

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

DATABASE SNAPSHOT

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**Graphical symbols for diagrams**

**Symboles graphiques pour schémas**





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DATABASE SNAPSHOT

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**Graphical symbols for diagrams**

**Symboles graphiques pour schémas**

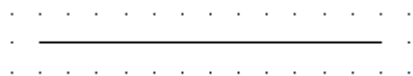
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ELECTROTECHNIQUE  
INTERNATIONALE

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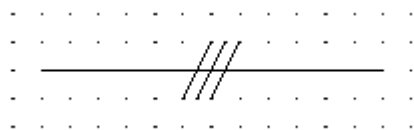
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## S00001



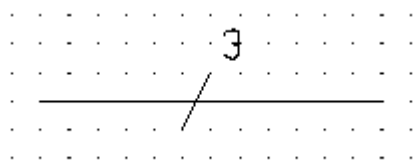
- Name:** Connection, general symbol
- Status level:** **Standard**
- Released on:** 2001-07-01
- Earlier published in:** IEC 60617-3 (ed.2.0) 03-01-01
- Alternative names:** conductor; cable; line; transmission path; telecommunication line
- Keywords:** cables, conductors, connections, lines, telecommunication, transmission paths
- Applied in:** S00004, S01449, S00054, S00052, S01927, S01807, S01928, S01143, S00423, S00410, S00409, S00415, S00407, S00412, S00414, S00413, S01414, S00447, S00439, S00446, S00448, S01415, S01929, S01391, S01082, S01084, S01148, S01086, S01142, S01318, S01378, S01081, S01145, S01831, S01083, S01377, S01150, S00826, S01080, S00051, S01916, S01917, S01141, S01140, S00408, S00418, S01336, S01138, S01185, S00531, S00425, S00437, S00050, S00005, S00416, S00444, S00592, S01149, S00417, S00449, S00411, S00445, S01448, S01151
- Application notes:** A00193, A00194
- Shape class:** Lines
- Function class:** W Guiding or transporting
- Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams
- Remarks:** See also symbol S00058.

## S00002



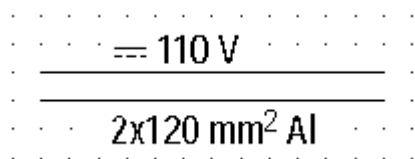
|                       |                                                                                                                                                                                                                                |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Group of connections (number of connections indicated)                                                                                                                                                                         |
| Status level:         | Standard                                                                                                                                                                                                                       |
| Released on:          | 2001-07-01                                                                                                                                                                                                                     |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-01-02                                                                                                                                                                                                  |
| Keywords:             | conductors, connections                                                                                                                                                                                                        |
| Form:                 | Form 1                                                                                                                                                                                                                         |
| Alternative forms:    | S00003                                                                                                                                                                                                                         |
| Applied in:           | S01837, S01087, S00888, S00886, S00872, S00868, S00870, S00852, S00854, S01089, S01088, S01091, S01913, S00856, S00882, S00884, S00874, S00880, S00025, S00449, S00876, S00890, S00864, S00866, S01093, S00862, S00860, S00858 |
| Applies:              | S00058                                                                                                                                                                                                                         |
| Application notes:    | A00192, A00193, A00194                                                                                                                                                                                                         |
| Shape class:          | Lines                                                                                                                                                                                                                          |
| Function class:       | W Guiding or transporting                                                                                                                                                                                                      |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams                                                                                                               |
| Remarks:              | Three connections shown.                                                                                                                                                                                                       |

## S00003



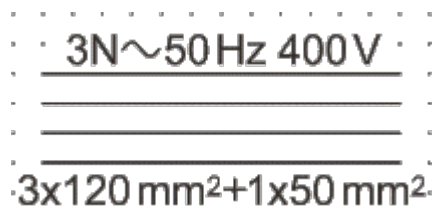
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Group of connections (number of connections indicated)                                                           |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-01-03                                                                                    |
| Keywords:             | conductors, connections                                                                                          |
| Form:                 | Form 2                                                                                                           |
| Alternative forms:    | S00002                                                                                                           |
| Applied in:           | S00024, S00055, S01277, S00888, S01285, S00027, S01323, S01324, S00294, S00295, S00053, S00890, S01092           |
| Applies:              | S00058                                                                                                           |
| Application notes:    | A00192, A00193, A00194                                                                                           |
| Shape class:          | Characters, Lines                                                                                                |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |
| Remarks:              | Three connections shown.                                                                                         |

## S00004



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Direct current circuit                                 |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-01-04                          |
| Keywords:             | conductors, connections                                |
| Applies:              | S00001; S01401                                         |
| Application notes:    | A00193, A00194                                         |
| Shape class:          | Characters, Lines                                      |
| Function class:       | W Guiding or transporting                              |
| Application class:    | Circuit diagrams, Connection diagrams                  |
| Remarks:              | 110 V, two aluminium conductors of 120 mm <sup>2</sup> |

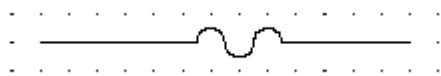
## S00005



|                       |                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------|
| Name:                 | Three-phase circuit                                                                                   |
| Status level:         | Standard                                                                                              |
| Released on:          | 2001-07-01                                                                                            |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-01-05                                                                         |
| Keywords:             | conductors, connections                                                                               |
| Applied in:           | S00314                                                                                                |
| Applies:              | S00001; S01403                                                                                        |
| Application notes:    | A00193, A00194                                                                                        |
| Shape class:          | Characters, Lines                                                                                     |
| Function class:       | W Guiding or transporting                                                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams                                              |
| Remarks:              | 50 Hz, 400 V, three conductors of 120 mm(2) , with neutral of 50 mm(2).<br>3N may be replaced by 3+N. |



## S00006



Name: Flexible connection

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-3 (ed.2.0) 03-01-06

Keywords: conductors, connections

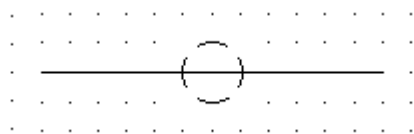
Applied in: S01147

Shape class: Depicting shapes

Function class: W Guiding or transporting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00007



Name: Screened conductor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-3 (ed.2.0) 03-01-07

Keywords: conductors, connections

Applied in: S00783, S00013, S00791

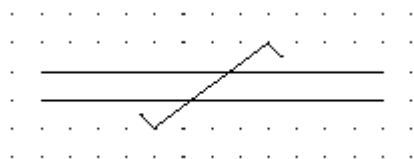
Application notes: A00001

Shape class: Circles, Lines

Function class: W Guiding or transporting

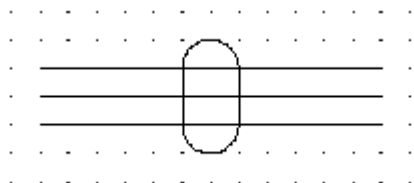
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00008



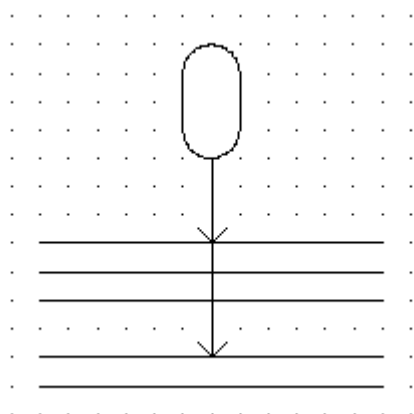
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Twisted connection                                                                                               |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-01-08                                                                                    |
| Keywords:             | conductors, connections                                                                                          |
| Application notes:    | A00001                                                                                                           |
| Shape class:          | Lines                                                                                                            |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |
| Remarks:              | Two connections shown.                                                                                           |

## S00009



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Conductors in a cable               |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-01-09       |
| Keywords:             | conductors, connections             |
| Alternative forms:    | S00010                              |
| Applied in:           | S01324, S00010                      |
| Application notes:    | A00001                              |
| Shape class:          | Ovals                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |
| Remarks:              | Three conductors shown.             |

## S00010



Name: Conductors in a cable

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-3 (ed.2.0) 03-01-10

Keywords: conductors, connections

Applies: S00009

Application notes: A00001

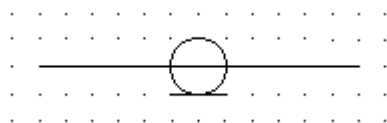
Shape class: Arrows, Lines , Ovals

Function class: W Guiding or transporting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

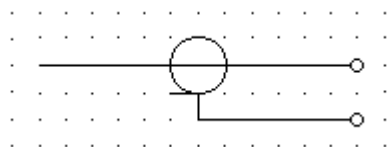
Remarks: Five conductors, two of which marked by arrowheads are in one cable.

## S00011



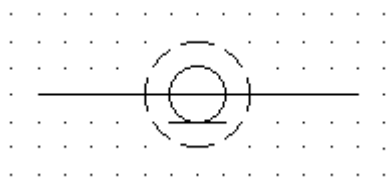
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Coaxial pair                                                                                                     |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-01-11                                                                                    |
| Keywords:             | conductors, connections                                                                                          |
| Applied in:           | S00042, S00610, S00013, S00012, S00606, S00591, S01119                                                           |
| Application notes:    | A00011                                                                                                           |
| Shape class:          | Circles, Lines                                                                                                   |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00012



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Coaxial pair connected to terminals                                                                |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-01-12                                                                      |
| Keywords:             | conductors, connections, terminals                                                                 |
| Applies:              | S00011; S00017                                                                                     |
| Application notes:    | A00011                                                                                             |
| Shape class:          | Circles, Lines                                                                                     |
| Function class:       | W Guiding or transporting                                                                          |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

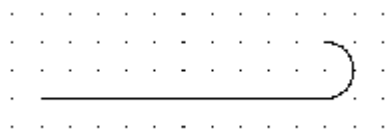
## S00013



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Coaxial pair with screen                                                                           |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-01-13                                                                      |
| Keywords:             | conductors, connections                                                                            |
| Applies:              | S00007; S00011                                                                                     |
| Shape class:          | Circles                                                                                            |
| Function class:       | W Guiding or transporting                                                                          |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |



## S00014



**Name:** End of a conductor or cable, not connected

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-01-14

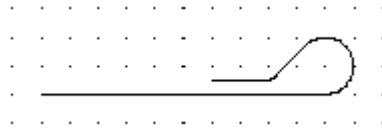
**Keywords:** conductors, connections

**Shape class:** Half-circles, Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00015



**Name:** End of a conductor or cable, not connected and specially insulated

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-01-15

**Keywords:** cables, conductors, connections

**Shape class:** Half-circles, Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00016



Name: Connection point

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-3 (ed.2.0) 03-02-01

Alternative names: Junction

Keywords: branchings, connections, junctions

Applied in: S00020, S01785, S00455, S01797, S00454, S00952, S01790, S00664, S01798, S01833, S00022, S01834, S01325

Replacing: S01350

Shape class: Circles, Dots (points)

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00017



Name: Terminal

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-3 (ed.2.0) 03-02-02

Keywords: terminals

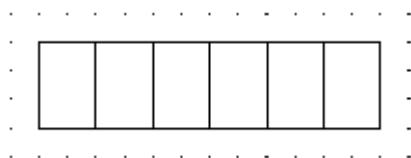
Applied in: S00039, S00044, S00046, S01840, S01841, S01200, S01842, S00881, S01836, S00955, S00957, S01201, S00269, S00012, S00880, S01202, S01839, S00267, S00268

Shape class: Circles

Function class: X Connecting

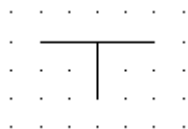
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00018



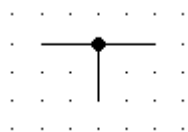
|                       |                               |
|-----------------------|-------------------------------|
| Name:                 | Terminal strip                |
| Status level:         | Standard                      |
| Released on:          | 2001-07-01                    |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-02-03 |
| Keywords:             | terminals                     |
| Application notes:    | A00002                        |
| Shape class:          | Rectangles                    |
| Function class:       | X Connecting                  |
| Application class:    | Circuit diagrams              |

## S00019



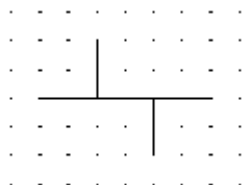
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | T-connection                                                                                                     |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-02-04                                                                                    |
| Keywords:             | branchings, connections, junctions                                                                               |
| Form:                 | Form 1                                                                                                           |
| Alternative forms:    | S00020                                                                                                           |
| Applied in:           | S00021, S00029, S00030, S00055, S00054, S00502                                                                   |
| Shape class:          | Lines                                                                                                            |
| Function class:       | W Guiding or transporting, X Connecting                                                                          |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00020



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | T-connection                                           |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-02-05                          |
| Keywords:             | branchings, connections, junctions                     |
| Form:                 | Form 2                                                 |
| Alternative forms:    | S00019                                                 |
| Applies:              | S00016                                                 |
| Shape class:          | Circles, Dots (points)                                 |
| Function class:       | W Guiding or transporting, X Connecting                |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Shown with junction symbol.                            |

## S00021



Name: Double junction of conductors

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-3 (ed.2.0) 03-02-06

Keywords: branchings, connections, junctions

Form: Form 1

Alternative forms: S00022

Applies: S00019

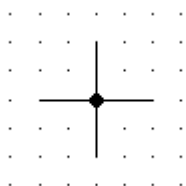
Shape class: Lines

Function class: W Guiding or transporting, X Connecting

Application class: Circuit diagrams, Function diagrams, Overview diagrams

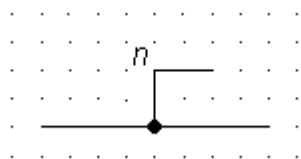


## S00022



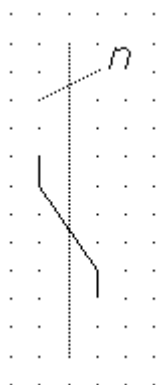
|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Double junction of conductors                          |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-02-07                          |
| Keywords:             | branchings, connections, junctions                     |
| Form:                 | Form 2                                                 |
| Alternative forms:    | S00021                                                 |
| Applied in:           | S00503                                                 |
| Applies:              | S00016                                                 |
| Shape class:          | Circles, Dots (points), Lines                          |
| Function class:       | W Guiding or transporting, X Connecting                |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |

## S00023



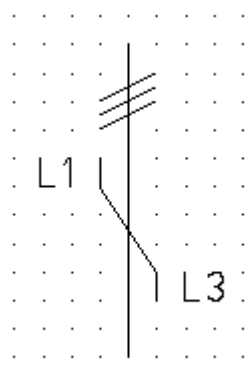
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Branching                                                                                                        |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-02-09                                                                                    |
| Alternative names:    | Junction                                                                                                         |
| Keywords:             | branchings, connections, junctions                                                                               |
| Applied in:           | S01351                                                                                                           |
| Application notes:    | A00003                                                                                                           |
| Shape class:          | Characters, Circles, Dots (points), Lines                                                                        |
| Function class:       | W Guiding or transporting, X Connecting                                                                          |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |
| Remarks:              | Junction common to a group of identical and repeated parallel circuits.                                          |

## S00024



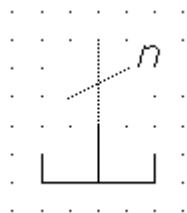
|                       |                                                                            |
|-----------------------|----------------------------------------------------------------------------|
| Name:                 | Interchange                                                                |
| Status level:         | Standard                                                                   |
| Released on:          | 2001-07-01                                                                 |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-02-11                                              |
| Alternative names:    | Interchange of conductors; Change of phase sequence; Inversion of polarity |
| Keywords:             | connections, interchanges, inversion                                       |
| Applied in:           | S01413, S00514, S01915, S00025                                             |
| Applies:              | S00003                                                                     |
| Application notes:    | A00004, A00262                                                             |
| Shape class:          | Characters, Lines                                                          |
| Function class:       | - Functional elements or attributes                                        |
| Application class:    | Conceptual elements or qualifiers                                          |

## S00025



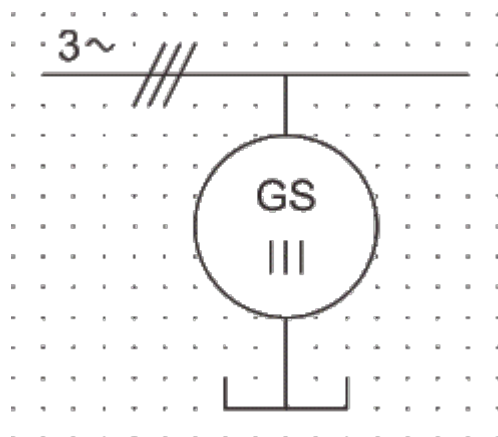
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Change of phase sequence            |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-02-12       |
| Keywords:             | interchanges                        |
| Applies:              | S00002; S00024                      |
| Application notes:    | A00004                              |
| Shape class:          | Characters, Lines                   |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00026



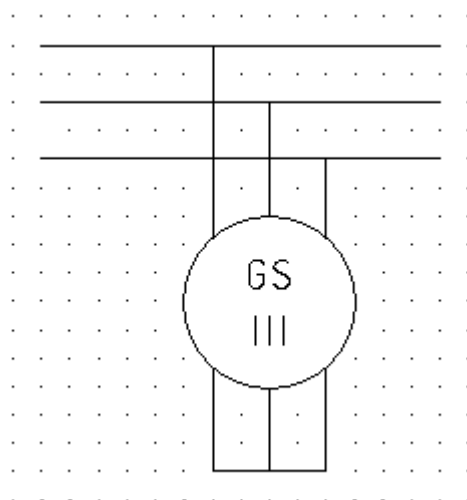
|                       |                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------|
| Name:                 | Neutral point                                                                                               |
| Status level:         | Standard                                                                                                    |
| Released on:          | 2001-07-01                                                                                                  |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-02-13                                                                               |
| Keywords:             | connections, junctions, neutral points                                                                      |
| Applied in:           | S00028, S00027                                                                                              |
| Application notes:    | A00003, A00262                                                                                              |
| Shape class:          | Characters, Lines                                                                                           |
| Function class:       | X Connecting                                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                                 |
| Remarks:              | Point at which multiple conductors are connected together to form the neutral point in a multiphase system. |

## S00027



|                       |                                                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Neutral point of a generator (single-line representation)                                                                             |
| Status level:         | Standard                                                                                                                              |
| Released on:          | 2001-07-01                                                                                                                            |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-02-14                                                                                                         |
| Keywords:             | connections, generators, junctions, neutral points, power generators                                                                  |
| Applies:              | S00003; S00026; S00797; S00819                                                                                                        |
| Shape class:          | Lines                                                                                                                                 |
| Function class:       | X Connecting                                                                                                                          |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                |
| Remarks:              | Synchronous generator, three-phase, both leads of each phase of the generator winding brought out, shown with external neutral point. |

## S00028



**Name:** Neutral point of a generator (multi-line representation)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-02-15

**Keywords:** connections, generators, junctions, neutral points, power generators

**Applies:** S00026; S00797; S00819

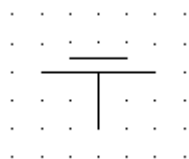
**Shape class:** Lines

**Function class:** X Connecting

**Application class:** Circuit diagrams

**Remarks:** Multi-line representation of symbol S00027.

## S00029



**Name:** Junction not interrupting the conductor

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-02-16

**Keywords:** branchings, connection devices, connections, junctions

**Applies:** S00019

**Application notes:** A00005

**Shape class:** Lines

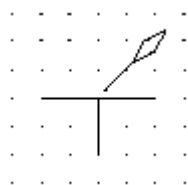
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The symbol is shown with symbol S00019.

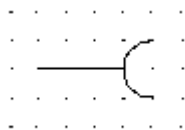


## S00030



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Junction requiring a special tool                      |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-02-17                          |
| Keywords:             | branchings, connection devices, connections, junctions |
| Applies:              | S00019                                                 |
| Shape class:          | Depicting shapes, Lines                                |
| Function class:       | - Functional elements or attributes                    |
| Application class:    | Conceptual elements or qualifiers                      |
| Remarks:              | The symbol is shown with symbol S00019.                |

## S00031



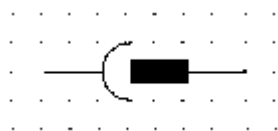
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Contact, female (of a socket or plug)                                                              |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-01                                                                      |
| Alternative names:    | Socket                                                                                             |
| Keywords:             | connection devices, sockets                                                                        |
| Applied in:           | S00457, S00048, S00049, S00047, S00038, S01329, S00033                                             |
| Application notes:    | A00006                                                                                             |
| Replacing:            | S01352                                                                                             |
| Shape class:          | Half-circles                                                                                       |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S00032



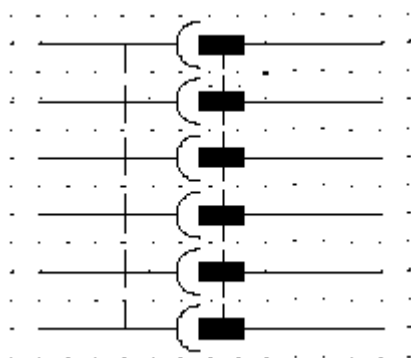
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Contact, male (of a socket or plug)                                                                |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-03                                                                      |
| Alternative names:    | Plug                                                                                               |
| Keywords:             | connection devices, plugs                                                                          |
| Applied in:           | S00039, S00043, S00048, S00049, S00047, S00038, S01329, S00033                                     |
| Application notes:    | A00007                                                                                             |
| Replacing:            | S01353                                                                                             |
| Shape class:          | Rectangles                                                                                         |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S00033



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Plug and socket                                                                                    |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-05                                                                      |
| Keywords:             | plugs, sockets                                                                                     |
| Applied in:           | S00035, S00042, S00034, S01329                                                                     |
| Applies:              | S00031; S00032                                                                                     |
| Application notes:    | A00210                                                                                             |
| Replacing:            | S01354                                                                                             |
| Shape class:          | Half-circles, Rectangles                                                                           |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S00034



**Name:** Plug and socket, multipole (multi-line representation)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-03-07

**Keywords:** plugs, sockets

**Alternative forms:** S00035

**Applies:** S00033; S00144

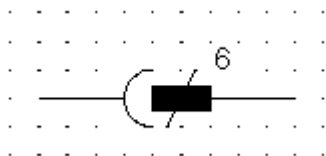
**Shape class:** Half-circles, Rectangles

**Function class:** X Connecting

**Application class:** Circuit diagrams

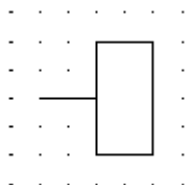
**Remarks:** The symbol "Plug and socket, multipole" is shown with 6 female and 6 male contacts in multi-line representation

## S00035



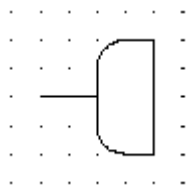
|                       |                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------|
| Name:                 | Plug and socket, multipole (single-line representation)                                                       |
| Status level:         | Standard                                                                                                      |
| Released on:          | 2001-07-01                                                                                                    |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-08                                                                                 |
| Keywords:             | plugs, sockets                                                                                                |
| Applies:              | S00033                                                                                                        |
| Shape class:          | Characters, Half-circles, Rectangles                                                                          |
| Function class:       | X Connecting                                                                                                  |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams            |
| Remarks:              | The symbol "Plug and socket, multipole" represents in single-line representation 6 female and 6 male contacts |

## S00036



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Connector, fixed portion of an assembly                                                            |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-09                                                                      |
| Keywords:             | connection devices, connectors                                                                     |
| Applied in:           | S00038                                                                                             |
| Application notes:    | A00008                                                                                             |
| Shape class:          | Rectangles                                                                                         |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

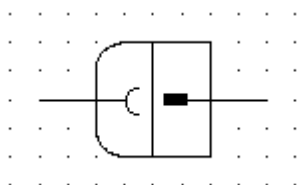
## S00037



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Connector, movable portion of an assembly                                                          |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-10                                                                      |
| Keywords:             | connection devices, connections                                                                    |
| Applied in:           | S00038                                                                                             |
| Application notes:    | A00008                                                                                             |
| Shape class:          | Rectangles                                                                                         |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

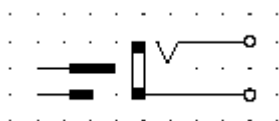


## S00038



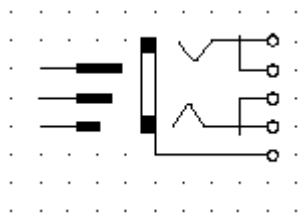
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Connector assembly                                                                                 |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-11                                                                      |
| Keywords:             | connection devices, connectors                                                                     |
| Applies:              | S00031; S00032; S00036; S00037                                                                     |
| Application notes:    | A00008                                                                                             |
| Shape class:          | Half-circles, Rectangles                                                                           |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |
| Remarks:              | The symbol is shown with fixed plug-side and movable socket-side.                                  |

## S00039



|                       |                                               |
|-----------------------|-----------------------------------------------|
| Name:                 | Telephone type plug and jack                  |
| Status level:         | Standard                                      |
| Released on:          | 2001-07-01                                    |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-12                 |
| Keywords:             | connection devices, jacks, plugs              |
| Applied in:           | S00040                                        |
| Applies:              | S00017; S00032                                |
| Application notes:    | A00009                                        |
| Shape class:          | Circles, Depicting shapes, Lines , Rectangles |
| Function class:       | X Connecting                                  |
| Application class:    | Circuit diagrams                              |
| Remarks:              | The symbol is shown with two poles.           |

## S00040



**Name:** Telephone type plug and jack with break contacts

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-03-13

**Keywords:** connection devices, jacks, plugs

**Applies:** S00039; S00233

**Application notes:** A00009

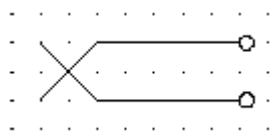
**Shape class:** Circles, Depicting shapes, Lines , Rectangles

**Function class:** X Connecting

**Application class:** Circuit diagrams

**Remarks:** The symbol is shown with three poles.

## S00041



**Name:** Telephone type break jack, telephone type isolating jack

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-03-14

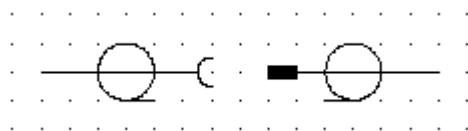
**Keywords:** connection devices

**Shape class:** Circles, Depicting shapes, Lines

**Function class:** X Connecting

**Application class:** Circuit diagrams

## S00042



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Plug and socket, coaxial                                                                           |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-15                                                                      |
| Keywords:             | connection devices, connectors, plugs, sockets                                                     |
| Applies:              | S00011; S00033                                                                                     |
| Application notes:    | A00010                                                                                             |
| Shape class:          | Circles, Half-circles, Lines , Rectangles                                                          |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S00043



Name: Butt-connector

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-3 (ed.2.0) 03-03-16

Keywords: connection devices, connectors

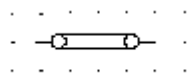
Applies: S00032

Shape class: Rectangles

Function class: X Connecting

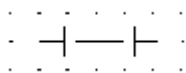
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

## S00044



|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| Name:                 | Connecting link, closed                                                         |
| Status level:         | Standard                                                                        |
| Released on:          | 2001-07-01                                                                      |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-17                                                   |
| Alternative names:    | Test terminal, twin stud type                                                   |
| Keywords:             | connection devices, testing points                                              |
| Form:                 | Form 1                                                                          |
| Alternative forms:    | S00045                                                                          |
| Applies:              | S00017                                                                          |
| Shape class:          | Circles, Depicting shapes                                                       |
| Function class:       | X Connecting                                                                    |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams |

## S00045



Name: Connecting link, closed

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-3 (ed.2.0) 03-03-18

Keywords: connection devices

Form: Form 2

Alternative forms: S00044

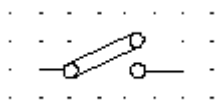
Shape class: Lines

Function class: X Connecting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams



## S00046



**Name:** Connecting link, open

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-03-19

**Keywords:** connection devices

**Applies:** S00017

**Shape class:** Circles, Depicting shapes

**Function class:** X Connecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

## S00047



**Name:** Plug and socket-type connector, male-male

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-03-20

**Alternative names:** U-link

**Keywords:** connection devices, connectors, plugs, sockets

**Applies:** S00031; S00032

**Shape class:** Half-circles, Rectangles

**Function class:** X Connecting

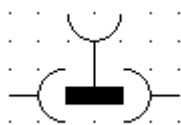
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

## S00048



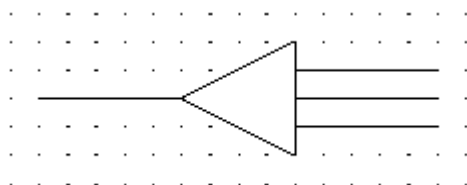
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Plug and socket-type connector, male-female                                                        |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-21                                                                      |
| Alternative names:    | U-link                                                                                             |
| Keywords:             | connection devices, connectors, plugs, sockets                                                     |
| Applies:              | S00031; S00032                                                                                     |
| Shape class:          | Half-circles, Rectangles                                                                           |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S00049



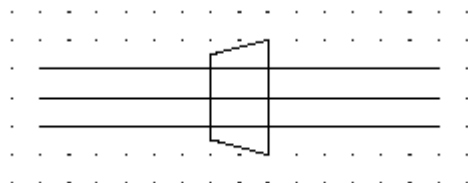
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Plug and socket-type connector, male-male with socket access                                       |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-03-22                                                                      |
| Alternative names:    | U-link                                                                                             |
| Keywords:             | connection devices, connectors, plugs, sockets                                                     |
| Applies:              | S00031; S00032                                                                                     |
| Shape class:          | Half-circles, Rectangles                                                                           |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S00050



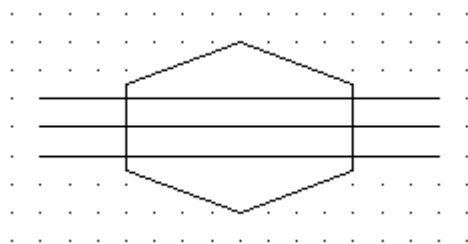
|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Cable sealing end (multi-core cable)           |
| Status level:         | Standard                                       |
| Released on:          | 2001-07-01                                     |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-04-01                  |
| Keywords:             | cable fittings, sealings                       |
| Applied in:           | S01397                                         |
| Applies:              | S00001; S00058                                 |
| Shape class:          | Equilateral triangles, Lines                   |
| Function class:       | X Connecting                                   |
| Application class:    | Connection diagrams, Installation diagrams     |
| Remarks:              | The symbol is shown with one three-core cable. |

## S00051



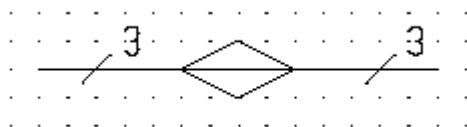
|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Cable sealing end (one-core cables)                      |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-04-02                            |
| Keywords:             | cable fittings, sealings                                 |
| Applied in:           | S01895                                                   |
| Applies:              | S00001                                                   |
| Shape class:          | Lines , Trapezoids                                       |
| Function class:       | X Connecting                                             |
| Application class:    | Connection diagrams, Installation diagrams, Network maps |
| Remarks:              | The symbol is shown with three one-core cables.          |

## S00052



|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Straight-through joint box (multi-line representation)                 |
| Status level:         | Standard                                                               |
| Released on:          | 2001-07-01                                                             |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-04-03                                          |
| Keywords:             | cable fittings                                                         |
| Alternative forms:    | S00053                                                                 |
| Applied in:           | S00054                                                                 |
| Applies:              | S00001                                                                 |
| Shape class:          | Hexagons, Lines                                                        |
| Function class:       | X Connecting                                                           |
| Application class:    | Connection diagrams, Installation diagrams, Network maps               |
| Remarks:              | The symbol is shown with three conductors in multi-line representation |

## S00053



**Name:** Straight-through joint box (single-line representation)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-04-04

**Keywords:** cable fittings

**Alternative forms:** S00052

**Applied in:** S00055

**Applies:** S00003

**Shape class:** Characters, Lines , Parallelograms

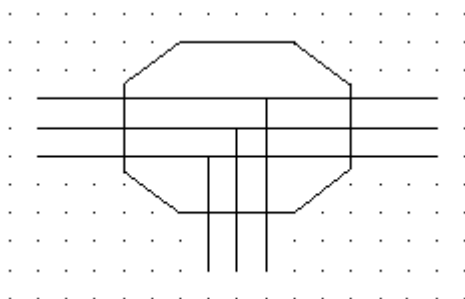
**Function class:** X Connecting

**Application class:** Connection diagrams, Installation diagrams, Network maps

**Remarks:** The symbol is shown with three conductors in single-line representation.

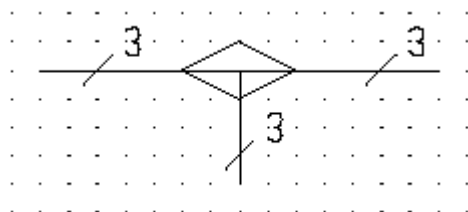


## S00054



|                       |                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------|
| Name:                 | Junction box (multi-line representation)                                                  |
| Status level:         | Standard                                                                                  |
| Released on:          | 2001-07-01                                                                                |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-04-05                                                             |
| Keywords:             | cable fittings                                                                            |
| Alternative forms:    | S00055                                                                                    |
| Applies:              | S00001; S00019; S00052                                                                    |
| Shape class:          | Lines , Octagons                                                                          |
| Function class:       | X Connecting                                                                              |
| Application class:    | Connection diagrams, Installation diagrams, Network maps                                  |
| Remarks:              | The symbol is shown with three conductors with T-connections in multi-line representation |

## S00055



**Name:** Junction box (single-line representation)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-3 (ed.2.0) 03-04-06

**Keywords:** cable fittings

**Alternative forms:** S00054

**Applies:** S00003; S00019; S00053

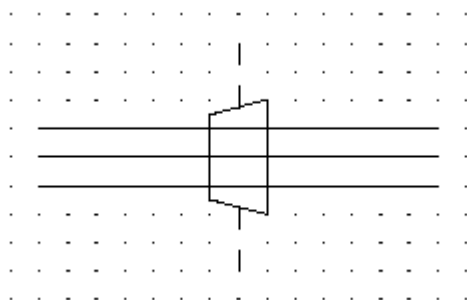
**Shape class:** Characters, Lines , Parallelograms

**Function class:** X Connecting

**Application class:** Connection diagrams, Installation diagrams, Network maps

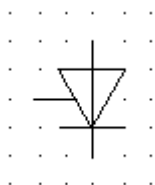
**Remarks:** The symbol is shown with three conductors with T-connections in single-line representation.

## S00056



|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Pressure-tight bulkhead cable gland                      |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-04-07                            |
| Keywords:             | cable fittings                                           |
| Applied in:           | S00513                                                   |
| Application notes:    | A00012                                                   |
| Shape class:          | Lines , Trapezoids                                       |
| Function class:       | X Connecting                                             |
| Application class:    | Connection diagrams, Installation diagrams, Network maps |
| Remarks:              | The symbol is shown with three cables.                   |

## S00057



**Name:** Triode thyristor, type unspecified

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-04

**Keywords:** semiconductors, thyristors

**Applies:** S00613; S00619

**Application notes:** A00184

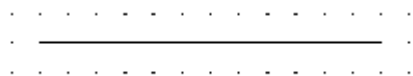
**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

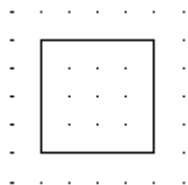
**Remarks:** This symbol is used to represent a reverse blocking triode thyristor, if it is not necessary to specify the type of gate.

## S00058



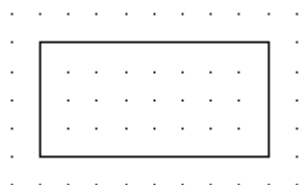
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Group of connections                                                                                             |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-3 (ed.2.0) 03-01-01                                                                                    |
| Keywords:             | connections                                                                                                      |
| Applied in:           | S00003, S01414, S00002, S00050                                                                                   |
| Application notes:    | A00192, A00193, A00194                                                                                           |
| Shape class:          | Lines                                                                                                            |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |
| Remarks:              | See also symbol S00001.                                                                                          |

## S00059



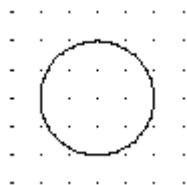
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Object                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Released on:          | 2001-07-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-01-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Alternative names:    | Equipment;Device;Functional unit;Component;Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Keywords:             | envelopes, outlines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Form:                 | Form 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Alternative forms:    | S00060; S00061                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Applied in:           | S01465, S01075, S00392, S00395, S00398, S00394, S00401, S00404, S00402, S00399, S00442, S01463, S01464, S00781, S01130, S01078, S01035, S00992, S01076, S01175, S00896, S00894, S01184, S01037, S00533, S00893, S00785, S01032, S01167, S00899, S01421, S00549, S01244, S00900, S00783, S01029, S01174, S01033, S00548, S01034, S01181, S00897, S00393, S00443, S00993, S00397, S00403, S01655, S01136, S01177, S01079, S00396, S00494, S01896, S00385, S00492, S00608, S01030, S01125, S01176, S01904, S01910, S01031, S00391, S00519, S01036, S00400, S00386, S00552, S01225, S00515 |
| Application notes:    | A00013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Shape class:          | Squares                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## S00060



|                       |                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Object                                                                                                                                                                 |
| Status level:         | Standard                                                                                                                                                               |
| Released on:          | 2001-07-01                                                                                                                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-01-02                                                                                                                                          |
| Alternative names:    | Equipment; Device; Functional unit; Component; Function                                                                                                                |
| Keywords:             | envelopes, outlines                                                                                                                                                    |
| Form:                 | Form 2                                                                                                                                                                 |
| Alternative forms:    | S00059; S00061                                                                                                                                                         |
| Applied in:           | S01923, S01420, S00387, S00479, S00455, S00456, S00994, S01419, S00480, S01327, S01326, S01888, S01887, S01328, S01893, S00784, S00495, S00516, S00609, S00388, S00478 |
| Application notes:    | A00013                                                                                                                                                                 |
| Shape class:          | Rectangles                                                                                                                                                             |
| Function class:       | - Functional elements or attributes                                                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                      |

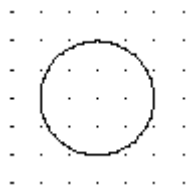
## S00061



|                       |                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Object                                                                                                                 |
| Status level:         | Standard                                                                                                               |
| Released on:          | 2001-07-01                                                                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-01-03                                                                                          |
| Alternative names:    | Equipment; Device; Functional unit; Component; Function                                                                |
| Keywords:             | envelopes, outlines                                                                                                    |
| Form:                 | Form 3                                                                                                                 |
| Alternative forms:    | S00059; S00060                                                                                                         |
| Applied in:           | S01903, S00390, S00453, S01845, S01844, S01133, S00493, S01894, S00405, S00428, S00389, S00429, S00436, S00406, S00534 |
| Application notes:    | A00013                                                                                                                 |
| Shape class:          | Circles                                                                                                                |
| Function class:       | - Functional elements or attributes                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                      |

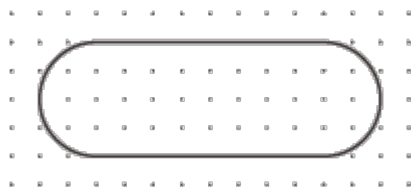


## S00062



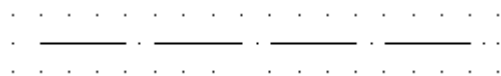
|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Envelope                                                                                                                                               |
| Status level:         | Standard                                                                                                                                               |
| Released on:          | 2001-07-01                                                                                                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-01-04                                                                                                                          |
| Keywords:             | envelopes, outlines                                                                                                                                    |
| Form:                 | Form 1                                                                                                                                                 |
| Alternative forms:    | S00063                                                                                                                                                 |
| Applied in:           | S00266, S00742, S00744, S00421, S00778, S00776, S00790, S00789, S00777, S00731, S00780, S00771, S00693, S00772, S00769, S00664, S00694, S00791, S00743 |
| Application notes:    | A00014, A00015, A00016, A00017                                                                                                                         |
| Shape class:          | Circles                                                                                                                                                |
| Function class:       | - Functional elements or attributes                                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                                      |

## S00063



|                       |                                                                                                                                                                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Envelope                                                                                                                                                                                                                                       |
| Status level:         | Standard                                                                                                                                                                                                                                       |
| Released on:          | 2001-07-01                                                                                                                                                                                                                                     |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-01-05                                                                                                                                                                                                                  |
| Keywords:             | envelopes, outlines                                                                                                                                                                                                                            |
| Form:                 | Form 2                                                                                                                                                                                                                                         |
| Alternative forms:    | S00062                                                                                                                                                                                                                                         |
| Applied in:           | S00745, S00751, S00774, S00752, S01391, S00734, S00792, S00763, S00770, S00735, S00757, S00733, S00756, S00759, S00753, S00779, S00746, S00755, S00761, S00767, S00754, S00793, S00758, S00794, S00760, S00732, S00747, S00762, S00773, S00764 |
| Application notes:    | A00014, A00015, A00016, A00017                                                                                                                                                                                                                 |
| Shape class:          | Barrels, Ovals                                                                                                                                                                                                                                 |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                            |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                              |
| Remarks:              | 2023-11-29 Editorial change to include grid dots within envelope.                                                                                                                                                                              |

**S00064**



Name: Boundary

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-01-06

Keywords: envelopes, outlines

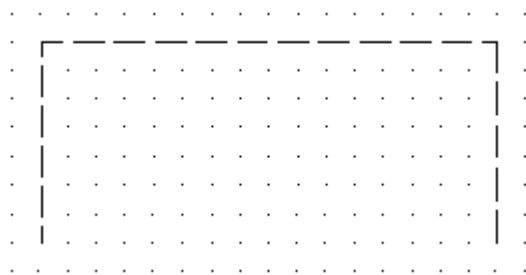
Application notes: A00018, A00019

Shape class: Lines

Function class: - Functional elements or attributes

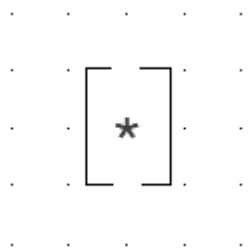
Application class: Conceptual elements or qualifiers

## S00065



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Screen                                                                      |
| Status level:         | <b>Standard</b>                                                             |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-01-07                                               |
| Alternative names:    | Shield                                                                      |
| Keywords:             | envelopes, outlines, screens, shields                                       |
| Applied in:           | S00853, S00852, S00694                                                      |
| Application notes:    | A00020                                                                      |
| Shape class:          | Lines                                                                       |
| Function class:       | - Functional elements or attributes                                         |
| Application class:    | Conceptual elements or qualifiers                                           |
| Remarks:              | For example for reducing penetration of electric or electromagnetic fields. |

## S00066



**Name:** Protection against unintentional direct contact, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-01-08

**Keywords:** envelopes, outlines, protections against contact

**Applied in:** S00168

**Application notes:** A00021

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00069

~ 50 Hz

**Name:** Alternating current (indication of frequency)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-02-05

**Keywords:** current, kind of current and voltage, voltage

**Applies:** S01403

**Application notes:** A00023

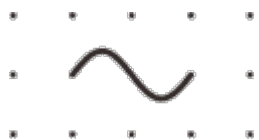
**Shape class:** Characters, Depicting shapes

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Symbol restrictions:** Shown for alternating current of 50 Hz.

## S00073



**Name:** Alternating current (indication of frequency range: low)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-02-09

**Alternative names:** Different frequency ranges. Relatively low frequencies (power frequencies or sub-audio frequencies)

**Keywords:** current, kind of current and voltage, voltage

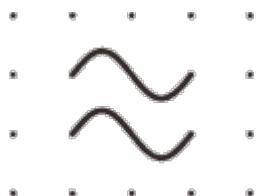
**Application notes:** A00027

**Shape class:** Depicting shapes

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00074



**Name:** Alternating current (indication of frequency range: medium)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-02-10

**Alternative names:** Different frequency ranges. Medium frequencies (audio)

**Keywords:** current, kind of current and voltage, voltage

**Applied in:** S01280, S01279, S01281

**Application notes:** A00027

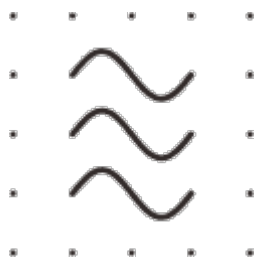
**Shape class:** Depicting shapes

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

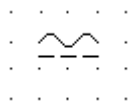


## S00075



|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Name:                 | Alternating current (indication of frequency range: high)                      |
| Status level:         | Standard                                                                       |
| Released on:          | 2001-07-01                                                                     |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-02-11                                                  |
| Alternative names:    | Different frequency ranges. Relatively high frequencies (super audio, carrier) |
| Keywords:             | current, kind of current and voltage, voltage                                  |
| Applied in:           | S01829, S01173, S01279, S01281                                                 |
| Application notes:    | A00027                                                                         |
| Shape class:          | Depicting shapes                                                               |
| Function class:       | - Functional elements or attributes                                            |
| Application class:    | Conceptual elements or qualifiers                                              |

## S00076



**Name:** Rectified current with alternating component

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-02-12

**Keywords:** current, kind of current and voltage, voltage

**Shape class:** Depicting shapes, Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** If it is necessary to distinguish from a rectified and filtered current.

**S00077**

+

Name: Positive polarity

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-02-13

Keywords: current, kind of current and voltage, voltage

Applied in: S00582, S00952, S00581, S00571

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

**S00078**

—

Name: Negative polarity

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-02-14

Keywords: current, kind of current and voltage, voltage

Applied in: S00952

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

**S00079**

**N**

Name: Neutral

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-02-15

Keywords: current, kind of current and voltage, voltage

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: This symbol for neutral is given in IEC 60445.

**S00080**

**M**

Name: Mid-wire

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-02-16

Keywords: current, kind of current and voltage, voltage

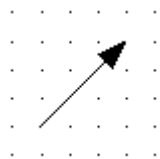
Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: This symbol for mid-wire is given in IEC 60445.

## S00081



Name: Adjustability, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-03-01

Keywords: adjustability, variability

Applied in: S00082, S00088, S00299, S00751, S01430, S01429, S01157, S01099, S00527, S00877, S01097, S00579, S01245, S00753, S00573, S00857, S01229, S00875, S00865, S00856, S00577, S01241, S00441, S00565, S00874, S00876, S00864, S00590, S00587, S00557, S00768

Application notes: A00261

Shape class: Arrows

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

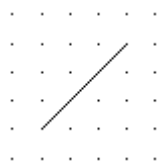
## S00082



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Adjustability, non-linear           |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-03-02       |
| Keywords:             | adjustability, variability          |
| Applies:              | S00081                              |
| Application notes:    | A00261                              |
| Shape class:          | Arrows, Lines                       |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

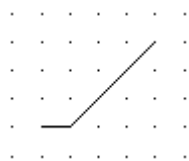


## S00083



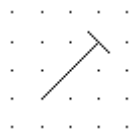
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Variability, general symbol         |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-03-03       |
| Keywords:             | adjustability, variability          |
| Applied in:           | S00084, S00689                      |
| Application notes:    | A00031, A00032, A00261              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00084



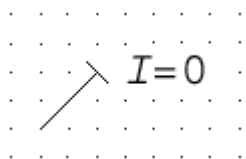
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Variability, non-linear             |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-03-04       |
| Keywords:             | adjustability, variability          |
| Applied in:           | S00582, S00558, S00690, S00581      |
| Applies:              | S00083                              |
| Application notes:    | A00031, A00032, A00261              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00085



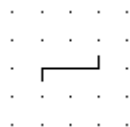
|                       |                                        |
|-----------------------|----------------------------------------|
| Name:                 | Adjustability, pre-set                 |
| Status level:         | Standard                               |
| Released on:          | 2001-07-01                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-03-05          |
| Keywords:             | adjustability, variability             |
| Applied in:           | S00086, S00343, S00090, S00562, S00575 |
| Application notes:    | A00031, A00032, A00033, A00261         |
| Shape class:          | Lines                                  |
| Function class:       | - Functional elements or attributes    |
| Application class:    | Conceptual elements or qualifiers      |

## S00086



|                       |                                                    |
|-----------------------|----------------------------------------------------|
| Name:                 | Pre-set adjustability                              |
| Status level:         | Standard                                           |
| Released on:          | 2001-07-01                                         |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-03-06                      |
| Keywords:             | adjustability, variability                         |
| Applies:              | S00085; S00111                                     |
| Application notes:    | A00031, A00032, A00033, A00261                     |
| Shape class:          | Lines                                              |
| Function class:       | - Functional elements or attributes                |
| Application class:    | Conceptual elements or qualifiers                  |
| Remarks:              | Pre-set adjustment permitted only at zero current. |

## S00087



Name: Action in steps

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-03-07

Keywords: adjustability, automatic control, variability

Applied in: S00088, S00524, S00589, S00865, S00298, S00864, S00821

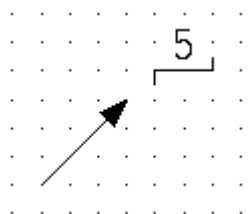
Application notes: A00034

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00088



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Adjustability step by step          |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-03-08       |
| Keywords:             | adjustability, variability          |
| Applies:              | S00081; S00087                      |
| Application notes:    | A00031, A00034, A00261              |
| Shape class:          | Arrows, Characters, Lines           |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |
| Remarks:              | 5 steps shown.                      |

**S00089**



Name: Continuous variability

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-03-09

Keywords: adjustability, automatic control, variability

Applied in: S00090

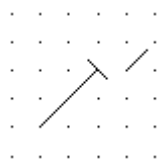
Application notes: A00031, A00261

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00090



|                       |                                           |
|-----------------------|-------------------------------------------|
| Name:                 | Continuous variability, pre-set           |
| Status level:         | Standard                                  |
| Released on:          | 2001-07-01                                |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-03-10             |
| Alternative names:    | Pre-set adjustment, continuously variable |
| Keywords:             | adjustability, variability                |
| Applies:              | S00085; S00089                            |
| Application notes:    | A00031, A00261                            |
| Shape class:          | Lines                                     |
| Function class:       | - Functional elements or attributes       |
| Application class:    | Conceptual elements or qualifiers         |

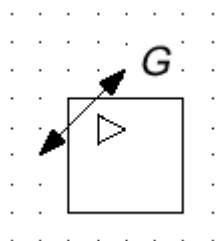


## S00091



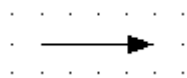
|                       |                                               |
|-----------------------|-----------------------------------------------|
| Name:                 | Automatic control                             |
| Status level:         | Standard                                      |
| Released on:          | 2001-07-01                                    |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-03-11                 |
| Keywords:             | adjustability, automatic control, variability |
| Applied in:           | S00092                                        |
| Application notes:    | A00031, A00035, A00261                        |
| Shape class:          | Arrows                                        |
| Function class:       | - Functional elements or attributes           |
| Application class:    | Conceptual elements or qualifiers             |

## S00092



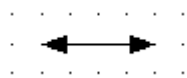
|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| Name:                 | Amplifier with automatic gain control                     |
| Status level:         | Standard                                                  |
| Released on:          | 2001-07-01                                                |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-03-12                             |
| Keywords:             | adjustability, amplifiers, automatic control, variability |
| Applies:              | S00091; S01240                                            |
| Application notes:    | A00031, A00035, A00261                                    |
| Shape class:          | Arrows, Squares                                           |
| Function class:       | T Converting but maintaining kind                         |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams    |
| Remarks:              | Amplifier with automatic gain control shown.              |

## S00093



|                       |                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------|
| Name:                 | Rectilinear motion (unidirectional)                                                    |
| Status level:         | Standard                                                                               |
| Released on:          | 2001-07-01                                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-04-01                                                          |
| Alternative names:    | Force; Unidirectional, in the direction of the arrowhead                               |
| Keywords:             | direction, force, motion                                                               |
| Applied in:           | S00145, S00187, S01453, S01452, S01175, S00949, S01177, S00948, S01176, S00474, S00840 |
| Application notes:    | A00036, A00037                                                                         |
| Shape class:          | Arrows                                                                                 |
| Function class:       | - Functional elements or attributes                                                    |
| Application class:    | Conceptual elements or qualifiers                                                      |

## S00094



Name: Rectilinear motion (bidirectional)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-04-02

Alternative names: Force

Keywords: direction, force, motion

Applied in: S00122, S01221, S01179, S01211, S01222, S01218, S01220, S00188, S00523, S01158

Application notes: A00036, A00037

Shape class: Arrows

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00095



|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Circular motion (unidirectional)                                       |
| Status level:         | Standard                                                               |
| Released on:          | 2001-07-01                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-04-03                                          |
| Alternative names:    | Rotation; Torque                                                       |
| Keywords:             | direction, force, motion                                               |
| Applied in:           | S00146, S00162, S01197, S01196, S01199, S00964, S00767                 |
| Application notes:    | A00035, A00036                                                         |
| Shape class:          | Arrows, Circle segments                                                |
| Function class:       | - Functional elements or attributes                                    |
| Application class:    | Conceptual elements or qualifiers                                      |
| Remarks:              | Circular motion, rotation or torque in the direction of the arrowhead. |

## S00096



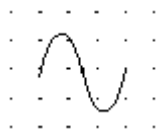
|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Circular motion (bidirectional)                        |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-04-04                          |
| Alternative names:    | Rotation; Torque                                       |
| Keywords:             | direction, force, motion                               |
| Applied in:           | S00162, S00301, S01200, S01152, S01201, S01202, S01198 |
| Application notes:    | A00036, A00037                                         |
| Shape class:          | Arrows, Circle segments                                |
| Function class:       | - Functional elements or attributes                    |
| Application class:    | Conceptual elements or qualifiers                      |

## S00097



|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Name:                 | Circular motion (bidirectional and limited)                     |
| Status level:         | Standard                                                        |
| Released on:          | 2001-07-01                                                      |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-04-05                                   |
| Alternative names:    | Rotation; Torque                                                |
| Keywords:             | direction, force, motion                                        |
| Application notes:    | A00035, A00036                                                  |
| Shape class:          | Arrows, Circle segments, Lines                                  |
| Function class:       | - Functional elements or attributes                             |
| Application class:    | Conceptual elements or qualifiers                               |
| Remarks:              | Circular motion, rotation or torque limited in both directions. |

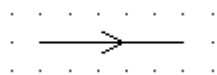
## S00098



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Oscillating motion                  |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-04-06       |
| Keywords:             | direction, force, motion            |
| Applied in:           | S00317, S01109                      |
| Application notes:    | A00035, A00036                      |
| Shape class:          | Depicting shapes                    |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |



## S00099



**Name:** Propagation (one way)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-05-01

**Alternative names:** Energy flow; Signal flow; Information flow

**Keywords:** direction, flow

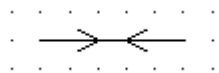
**Applied in:** S01716, S00985, S01738, S01603, S00942, S01280, S01254, S01279, S01378, S01040, S01713, S01281, S01041, S01252, S01377, S01596, S01253, S01746, S01038, S01739, S00104, S00940, S01599, S00105, S00934, S00941, S01251

**Shape class:** Arrows, Lines

**Function class:** - Functional elements or attributes

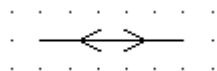
**Application class:** Conceptual elements or qualifiers

## S00100



|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Propagation, both ways, simultaneously   |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-05-02            |
| Alternative names:    | Simultaneous transmission and reception  |
| Keywords:             | direction, flow                          |
| Applied in:           | S01803, S01126, S01039                   |
| Shape class:          | Arrows, Lines                            |
| Function class:       | - Functional elements or attributes      |
| Application class:    | Conceptual elements or qualifiers        |
| Remarks:              | Simultaneous transmission and reception. |

## S00101



**Name:** Propagation, both ways, not simultaneously

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-05-03

**Alternative names:** Alternate transmission and reception

**Keywords:** direction, flow

**Applied in:** S01716, S01603, S01629, S00497, S01129, S01713, S01131, S01635, S01628, S00897, S01547, S01030, S01031

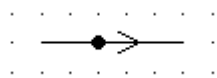
**Shape class:** Arrows, Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

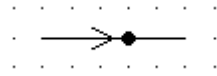
**Remarks:** Alternate transmission and reception.

## S00102



|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| Name:                 | Transmission                                                 |
| Status level:         | Standard                                                     |
| Released on:          | 2001-07-01                                                   |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-05-04                                |
| Keywords:             | direction, flow                                              |
| Applied in:           | S01923, S01128, S01035, S01037, S01029, S01034, S01036       |
| Application notes:    | A00038                                                       |
| Shape class:          | Arrows, Dots (points), Lines                                 |
| Function class:       | - Functional elements or attributes                          |
| Application class:    | Conceptual elements or qualifiers                            |
| Remarks:              | Symbol S01128 shows an example where the dot may be omitted. |

## S00103



Name: Reception

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-05-05

Keywords: direction, flow

Applied in: S01923, S01037, S01032, S01127, S01033, S01036

Application notes: A00039

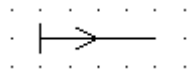
Shape class: Arrows, Dots (points), Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

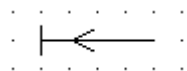
Remarks: Symbol S01127 shows an example where the dot may be omitted..

## S00104



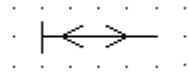
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Energy flow from the busbars        |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-05-06       |
| Keywords:             | busbars, direction, flow            |
| Applied in:           | S00935                              |
| Applies:              | S00099                              |
| Shape class:          | Arrows, Lines                       |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00105



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Energy flow towards the busbars     |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-05-07       |
| Keywords:             | busbars, direction, flow            |
| Applied in:           | S00343, S00936                      |
| Applies:              | S00099                              |
| Shape class:          | Arrows, Lines                       |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00106



**Name:** Energy flow, bidirectional (towards and from the busbars)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-05-08

**Keywords:** busbars, direction, flow

**Alternative forms:** S00103

**Applied in:** S00937

**Shape class:** Arrows, Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers



**S00108**

>

Name: Actuating (higher than)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-06-01

Keywords: dependence on a quantity, quantity dependency

Applied in: S00343, S00350, S00345, S00341

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Actuating when the characteristic quantity is higher than the setting value. See also ISO/IEC 646.

**S00109**

<

Name: Actuating (lower than)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-06-02

Keywords: dependence on a quantity, quantity dependency

Applied in: S00340, S00344, S00351, S00346, S00345, S00349, S00347

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Actuating when the characteristic quantity is lower than the setting value. See also ISO/IEC 646.

**S00110**

>  
<

Name: Actuating (either higher than or lower than)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-06-03

Keywords: dependence on a quantity, quantity dependency

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Actuating when the characteristic quantity is either higher than a given high setting or lower than a given low setting.

**S00111**

= 0

Name: Actuating (equal to zero)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-06-04

Keywords: dependence on a quantity, quantity dependency

Applied in: S00086, S00338

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

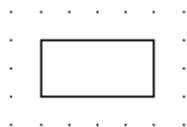
Remarks: Actuating when the value of the characteristic quantity is equal to zero.

## S00112

≈ 0

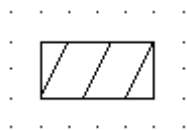
|                       |                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------|
| Name:                 | Actuating (approximately equal to zero)                                                 |
| Status level:         | Standard                                                                                |
| Released on:          | 2001-07-01                                                                              |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-06-05                                                           |
| Keywords:             | dependence on a quantity, quantity dependency                                           |
| Applied in:           | S00350, S01832                                                                          |
| Shape class:          | Characters                                                                              |
| Function class:       | - Functional elements or attributes                                                     |
| Application class:    | Conceptual elements or qualifiers                                                       |
| Remarks:              | Actuating when the value of the characteristic quantity is approximately equal to zero. |

## S00113



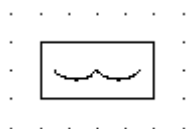
|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Material, unspecified                          |
| Status level:         | Standard                                       |
| Released on:          | 2001-07-01                                     |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-07-01                  |
| Keywords:             | material                                       |
| Applied in:           | S00114, S00116, S00115, S00118, S00119, S00117 |
| Application notes:    | A00040                                         |
| Shape class:          | Rectangles                                     |
| Function class:       | - Functional elements or attributes            |
| Application class:    | Conceptual elements or qualifiers              |

## S00114



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Material, solid                     |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-07-02       |
| Keywords:             | material                            |
| Applied in:           | S00607, S01217, S01216, S00356      |
| Applies:              | S00113                              |
| Application notes:    | A00040                              |
| Shape class:          | Lines , Rectangles                  |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00115



|                       |                                        |
|-----------------------|----------------------------------------|
| Name:                 | Material, liquid                       |
| Status level:         | Standard                               |
| Released on:          | 2001-07-01                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-07-03          |
| Keywords:             | material                               |
| Applied in:           | S00792, S00408, S00793, S00794, S00795 |
| Applies:              | S00113                                 |
| Application notes:    | A00040                                 |
| Shape class:          | Circle segments, Rectangles            |
| Function class:       | - Functional elements or attributes    |
| Application class:    | Conceptual elements or qualifiers      |



## S00116



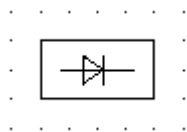
|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Material, gas                                                                                                                                          |
| Status level:         | Standard                                                                                                                                               |
| Released on:          | 2001-07-01                                                                                                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-07-04                                                                                                                          |
| Keywords:             | material                                                                                                                                               |
| Applied in:           | S00199, S00198, S00266, S00745, S00774, S00781, S00790, S00780, S00771, S00693, S00772, S00770, S00769, S00783, S00775, S00782, S00784, S00791, S00773 |
| Applies:              | S00113                                                                                                                                                 |
| Application notes:    | A00040                                                                                                                                                 |
| Shape class:          | Dots (points), Rectangles                                                                                                                              |
| Function class:       | - Functional elements or attributes                                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                                      |

## S00117



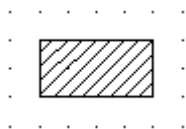
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Material, electret                  |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-07-05       |
| Keywords:             | material                            |
| Applied in:           | S00603                              |
| Applies:              | S00113                              |
| Application notes:    | A00040                              |
| Shape class:          | Equilateral triangles, Rectangles   |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00118



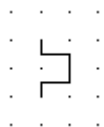
|                       |                                           |
|-----------------------|-------------------------------------------|
| Name:                 | Material, semiconducting                  |
| Status level:         | Standard                                  |
| Released on:          | 2001-07-01                                |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-07-06             |
| Keywords:             | material                                  |
| Applied in:           | S00785                                    |
| Applies:              | S00113                                    |
| Application notes:    | A00040                                    |
| Shape class:          | Equilateral triangles, Lines , Rectangles |
| Function class:       | - Functional elements or attributes       |
| Application class:    | Conceptual elements or qualifiers         |

## S00119



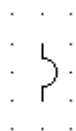
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Material, insulating                |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-07-07       |
| Keywords:             | material                            |
| Applies:              | S00113                              |
| Application notes:    | A00040                              |
| Shape class:          | Lines , Rectangles                  |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00120



|                       |                                        |
|-----------------------|----------------------------------------|
| Name:                 | Thermal effect                         |
| Status level:         | Standard                               |
| Released on:          | 2001-07-01                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-08-01          |
| Keywords:             | dependence, effect, thermal            |
| Applied in:           | S00191, S00266, S00265, S00381, S00325 |
| Shape class:          | Lines                                  |
| Function class:       | - Functional elements or attributes    |
| Application class:    | Conceptual elements or qualifiers      |

## S00121



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Electromagnetic effect              |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-08-02       |
| Keywords:             | dependence, effect, electromagnetic |
| Applied in:           | S00190                              |
| Shape class:          | Half-circles, Lines                 |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00122



|                       |                                      |
|-----------------------|--------------------------------------|
| Name:                 | Magnetostrictive effect              |
| Status level:         | Standard                             |
| Released on:          | 2001-07-01                           |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-08-03        |
| Keywords:             | dependence, effect, magnetostrictive |
| Applied in:           | S00605, S00609, S00604               |
| Applies:              | S00094                               |
| Shape class:          | Arrows, Half-circles                 |
| Function class:       | - Functional elements or attributes  |
| Application class:    | Conceptual elements or qualifiers    |

## S00123



**Name:** Magnetic field effect or dependence

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-08-04

**Keywords:** dependence, effect, magnetic

**Applied in:** S00689, S00690, S00688

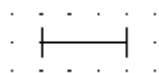
**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers



## S00124



Name: Delay

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-08-05

Keywords: delayed operation, dependence, effect

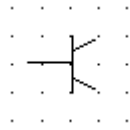
Applied in: S00337, S00343, S01266, S00353, S00607, S00605, S01655, S00341, S00609, S00604, S00608

Shape class: Lines

Function class: - Functional elements or attributes

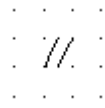
Application class: Conceptual elements or qualifiers

## S00125



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Semiconductor effect                |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-08-06       |
| Keywords:             | dependence, effect, semiconductors  |
| Applied in:           | S00194, S00382, S00326              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00126



**Name:** Coupling effect with electrical separation

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-08-07

**Keywords:** couplers, dependence, effect

**Applied in:** S00384, S00383

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00127



|                       |                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Radiation, electromagnetic, non-ionizing                                                                                                                                                               |
| Status level:         | Standard                                                                                                                                                                                               |
| Released on:          | 2001-07-01                                                                                                                                                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-09-01                                                                                                                                                                          |
| Alternative names:    | Light                                                                                                                                                                                                  |
| Keywords:             | radiation                                                                                                                                                                                              |
| Applied in:           | S00384, S01431, S01078, S00488, S00686, S00786, S01318, S00685, S01327, S01920, S00904, S00788, S00642, S00906, S01326, S00684, S00687, S01919, S00489, S01216, S01063, S01079, S00130, S00908, S00787 |
| Application notes:    | A00041, A00042                                                                                                                                                                                         |
| Shape class:          | Arrows                                                                                                                                                                                                 |
| Function class:       | - Functional elements or attributes                                                                                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                      |
| Remarks:              | For example radio waves or visible light.                                                                                                                                                              |

## S00128



|                       |                                        |
|-----------------------|----------------------------------------|
| Name:                 | Radiation, coherent, non-ionizing      |
| Status level:         | <b>Standard</b>                        |
| Released on:          | 2001-07-01                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-09-02          |
| Alternative names:    | Light                                  |
| Keywords:             | radiation                              |
| Applied in:           | S00131, S01214, S01876, S01215, S01328 |
| Application notes:    | A00041, A00042                         |
| Shape class:          | Arrows, Lines                          |
| Function class:       | - Functional elements or attributes    |
| Application class:    | Conceptual elements or qualifiers      |
| Remarks:              | For example coherent light.            |

## S00129



Name: Radiation, ionizing

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-09-03

Keywords: radiation

Applied in: S00781, S00790, S00901, S00789, S00786, S00785, S00907, S00783, S00788, S00905, S01875, S00782, S00784, S00787, S00791

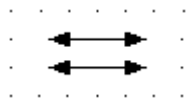
Application notes: A00041, A00042, A00043

Shape class: Arrows

Function class: - Functional elements or attributes

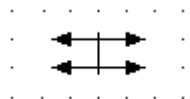
Application class: Conceptual elements or qualifiers

## S00130



|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| Name:                 | Radiation, electromagnetic, non-ionizing, bidirectional                      |
| Status level:         | Standard                                                                     |
| Released on:          | 2001-07-01                                                                   |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-09-04                                                |
| Keywords:             | radiation                                                                    |
| Applied in:           | S00131                                                                       |
| Applies:              | S00127                                                                       |
| Application notes:    | A00041                                                                       |
| Shape class:          | Arrows                                                                       |
| Function class:       | - Functional elements or attributes                                          |
| Application class:    | Conceptual elements or qualifiers                                            |
| Remarks:              | For example radiation produced by radar or photorelay with mirror reflector. |

## S00131



**Name:** Radiation, coherent, non-ionizing, bidirectional

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-09-05

**Keywords:** radiation

**Applies:** S00128; S00130

**Application notes:** A00041

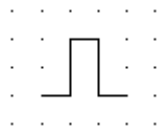
**Shape class:** Arrows

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers



## S00132



Name: Pulse, positive-going

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-10-01

Keywords: signal waveform

Applied in: S01263, S01219, S01675, S01235, S01221, S00546, S01222, S01218, S01220, S00966, S00550, S01237, S01674, S01238, S00551, S01223, S01228, S00545

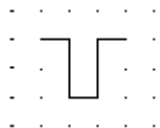
Application notes: A00044

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00133



Name: Pulse, negative-going

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-10-02

Keywords: signal waveform

Applied in: S01235

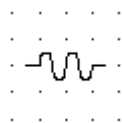
Application notes: A00044

Shape class: Lines

Function class: - Functional elements or attributes

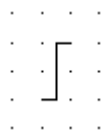
Application class: Conceptual elements or qualifiers

## S00134



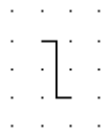
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Pulse, alternating current          |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-10-03       |
| Keywords:             | signal waveform                     |
| Application notes:    | A00044                              |
| Shape class:          | Depicting shapes                    |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00135



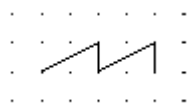
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Step function, positive going       |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-10-04       |
| Keywords:             | signal waveform                     |
| Applied in:           | S00792, S01038, S01257              |
| Application notes:    | A00044                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00136



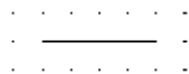
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Step function, negative going       |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-10-05       |
| Keywords:             | signal waveform                     |
| Application notes:    | A00044                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00137



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Saw-tooth wave                      |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-10-06       |
| Keywords:             | signal waveform                     |
| Applied in:           | S01227                              |
| Application notes:    | A00044                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

**S00138**



- Name:** Printing, tape
- Status level:** **Standard**
- Released on:** 2001-07-01
- Earlier published in:** IEC 60617-2 (ed.2.0) 02-11-01
- Alternative names:** Tape printing
- Keywords:** facsimile, perforating, printing
- Applied in:** S00942, S00495, S01031
- Shape class:** Lines
- Function class:** - Functional elements or attributes
- Application class:** Conceptual elements or qualifiers

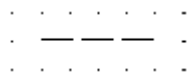
## S00143



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Facsimile                           |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-11-06       |
| Keywords:             | facsimile, perforating, printing    |
| Applied in:           | S01033                              |
| Shape class:          | Rectangles                          |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

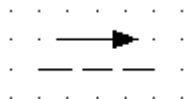


## S00144



|                       |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| Name:                 | Link                                                                                                   |
| Status level:         | Standard                                                                                               |
| Released on:          | 2001-07-01                                                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-12-01                                                                          |
| Alternative names:    | Mechanical link, pneumatic link, hydraulic link, optical link, functional link, radio link             |
| Keywords:             | links, mechanical control, other control                                                               |
| Form:                 | Form 1                                                                                                 |
| Alternative forms:    | S00147                                                                                                 |
| Applied in:           | S00145, S00146, S00190, S00191, S00364, S00261, S00034, S00269, S00164, S00165, S00248, S00267, S00268 |
| Application notes:    | A00045                                                                                                 |
| Shape class:          | Lines                                                                                                  |
| Function class:       | - Functional elements or attributes                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                      |

## S00145



Name: Mechanical link (force or motion)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-02

Alternative names: Link, mechanical ; Mechanical link with indication of direction of force or motion

Keywords: links, mechanical control, other control

Applied in: S00294, S00295

Applies: S00093; S00144

Application notes: A00045

Shape class: Arrows, Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00146



**Name:** Mechanical link (rotation)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-12-03

**Alternative names:** Link, mechanical; Mechanical link with indication of direction of rotation.

**Keywords:** links, mechanical control, other control

**Applies:** S00095; S00144

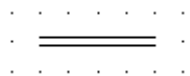
**Application notes:** A00045, A00046

**Shape class:** Arrows, Lines

**Function class:** - Functional elements or attributes

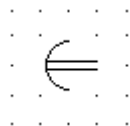
**Application class:** Conceptual elements or qualifiers

## S00147



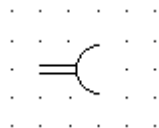
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Link                                     |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-12-04            |
| Keywords:             | links, mechanical control, other control |
| Form:                 | Form 2                                   |
| Alternative forms:    | S00144                                   |
| Applied in:           | S01200, S00148, S00149, S01202, S00822   |
| Application notes:    | A00045                                   |
| Shape class:          | Lines                                    |
| Function class:       | - Functional elements or attributes      |
| Application class:    | Conceptual elements or qualifiers        |

## S00148



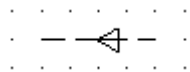
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Delayed action                           |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-12-05            |
| Alternative names:    | Action, delayed                          |
| Keywords:             | links, mechanical control, other control |
| Form:                 | Form 1                                   |
| Alternative forms:    | S00149                                   |
| Applied in:           | S00245, S00247, S01911, S00243           |
| Applies:              | S00147                                   |
| Application notes:    | A00047                                   |
| Shape class:          | Half-circles, Lines                      |
| Function class:       | - Functional elements or attributes      |
| Application class:    | Circuit diagrams                         |

## S00149



|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Delayed action                           |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-12-06            |
| Alternative names:    | Action, delayed                          |
| Keywords:             | links, mechanical control, other control |
| Form:                 | Form 2                                   |
| Alternative forms:    | S00148                                   |
| Applied in:           | S00244, S00247, S01911, S00246           |
| Applies:              | S00147                                   |
| Application notes:    | A00047                                   |
| Shape class:          | Half-circles, Lines                      |
| Function class:       | - Functional elements or attributes      |
| Application class:    | Circuit diagrams                         |

## S00150



Name: Automatic return

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-07

Alternative names: Return, automatic

Keywords: links, mechanical control, other control

Applied in: S00294, S00295, S00267

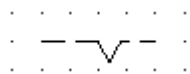
Application notes: A00048

Shape class: Equilateral triangles

Function class: - Functional elements or attributes

Application class: Circuit diagrams

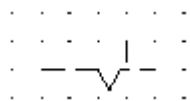
## S00151



|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| Name:                 | Detent                                                                               |
| Status level:         | Standard                                                                             |
| Released on:          | 2001-07-01                                                                           |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-12-08                                                        |
| Alternative names:    | Non-automatic return; Return, non-automatic; Device for maintaining a given position |
| Keywords:             | links, mechanical control, other control                                             |
| Applied in:           | S00152, S00153, S00258, S00294, S01864, S00267                                       |
| Shape class:          | Lines                                                                                |
| Function class:       | - Functional elements or attributes                                                  |
| Application class:    | Circuit diagrams                                                                     |



## S00152



Name: Detent, disengaged

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-09

Keywords: links, mechanical control, other control

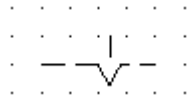
Applies: S00151

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00153



Name: Detent, engaged

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-10

Keywords: links, mechanical control, other control

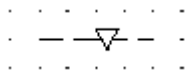
Applies: S00151

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00154



Name: Mechanical interlock

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-11

Alternative names: Interlock, mechanical; Mechanical interlock between two devices

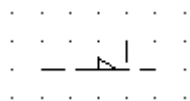
Keywords: links, mechanical control, other control

Shape class: Equilateral triangles, Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00155



Name: Latching device, disengaged

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-12

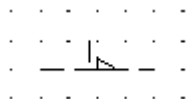
Keywords: links, mechanical control, other control

Shape class: Lines , Right-angled triangle

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00156



Name: Latching device, engaged

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-13

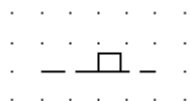
Keywords: links, mechanical control, other control

Shape class: Lines , Right-angled triangle

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00157



Name: Blocking device

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-14

Keywords: links, mechanical control, other control

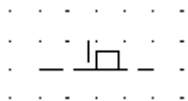
Applied in: S00158

Shape class: Lines , Rectangles

Function class: - Functional elements or attributes

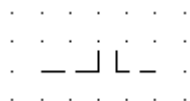
Application class: Circuit diagrams

## S00158



|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| Name:                 | Blocking device, engaged                              |
| Status level:         | Standard                                              |
| Released on:          | 2001-07-01                                            |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-12-15                         |
| Alternative names:    | Blocking device engaged, movement to the left blocked |
| Keywords:             | links, mechanical control, other control              |
| Applied in:           | S00292                                                |
| Applies:              | S00157                                                |
| Shape class:          | Lines , Rectangles                                    |
| Function class:       | - Functional elements or attributes                   |
| Application class:    | Circuit diagrams                                      |

## S00159



Name: Clutch; Mechanical coupling

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-16

Keywords: links, mechanical control, other control

Applied in: S00160, S00161

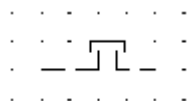
Shape class: Lines

Function class: X Connecting

Application class: Circuit diagrams



## S00160



Name: Mechanical coupling, disengaged

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-17

Keywords: links, mechanical control, other control

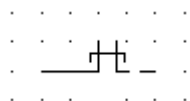
Applies: S00159

Shape class: Lines

Function class: X Connecting

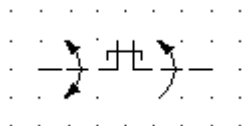
Application class: Circuit diagrams

## S00161



|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Mechanical coupling, engaged             |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-12-18            |
| Keywords:             | links, mechanical control, other control |
| Applied in:           | S00162                                   |
| Applies:              | S00159                                   |
| Shape class:          | Lines                                    |
| Function class:       | X Connecting                             |
| Application class:    | Circuit diagrams                         |

## S00162



**Name:** Unidirectional coupling device for rotation

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-12-19

**Alternative names:** Free wheel

**Keywords:** links, mechanical control, other control

**Applies:** S00095; S00096; S00161

**Shape class:** Arrows, Lines

**Function class:** X Connecting

**Application class:** Circuit diagrams

**Remarks:** The coupling shown in engaged position.

## S00163



Name: Brake

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-20

Keywords: brakes, links, mechanical control, other control

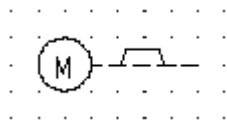
Applied in: S00164, S00165

Shape class: Trapezoids

Function class: R Restricting or stabilising

Application class: Circuit diagrams

## S00164



Name: Brake, applied

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-21

Alternative names: Electric motor with brake applied.

Keywords: brakes, links, mechanical control, other control

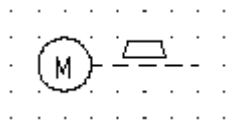
Applies: S00144; S00163; S00819

Shape class: Depicting shapes

Function class: R Restricting or stabilising

Application class: Circuit diagrams

## S00165



Name: Brake, released

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-22

Alternative names: Electric motor with brake released

Keywords: brakes, links, mechanical control, other control

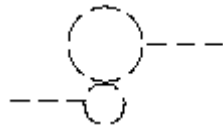
Applies: S00144; S00163; S00819

Shape class: Depicting shapes

Function class: R Restricting or stabilising

Application class: Circuit diagrams

## S00166



Name: Gearing

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-12-23

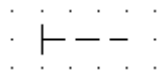
Keywords: gearings, links, mechanical control

Shape class: Circles, Lines

Function class: X Connecting

Application class: Circuit diagrams

## S00167



**Name:** Actuator, manual, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-01

**Keywords:** actuators

**Applied in:** S00292, S00273, S00168, S00253, S00294, S00295, S00948

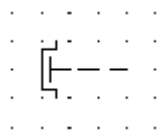
**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams, Conceptual elements or qualifiers



## S00168



Name: Actuator, manual (protected)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-13-02

Alternative names: Manual actuator protected against unintentional operation

Keywords: actuators

Applied in: S00477

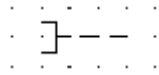
Applies: S00066; S00167

Shape class: Lines

Function class: - Functional elements or attributes

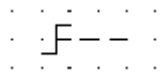
Application class: Circuit diagrams

## S00169



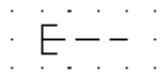
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Actuator (operated by pulling)      |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-13-03       |
| Keywords:             | actuators                           |
| Applied in:           | S00255                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00170



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Actuator (operated by turning)      |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-13-04       |
| Keywords:             | actuators                           |
| Applied in:           | S00256, S00269, S00268              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00171



Name: Actuator (operated by pushing)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-13-05

Keywords: actuators

Applied in: S00254, S00269, S00268

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00172



**Name:** Actuator (operated by proximity effect)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-06

**Keywords:** actuators

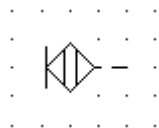
**Applied in:** S00361, S00359

**Shape class:** Lines , Squares

**Function class:** - Functional elements or attributes

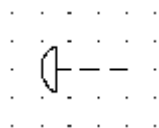
**Application class:** Circuit diagrams

## S00173



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Actuator (operated by touching)     |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-13-07       |
| Keywords:             | actuators                           |
| Applied in:           | S00358                              |
| Shape class:          | Lines , Squares                     |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00174



Name: Actuator, emergency

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-13-08

Alternative names: Emergency actuator, type "mushroom-head"

Keywords: actuators, emergency actuators

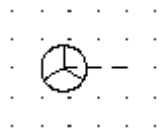
Applied in: S00258, S01864

Shape class: Circle segments, Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00175



**Name:** Actuator (operated by handwheel)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-09

**Keywords:** actuators

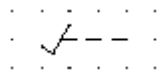
**Shape class:** Circles, Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams



## S00176



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Actuator (operated by pedal)        |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-13-10       |
| Keywords:             | actuators                           |
| Applied in:           | S01865                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00177



Name: Actuator (operated by lever)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-13-11

Keywords: actuators

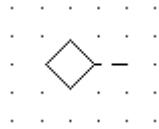
Applied in: S00272

Shape class: Circles, Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00178



**Name:** Actuator (operated by removable handle)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-12

**Keywords:** actuators

**Shape class:** Lines , Squares

**Function class:** - Functional elements or attributes

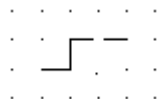
**Application class:** Circuit diagrams

## S00179



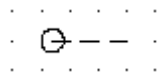
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Actuator (operated by key)          |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-13-13       |
| Keywords:             | actuators                           |
| Applied in:           | S00480                              |
| Shape class:          | Depicting shapes                    |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00180



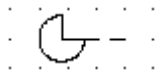
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Actuator (operated by crank)        |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-13-14       |
| Keywords:             | actuators                           |
| Applied in:           | S01024, S00822                      |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00181



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Actuator (operated by roller)       |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-13-15       |
| Keywords:             | actuators                           |
| Applied in:           | S00185                              |
| Shape class:          | Circles, Lines                      |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00182



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Actuator (operated by cam)          |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-13-16       |
| Keywords:             | actuators                           |
| Applied in:           | S00184, S00951, S00183              |
| Application notes:    | A00049                              |
| Shape class:          | Circle segments, Lines              |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00183



**Name:** Actuator (operated by cam/cam profile)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-17

**Keywords:** actuators

**Applied in:** S00185

**Applies:** S00182

**Application notes:** A00049

**Shape class:** Depicting shapes

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

**Remarks:** An example of cam profile is shown



## S00184



**Name:** Actuator (operated by cam/profile plate)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-18

**Keywords:** actuators

**Applies:** S00182

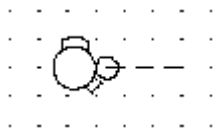
**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

**Remarks:** An example of cam profile in developed representation is shown

## S00185



**Name:** Actuator (operated by cam and roller)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-19

**Keywords:** actuators

**Applies:** S00181; S00183

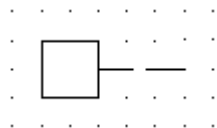
**Application notes:** A00049

**Shape class:** Depicting shapes

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

## S00186



**Name:** Actuator (operated by stored mechanical energy)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-20

**Keywords:** actuators

**Applied in:** S01406

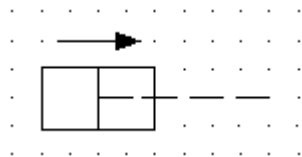
**Application notes:** A00050

**Shape class:** Squares

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

## S00187



**Name:** Actuator (actuated by pneumatic or hydraulic power/ single action)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-21

**Alternative names:** Single acting actuator

**Keywords:** actuators

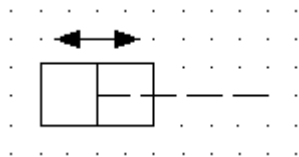
**Applies:** S00093

**Shape class:** Arrows, Lines , Rectangles

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

## S00188



**Name:** Actuator (actuated by pneumatic or hydraulic power/double acting)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-22

**Alternative names:** Double acting actuator

**Keywords:** actuators

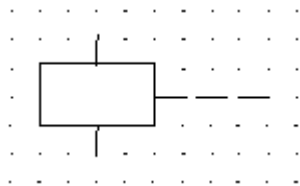
**Applies:** S00094

**Shape class:** Arrows, Lines , Rectangles

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

## S00189



**Name:** Actuator (actuated by electromagnetic effect)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-23

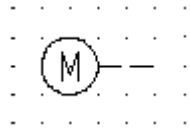
**Keywords:** actuators

**Shape class:** Lines , Rectangles

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

## S00192



**Name:** Actuator (operated by electric motor)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-26

**Keywords:** actuators

**Applied in:** S00294, S00295

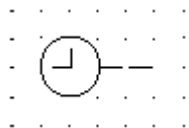
**Applies:** S00819

**Shape class:** Characters, Circles

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

## S00193



**Name:** Actuator (operated by electric clock)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-13-27

**Keywords:** actuators

**Applies:** S00959

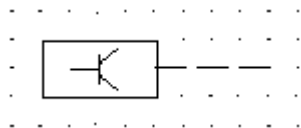
**Shape class:** Circles

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

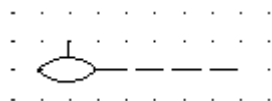


## S00194



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Actuator (semiconductor)            |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-13-28       |
| Alternative names:    | Semiconductor actuator              |
| Keywords:             | actuators                           |
| Applies:              | S00125                              |
| Shape class:          | Lines , Rectangles                  |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00195



Name: Actuator (actuated by liquid level)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-14-01

Keywords: actuators

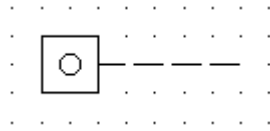
Applied in: S00352

Shape class: Circle segments, Lines

Function class: - Functional elements or attributes

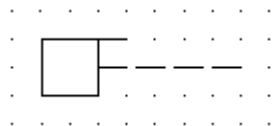
Application class: Circuit diagrams

## S00196



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Actuator (actuated by a counter)    |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-14-02       |
| Keywords:             | actuators                           |
| Applies:              | S00946                              |
| Shape class:          | Circles, Lines , Squares            |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00197



Name: Actuator (actuated by fluid flow)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-14-03

Keywords: actuators

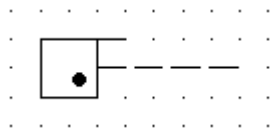
Applied in: S00198

Shape class: Lines , Squares

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00198



Name: Actuator (actuated by gas flow)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-14-04

Keywords: actuators

Applied in: S00352

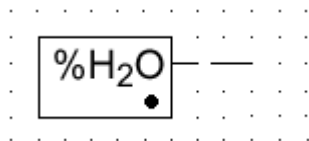
Applies: S00116; S00197

Shape class: Dots (points), Lines , Squares

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00199



**Name:** Actuator (actuated by relative humidity)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-14-05

**Keywords:** actuators

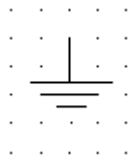
**Applies:** S00116

**Shape class:** Characters, Lines , Rectangles

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

## S00200



**Name:** Earth, general symbol

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-15-01

**Alternative names:** Earthing, general symbol; Ground (US), general symbol; Grounding (US), general symbol

**Keywords:** earth connection, equipotentiality, frame connection, ground connection

**Applied in:** S00201, S00202, S00333, S01408, S01848, S00753

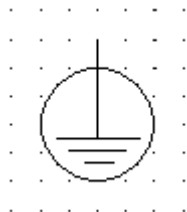
**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** For the definition of "earth", see IEV 195-02-03.

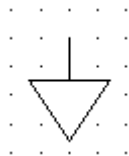
## S00202



|                       |                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Protective earthing                                                                                                                                             |
| Status level:         | Standard                                                                                                                                                        |
| Released on:          | 2001-07-01                                                                                                                                                      |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-15-03                                                                                                                                   |
| Alternative names:    | Protective grounding (US); Protective earthing conductor; Protective earthing terminal; Protective grounding conductor (US); Protective grounding terminal (US) |
| Keywords:             | earth connection, equipotentiality, frame connection, ground connection                                                                                         |
| Applies:              | S00200                                                                                                                                                          |
| Shape class:          | Circles, Lines                                                                                                                                                  |
| Function class:       | - Functional elements or attributes, W Guiding or transporting, X Connecting                                                                                    |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams, Conceptual elements or qualifiers             |
| Remarks:              | For the definition of "protective earthing", see IEV 195-01-11.                                                                                                 |

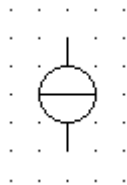


## S00204



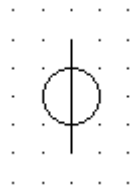
|                       |                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Protective equipotential bonding                                                                                                                    |
| Status level:         | Standard                                                                                                                                            |
| Released on:          | 2001-07-01                                                                                                                                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-15-05                                                                                                                       |
| Alternative names:    | Protective bonding conductor; Protective bonding terminal                                                                                           |
| Keywords:             | equipotentiality, frame connection                                                                                                                  |
| Applied in:           | S01799                                                                                                                                              |
| Shape class:          | Equilateral triangles                                                                                                                               |
| Function class:       | - Functional elements or attributes, W Guiding or transporting, X Connecting                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams, Conceptual elements or qualifiers |
| Remarks:              | For the definition of "protective equipotential bonding", see IEC 195-01-15.                                                                        |

## S00205



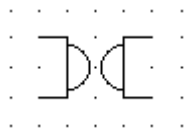
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Ideal current source                |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-16-01       |
| Keywords:             | ideal circuit elements              |
| Application notes:    | A00054                              |
| Shape class:          | Circles, Lines                      |
| Function class:       | - Functional elements or attributes |
| Application class:    | Function diagrams                   |

## S00206



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Ideal voltage source                |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-16-02       |
| Keywords:             | ideal circuit elements              |
| Application notes:    | A00054                              |
| Shape class:          | Circles, Lines                      |
| Function class:       | - Functional elements or attributes |
| Application class:    | Function diagrams                   |

## S00207



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Ideal gyrator                       |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-16-03       |
| Keywords:             | ideal circuit elements              |
| Application notes:    | A00054                              |
| Shape class:          | Half-circles, Lines                 |
| Function class:       | - Functional elements or attributes |
| Application class:    | Function diagrams                   |

## S00208



Name: Fault

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-17-01

Alternative names: Indication of assumed fault location

Keywords: faults, indications of fault

Shape class: Arrows

Function class: - Functional elements or attributes

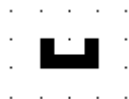
Application class: Function diagrams

## S00209



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Flashover                           |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-17-02       |
| Alternative names:    | Break-through                       |
| Keywords:             | faults, indications of fault        |
| Shape class:          | Arrows, Lines                       |
| Function class:       | - Functional elements or attributes |
| Application class:    | Function diagrams                   |

## S00210



Name: Permanent magnet

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-17-03

Alternative names: Magnet, permanent

Keywords: magnet

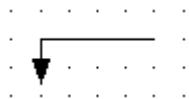
Applied in: S00734, S01027, S00765, S00763, S00749, S00831, S00757, S00756, S00759, S00826, S00319, S00761, S00767, S00360

Shape class: Depicting shapes

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00211



Name: Movable contact

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-17-04

Alternative names: Sliding contact

Keywords: contacts

Applied in: S00560, S00559, S00589, S00525, S00562, S00561

Shape class: Arrows, Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams

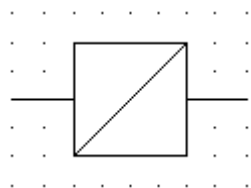


## S00212



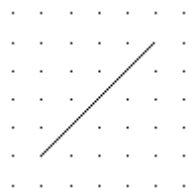
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Test point indicator                |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-17-05       |
| Keywords:             | testing points                      |
| Application notes:    | A00250                              |
| Shape class:          | Dots (points), Lines                |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00213



|                       |                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Converter, general symbol                                                                                              |
| Status level:         | Standard                                                                                                               |
| Released on:          | 2001-07-01                                                                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-17-06                                                                                          |
| Alternative names:    | Power converter; Signal converter; Measuring transducer; Repeater                                                      |
| Keywords:             | converters, power converters, repeaters, signal converters                                                             |
| Applied in:           | S01235, S00894, S01040, S00958, S01234, S01041, S01233, S01231, S01232, S01039, S01038, S01237, S01238, S01922, S01236 |
| Applies:              | S00214                                                                                                                 |
| Application notes:    | A00055, A00056                                                                                                         |
| Replacing:            | S00958; S01231                                                                                                         |
| Shape class:          | Lines , Squares                                                                                                        |
| Function class:       | B Converting variable to signal, T Converting but maintaining kind                                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams       |

## S00214



**Name:** Conversion, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-2 (ed.2.0) 02-17-06A

**Keywords:** conversion, converters, power converters, signal converters

**Applied in:** S00213, S01407, S01791, S00896, S00894, S00893, S00897, S01278, S01904, S01290

**Replacing:** S00892

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00216



Name: Analogue

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-2 (ed.2.0) 02-17-08

Keywords: analogue

Applied in: S01684, S01748, S01749, S01289, S01635, S01290

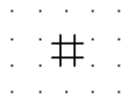
Application notes: A00057, A00058, A00358

Shape class: Half-circles, Lines

Function class: - Functional elements or attributes

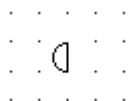
Application class: Conceptual elements or qualifiers

**S00217**



- Name: Digital
- Status level: **Standard**
- Released on: 2001-07-01
- Earlier published in: IEC 60617-2 (ed.2.0) 02-17-09
- Keywords: digital
- Applied in: S01289, S01751, S01750, S01290
- Application notes: A00057, A00059, A00358
- Shape class: Characters, Lines
- Function class: - Functional elements or attributes
- Application class: Conceptual elements or qualifiers

## S00218



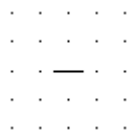
|                       |                                        |
|-----------------------|----------------------------------------|
| Name:                 | Contactor function                     |
| Status level:         | Standard                               |
| Released on:          | 2001-07-01                             |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-01-01          |
| Keywords:             | contactors, contacts                   |
| Applied in:           | S00285, S00377, S01413, S00284, S00286 |
| Application notes:    | A00061                                 |
| Shape class:          | Half-circles                           |
| Function class:       | - Functional elements or attributes    |
| Application class:    | Conceptual elements or qualifiers      |

## S00219



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Circuit breaker function            |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-01-02       |
| Keywords:             | circuit breakers                    |
| Applied in:           | S00287, S01413, S01860              |
| Application notes:    | A00061                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00220



**Name:** Disconnector (isolator) function

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-01-03

**Keywords:** disconnectors

**Applied in:** S00292, S00289, S00288, S01413, S00369, S01860

**Application notes:** A00061

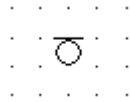
**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

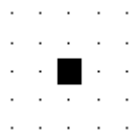


## S00221



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Switch-disconnector function        |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-01-04       |
| Alternative names:    | Isolating-switch function           |
| Keywords:             | disconnectors, switches             |
| Applied in:           | S00370, S00290, S00291              |
| Application notes:    | A00061                              |
| Shape class:          | Circles, Lines                      |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00222



**Name:** Automatic tripping function

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-01-05

**Keywords:** tripping

**Applied in:** S00285, S01413, S00291

**Application notes:** A00061

**Shape class:** Squares

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The tripping function can be initiated by a built-in measuring relay or release.

## S00223



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Position switch function            |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-01-06       |
| Keywords:             | position switches                   |
| Applied in:           | S00261, S00260, S00259              |
| Application notes:    | A00061, A00062, A00063              |
| Shape class:          | Right-angled triangle               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00226



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Positive operation of a switch      |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-01-09       |
| Keywords:             | positive operation                  |
| Applied in:           | S00296, S00258, S00262, S00257      |
| Application notes:    | A00061, A00068, A00069              |
| Shape class:          | Arrows, Circles                     |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00227



**Name:** Make contact, general symbol; Switch, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-02-01

**Keywords:** contacts, power switching devices, switches

**Applied in:** S00244, S00249, S00254, S00255, S00376, S00256, S00263, S00287, S00292, S00290, S00285, S00288, S00296, S00250, S00261, S01413, S01454, S00961, S00951, S00365, S01859, S00247, S00366, S00950, S00259, S00253, S00269, S00294, S00295, S00248, S01855, S00267, S00243, S00268, S00284, S00358, S00359, S00367, S00291

**Application notes:** A00061, A00060

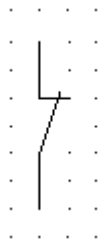
**Replacing:** S00228; S00283

**Shape class:** Lines

**Function class:** K Processing signals or information, Q Controlled switching or varying

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00229



Name: Break contact

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-02-03

Keywords: contacts, switches

Applied in: S00245, S00264, S00265, S00296, S00361, S00258, S00261, S01462, S01911, S00260, S00269, S00294, S00246, S00295, S00267, S00268, S00286, S01912, S00251

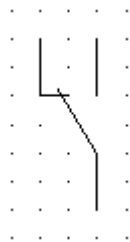
Application notes: A00061, A00060

Shape class: Lines

Function class: K Processing signals or information, Q Controlled switching or varying

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00230



**Name:** Change-over break before make contact

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-02-04

**Keywords:** contacts, switches

**Applied in:** S00320, S01416, S00269, S00267, S01330, S00268

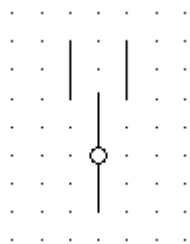
**Application notes:** A00061, A00060

**Shape class:** Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

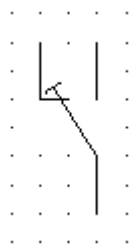
## S00231



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Change-over contact with off-position                                       |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-02-05                                               |
| Keywords:             | contacts, switches                                                          |
| Applied in:           | S00321, S00252                                                              |
| Application notes:    | A00061                                                                      |
| Shape class:          | Circles, Lines                                                              |
| Function class:       | K Processing signals or information, Q Controlled switching or varying      |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |



## S00232



**Name:** Change-over make before break contact, both ways

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-02-06

**Keywords:** contacts, switches

**Form:** Form 1

**Alternative forms:** S00233

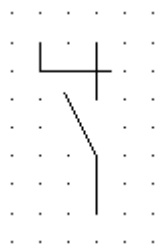
**Application notes:** A00061, A00060

**Shape class:** Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00233



**Name:** Change-over make before break contact, both ways

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-02-07

**Keywords:** contacts, switches

**Form:** Form 2

**Alternative forms:** S00232

**Applied in:** S01856, S00040, S00267

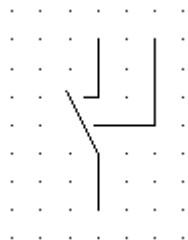
**Application notes:** A00061, A00060

**Shape class:** Lines

**Function class:** K Processing signals or information

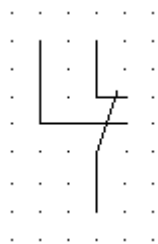
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00234



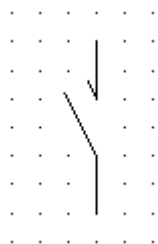
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Contact with two makes                                                      |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-02-08                                               |
| Keywords:             | contacts, switches                                                          |
| Application notes:    | A00061, A00060                                                              |
| Shape class:          | Lines                                                                       |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00235



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Contact with two breaks                                                     |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-02-09                                               |
| Keywords:             | contacts, switches                                                          |
| Application notes:    | A00061, A00060                                                              |
| Shape class:          | Lines                                                                       |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00236



**Name:** Passing make contact when actuated

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-03-01

**Keywords:** contacts, switches

**Application notes:** A00061, A00060

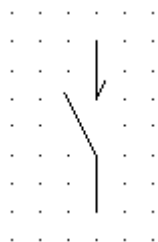
**Shape class:** Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

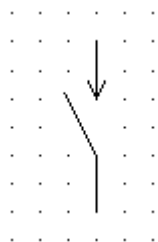
**Remarks:** The contact is closing momentarily when its operating device is actuated.

## S00237



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Passing make contact when released                                          |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-03-02                                               |
| Keywords:             | contacts, switches                                                          |
| Application notes:    | A00061, A00060                                                              |
| Shape class:          | Lines                                                                       |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | The contact is closing momentarily when its operating device is released.   |

## S00238



**Name:** Passing make contact

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-03-03

**Keywords:** contacts, switches

**Application notes:** A00061, A00060

**Shape class:** Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The contact is closing momentarily when its operating device is actuated or released.

## S00239



**Name:** Make contact, early closing

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-04-01

**Keywords:** contacts, switches

**Applied in:** S00279

**Application notes:** A00061, A00060

**Shape class:** Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The contact is early to close relative to the other make contacts of a contact assembly.





## S00241



**Name:** Break contact, late opening

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-04-03

**Keywords:** contacts, switches

**Application notes:** A00061, A00060

**Shape class:** Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The contact is late to open relative to the other break contacts of a contact assembly.

## S00242



**Name:** Break contact, early opening

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-04-04

**Keywords:** contacts, switches

**Application notes:** A00061, A00060

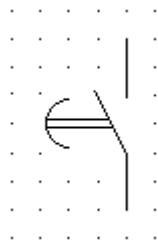
**Shape class:** Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The contact which is early to open relative to the other break contacts of a contact assembly.

## S00243



**Name:** Make contact, delayed closing

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-05-01

**Keywords:** contacts, switches

**Applied in:** S00248

**Applies:** S00148; S00227

**Application notes:** A00061, A00070, A00060

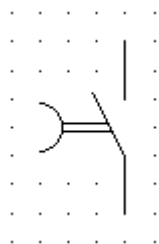
**Shape class:** Half-circles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The closing of the contact is delayed when the device containing the contact is being activated.

## S00244



**Name:** Make contact, delayed opening

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-05-02

**Keywords:** contacts, switches

**Applies:** S00149; S00227

**Application notes:** A00061, A00070, A00060

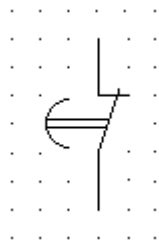
**Shape class:** Half-circles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The opening of the contact is delayed when the device containing the contact is being de-activated.

## S00245



**Name:** Break contact, delayed opening

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-05-03

**Keywords:** contacts, switches

**Applies:** S00148; S00229

**Application notes:** A00061, A00070, A00060

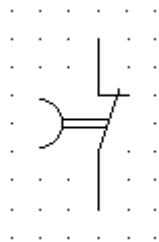
**Shape class:** Half-circles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The opening of the contact is delayed when the device containing the contact is being activated.

## S00246



**Name:** Break contact, delayed closing

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-05-04

**Keywords:** contacts, switches

**Applied in:** S00248

**Applies:** S00149; S00229

**Application notes:** A00061, A00070, A00060

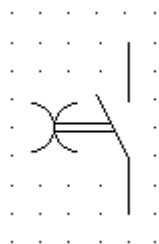
**Shape class:** Half-circles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The closing of the contact is delayed when the device containing the contact is being de-activated.

## S00247



**Name:** Make contact, delayed

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-05-05

**Keywords:** contacts, switches

**Applies:** S00148; S00149; S00227

**Application notes:** A00061, A00070, A00060

**Shape class:** Half-circles, Lines

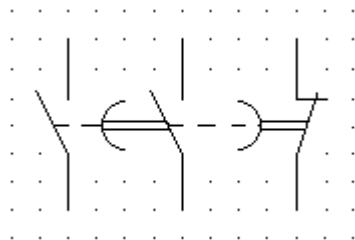
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The contact is delayed both when the device containing the contact is being activated and when it is being de-activated.



## S00248



**Name:** Contact assembly

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-05-06

**Keywords:** contacts, switches

**Applies:** S00144; S00227; S00243; S00246

**Application notes:** A00061, A00070, A00060

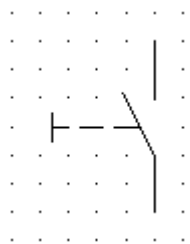
**Shape class:** Half-circles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The contact assembly is shown with one make contact not delayed, one make contact delayed when the device containing the contact is being activated and one break contact delayed when the device containing the contact is being de-activated.

## S00253



**Name:** Switch, manually operated, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-07-01

**Keywords:** contacts, switches

**Applies:** S00167; S00227

**Application notes:** A00061, A00082, A00083, A00060

**Shape class:** Lines

**Function class:** S Converting a manual operation into a signal

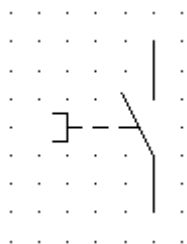
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00254



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Switch, manually operated, push-button, automatic return                    |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-07-02                                               |
| Keywords:             | contacts, switches                                                          |
| Applied in:           | S00257                                                                      |
| Applies:              | S00171; S00227                                                              |
| Application notes:    | A00061, A00082, A00060                                                      |
| Shape class:          | Lines                                                                       |
| Function class:       | S Converting a manual operation into a signal                               |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00255



**Name:** Switch, manually operated, pulling, automatic return

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-07-03

**Keywords:** contacts, switches

**Applies:** S00169; S00227

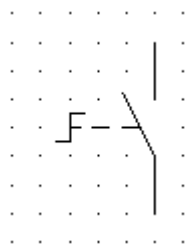
**Application notes:** A00061, A00082, A00060

**Shape class:** Lines

**Function class:** S Converting a manual operation into a signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00256



**Name:** Switch, manually operated, turning, stay-put

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-07-04

**Keywords:** contacts, switches

**Applies:** S00170; S00227

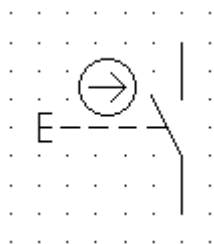
**Application notes:** A00061, A00083, A00060

**Shape class:** Lines

**Function class:** S Converting a manual operation into a signal

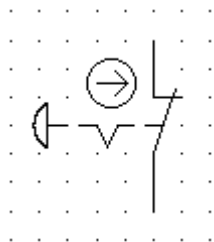
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00257



|                              |                                                                                  |
|------------------------------|----------------------------------------------------------------------------------|
| <b>Name:</b>                 | Switch, manually operated with positive operation, push-button, automatic return |
| <b>Status level:</b>         | <b>Standard</b>                                                                  |
| <b>Released on:</b>          | 2001-07-01                                                                       |
| <b>Earlier published in:</b> | IEC 60617-7 (ed.2.0) 07-07-05                                                    |
| <b>Alternative names:</b>    | Alarm switch                                                                     |
| <b>Keywords:</b>             | contacts, switches                                                               |
| <b>Applies:</b>              | S00226; S00254                                                                   |
| <b>Application notes:</b>    | A00061, A00082, A00060                                                           |
| <b>Shape class:</b>          | Arrows, Circles, Lines                                                           |
| <b>Function class:</b>       | S Converting a manual operation into a signal                                    |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams      |

## S00258



|                       |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| Name:                 | Switch, emergency stop                                                                                 |
| Status level:         | Standard                                                                                               |
| Released on:          | 2001-07-01                                                                                             |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-07-06                                                                          |
| Keywords:             | contacts, switches                                                                                     |
| Applies:              | S00151; S00174; S00226; S00229                                                                         |
| Application notes:    | A00061, A00082, A00060                                                                                 |
| Shape class:          | Arrows, Circles, Lines                                                                                 |
| Function class:       | S Converting a manual operation into a signal                                                          |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                            |
| Remarks:              | "Mushroom-head" activated, with positive opening operation of the break contact and maintain position. |

## S00259



**Name:** Position switch, make contact

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-08-01

**Keywords:** contacts, position switches, switches

**Applies:** S00223; S00227

**Application notes:** A00061, A00084, A00060

**Shape class:** Lines , Right-angled triangle

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams



## S00260



**Name:** Position switch, break contact

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-08-02

**Keywords:** contacts, position switches, switches

**Applied in:** S00262

**Applies:** S00223; S00229

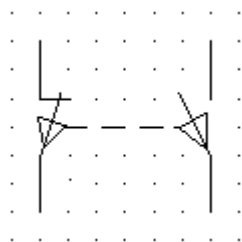
**Application notes:** A00061, A00084, A00060

**Shape class:** Lines , Right-angled triangle

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00261



**Name:** Position switch assembly

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-08-03

**Keywords:** contacts, position switches, switches

**Applies:** S00144; S00223; S00227; S00229

**Application notes:** A00061, A00084, A00060

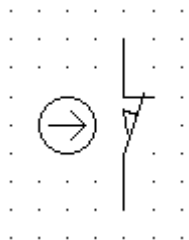
**Shape class:** Lines , Right-angled triangle

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** Mechanically operated in both directions with two separate circuits

## S00262



**Name:** Position switch, break contact, positive operation

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-08-04

**Alternative names:** Limit switch

**Keywords:** contacts, position switches, positive operation, switches

**Applies:** S00226; S00260

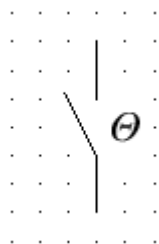
**Application notes:** A00061, A00084, A00060

**Shape class:** Arrows, Circles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00263



**Name:** Temperature sensitive switch, make contact

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-09-01

**Keywords:** contacts, switches, temperature

**Applies:** S00227

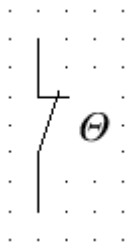
**Application notes:** A00061, A00085, A00060

**Shape class:** Characters, Lines

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00264



**Name:** Temperature sensitive switch, break contact

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-09-02

**Keywords:** contacts, switches, temperature

**Applies:** S00229

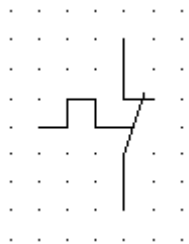
**Application notes:** A00061, A00060

**Shape class:** Characters, Lines

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00265



**Name:** Thermal switch, self-operating, break contact

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-09-03

**Alternative names:** Bimetal break contact

**Keywords:** contacts, switches, temperature

**Applies:** S00120; S00229

**Application notes:** A00061, A00060

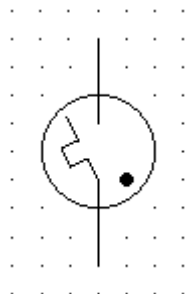
**Shape class:** Lines

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** It is important to distinguish between a contact as shown and a contact of a thermal relay. In detached representation a thermal relay is applying the symbol S00191.

## S00266



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Gas discharge tube with thermal element                                     |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-09-04                                               |
| Alternative names:    | Starter for fluorescent lamp                                                |
| Keywords:             | contacts, switches                                                          |
| Applies:              | S00062; S00116; S00120                                                      |
| Shape class:          | Circles, Dots (points), Lines                                               |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

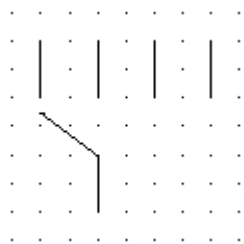
## S00270



|                       |                                               |
|-----------------------|-----------------------------------------------|
| Name:                 | Multi-position switch                         |
| Status level:         | Standard                                      |
| Released on:          | 2001-07-01                                    |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-11-04                 |
| Keywords:             | contacts, switches                            |
| Applied in:           | S00275, S00278, S00276, S00277, S00279        |
| Application notes:    | A00061                                        |
| Shape class:          | Lines                                         |
| Function class:       | S Converting a manual operation into a signal |
| Application class:    | Circuit diagrams                              |
| Remarks:              | Six positions shown                           |



## S00271



**Name:** Multi-position switch, maximum four positions

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-11-05

**Keywords:** contacts, switches

**Applied in:** S00274, S00272

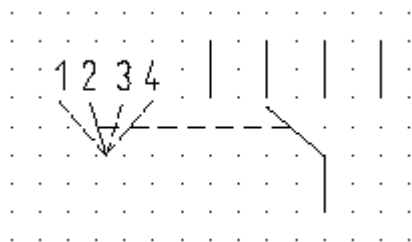
**Application notes:** A00061, A00060

**Shape class:** Lines

**Function class:** S Converting a manual operation into a signal

**Application class:** Circuit diagrams

## S00272



**Name:** Multi-position switch, with position diagram

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-11-06

**Keywords:** contacts, switches

**Applies:** S00177; S00271

**Application notes:** A00061, A00251, A00060

**Shape class:** Lines

**Function class:** S Converting a manual operation into a signal

**Application class:** Circuit diagrams

## S00284



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Contactor; Main make contact of a contactor                                 |
| Status level:         | <b>Standard</b>                                                             |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-13-02                                               |
| Keywords:             | contactors, contacts, power switching devices                               |
| Applied in:           | S00301                                                                      |
| Applies:              | S00218; S00227                                                              |
| Application notes:    | A00060                                                                      |
| Shape class:          | Half-circles, Lines                                                         |
| Function class:       | Q Controlled switching or varying                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Contact opened in the unoperated position.                                  |

## S00285



**Name:** Contactor with automatic tripping

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-13-03

**Keywords:** contactors, power switching devices, switches

**Applies:** S00218; S00222; S00227

**Application notes:** A00060

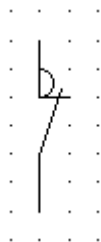
**Shape class:** Half-circles, Lines , Squares

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

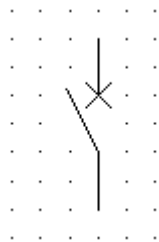
**Remarks:** Initiated by a built-in measuring relay or release.

## S00286



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Contactor; Main break contact of a contactor                                |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-13-04                                               |
| Keywords:             | contactors, contacts, power switching devices                               |
| Applies:              | S00218; S00229                                                              |
| Application notes:    | A00060                                                                      |
| Shape class:          | Half-circles, Lines                                                         |
| Function class:       | Q Controlled switching or varying                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Contact closed in the unoperated position.                                  |

## S00287



Name: Circuit breaker

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-13-05

Keywords: circuit breakers, contacts, power switching devices

Applies: S00219; S00227

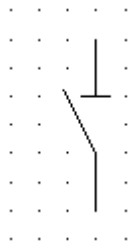
Application notes: A00060

Shape class: Lines

Function class: Q Controlled switching or varying

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00288



Name: Disconnector; Isolator

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-13-06

Keywords: contacts, disconnectors, power switching devices

Applied in: S01848

Applies: S00220; S00227

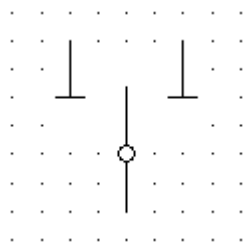
Application notes: A00060

Shape class: Lines

Function class: Q Controlled switching or varying

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

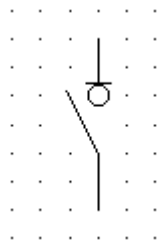
## S00289



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Two-way disconnector; Two-way isolator                                      |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-13-07                                               |
| Keywords:             | disconnectors, power switching devices                                      |
| Applies:              | S00220; S00228                                                              |
| Shape class:          | Circles, Lines                                                              |
| Function class:       | Q Controlled switching or varying                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | With off-position in the centre.                                            |

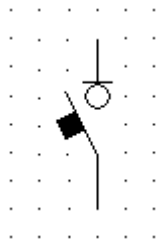


## S00290



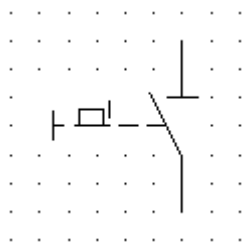
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Switch-disconnector; On-load isolating switch                               |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-13-08                                               |
| Keywords:             | disconnectors, power switching devices, switches                            |
| Applies:              | S00221; S00227                                                              |
| Application notes:    | A00060                                                                      |
| Shape class:          | Circles, Lines                                                              |
| Function class:       | Q Controlled switching or varying                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00291



|                       |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| Name:                 | Switch-disconnector, automatic release; On-load isolating switch, automatic release |
| Status level:         | Standard                                                                            |
| Released on:          | 2001-07-01                                                                          |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-13-09                                                       |
| Keywords:             | disconnectors, power switching devices, switches                                    |
| Applies:              | S00221; S00222; S00227                                                              |
| Application notes:    | A00060                                                                              |
| Shape class:          | Half-circles, Lines , Squares                                                       |
| Function class:       | Q Controlled switching or varying                                                   |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams         |
| Remarks:              | With automatic tripping initiated by a built-in measuring relay or release.         |

## S00292



Name: Disconnecter; Isolator

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-13-10

Keywords: disconnectors, power switching devices

Applies: S00158; S00167; S00220; S00227

Application notes: A00082, A00083, A00060

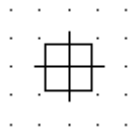
Shape class: Lines , Squares

Function class: Q Controlled switching or varying

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

Remarks: With blocking device, manually operated.

## S00293



**Name:** Trip-free mechanism

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-13-11

**Keywords:** mechanical control, power switching devices

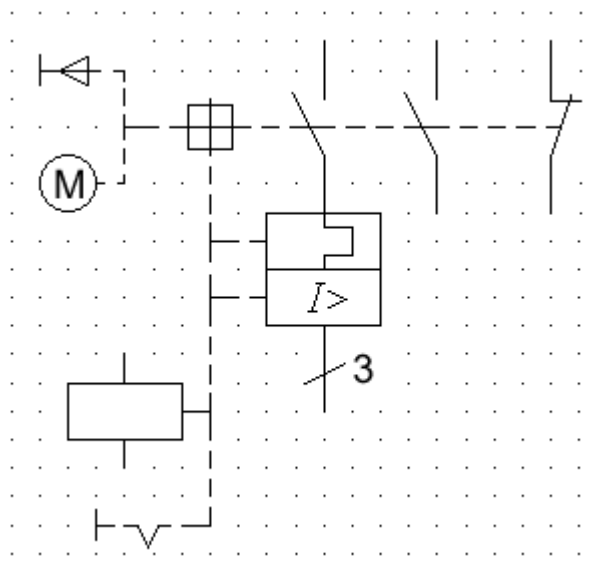
**Applied in:** S00294

**Application notes:** A00247

**Shape class:** Lines , Squares

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**S00294**

**Name:** Trip-free mechanism, application

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-13-12

**Keywords:** power switching devices

**Applies:** S00003; S00145; S00150; S00151; S00167; S00192; S00227; S00229; S00293; S00305; S00325; S00345

**Application notes:** A00082, A00083, A00060

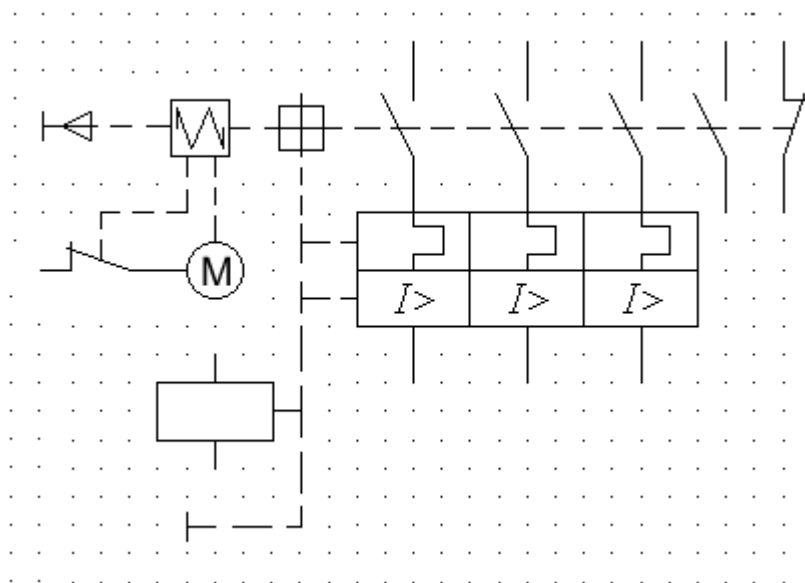
**Shape class:** Lines , Squares

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

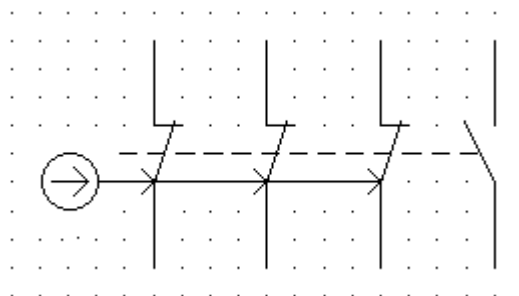
**Remarks:** Three-pole mechanical switching device, operated by motor or manually, with trip-free mechanism, and:

- thermal overload release
- overcurrent release
- hand release with detent
- coil for remote release
- one make and one break auxiliary contact.

**S00295**

|                              |                                                                                                                                                                                                                                                                                                             |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Mechanical switching device, three-pole                                                                                                                                                                                                                                                                     |
| <b>Status level:</b>         | Standard                                                                                                                                                                                                                                                                                                    |
| <b>Released on:</b>          | 2001-07-01                                                                                                                                                                                                                                                                                                  |
| <b>Earlier published in:</b> | IEC 60617-7 (ed.2.0) 07-13-13                                                                                                                                                                                                                                                                               |
| <b>Keywords:</b>             | power switching devices                                                                                                                                                                                                                                                                                     |
| <b>Applies:</b>              | S00003; S00145; S00150; S00167; S00192; S00227; S00229; S00305; S00325; S00345; S01406                                                                                                                                                                                                                      |
| <b>Application notes:</b>    | A00082, A00083, A00060                                                                                                                                                                                                                                                                                      |
| <b>Shape class:</b>          | Lines , Rectangles, Squares                                                                                                                                                                                                                                                                                 |
| <b>Function class:</b>       | Q Controlled switching or varying                                                                                                                                                                                                                                                                           |
| <b>Application class:</b>    | Circuit diagrams                                                                                                                                                                                                                                                                                            |
| <b>Remarks:</b>              | Operated by motor with a spring storage and:<br>- three overload releases<br>- three overcurrent releases<br>- hand release<br>- coil for remote release<br>- three main make contacts<br>- one make and one break auxiliary contact<br>- one position switch to start and stop the operation of the motor. |

## S00296



**Name:** Switch with positive opening

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-13-14

**Keywords:** positive operation, power switching devices

**Applies:** S00226; S00227; S00229

**Shape class:** Arrows, Circles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

**Remarks:** Switch with positive opening operation of the three main break contacts and the auxiliary make contact without positive operation.

## S00297



**Name:** Motor starter, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-14-01

**Keywords:** motor starters

**Applied in:** S00303, S00301, S00299, S00302, S00298

**Application notes:** A00087

**Shape class:** Equilateral triangles, Squares

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

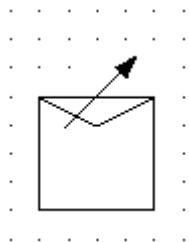


## S00298



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Starter operating in steps                                                  |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-14-02                                               |
| Keywords:             | motor starters                                                              |
| Applies:              | S00087; S00297                                                              |
| Application notes:    | A00088                                                                      |
| Shape class:          | Equilateral triangles, Lines , Squares                                      |
| Function class:       | Q Controlled switching or varying                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00299



**Name:** Starter-regulator

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-14-03

**Keywords:** motor starters

**Applied in:** S00304

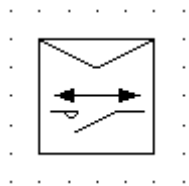
**Applies:** S00081; S00297

**Shape class:** Arrows, Equilateral triangles, Squares

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00301



**Name:** Direct-on-line starter, reversing

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-14-05

**Keywords:** motor starters, reversing

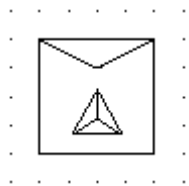
**Applies:** S00096; S00284; S00297

**Shape class:** Arrows, Equilateral triangles, Squares

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00302



Name: Star-delta starter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-14-06

Keywords: motor starters

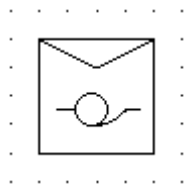
Applies: S00297; S00806; S00808

Shape class: Equilateral triangles, Squares

Function class: Q Controlled switching or varying

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00303



Name: Starter with auto-transformer

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-14-07

Keywords: motor starters

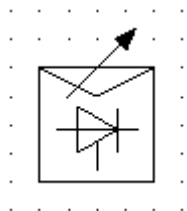
Applies: S00297; S00846

Shape class: Circles, Equilateral triangles, Squares

Function class: Q Controlled switching or varying

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00304



**Name:** Starter-regulator with thyristors

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-14-08

**Keywords:** motor starters

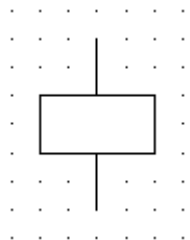
**Applies:** S00299; S00641

**Shape class:** Arrows, Equilateral triangles, Squares

**Function class:** Q Controlled switching or varying

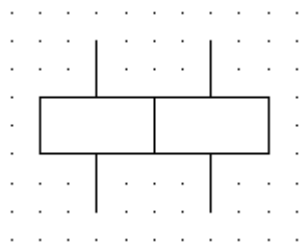
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00305



|                       |                                                                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Operating device, general symbol; Relay coil, general symbol                                                                                   |
| Status level:         | Standard                                                                                                                                       |
| Released on:          | 2001-07-01                                                                                                                                     |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-15-01                                                                                                                  |
| Alternative names:    | Operating coil of a selector                                                                                                                   |
| Keywords:             | all-or-nothing relays, operating devices                                                                                                       |
| Form:                 | Form 1                                                                                                                                         |
| Alternative forms:    | S00306                                                                                                                                         |
| Applied in:           | S00307, S00308, S00317, S00311, S00309, S00316, S00324, S00318, S00379, S00319, S00294, S00312, S00295, S00323, S00315, S00310, S00325, S00326 |
| Application notes:    | A00089                                                                                                                                         |
| Replacing:            | S01003                                                                                                                                         |
| Shape class:          | Rectangles                                                                                                                                     |
| Function class:       | K Processing signals or information                                                                                                            |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                                                                    |

## S00307



**Name:** Operating device; Relay coil (attached representation)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-15-03

**Keywords:** all-or-nothing relays, operating devices

**Form:** Form 1

**Alternative forms:** S00308

**Applies:** S00305

**Shape class:** Rectangles

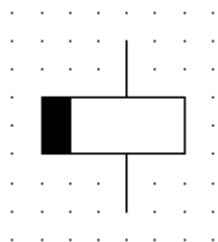
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** Shown with two separate windings, attached representation.

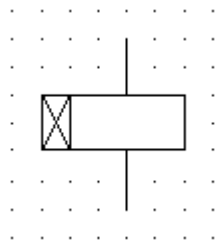


## S00311



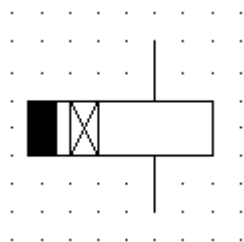
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Relay coil of a slow-releasing relay                                        |
| Status level:         | <b>Standard</b>                                                             |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-15-07                                               |
| Keywords:             | all-or-nothing relays, operating devices                                    |
| Applied in:           | S00313                                                                      |
| Applies:              | S00305                                                                      |
| Shape class:          | Rectangles                                                                  |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00312



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Relay coil of a slow-operating relay                                        |
| Status level:         | <b>Standard</b>                                                             |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-15-08                                               |
| Keywords:             | all-or-nothing relays, operating devices                                    |
| Applied in:           | S00313                                                                      |
| Applies:              | S00305                                                                      |
| Shape class:          | Lines , Rectangles                                                          |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00313



**Name:** Relay coil of a slow-operating and slow-releasing relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-15-09

**Keywords:** all-or-nothing relays, operating devices

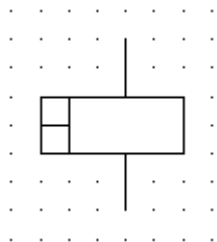
**Applies:** S00311; S00312

**Shape class:** Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00314



**Name:** Relay coil of a high speed relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-15-10

**Keywords:** all-or-nothing relays, operating devices

**Applies:** S00005

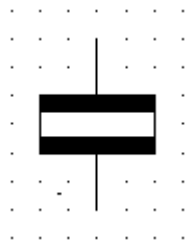
**Shape class:** Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

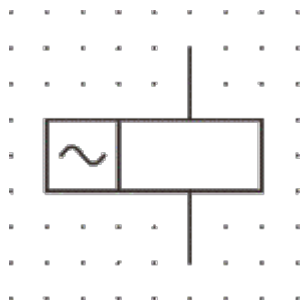
**Remarks:** Fast-operating and fast-releasing

## S00315



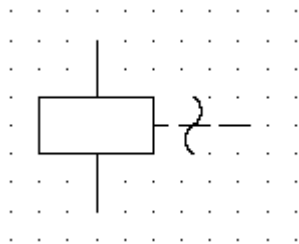
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Relay coil of a relay unaffected by alternating current                     |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-15-11                                               |
| Keywords:             | all-or-nothing relays, operating devices                                    |
| Applies:              | S00305                                                                      |
| Shape class:          | Lines , Rectangles                                                          |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00316



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Relay coil of an alternating current relay                                  |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-15-12                                               |
| Keywords:             | all-or-nothing relays, operating devices                                    |
| Applies:              | S00305; S01403                                                              |
| Shape class:          | Depicting shapes, Rectangles                                                |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00317



**Name:** Relay coil of a mechanically resonant relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-15-13

**Keywords:** all-or-nothing relays, operating devices

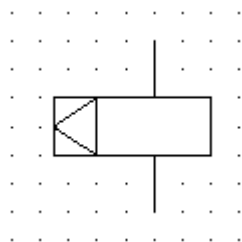
**Applies:** S00098; S00305

**Shape class:** Depicting shapes, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

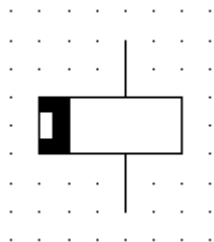
## S00318



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Relay coil of a mechanically latched relay                                  |
| Status level:         | <b>Standard</b>                                                             |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-15-14                                               |
| Keywords:             | all-or-nothing relays, automatic control, operating devices                 |
| Applies:              | S00305                                                                      |
| Shape class:          | Equilateral triangles, Rectangles                                           |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |



## S00319



**Name:** Relay coil of a polarized relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-15-15

**Keywords:** all-or-nothing relays, operating devices

**Applied in:** S00320, S00321, S01416, S00322

**Applies:** S00210; S00305

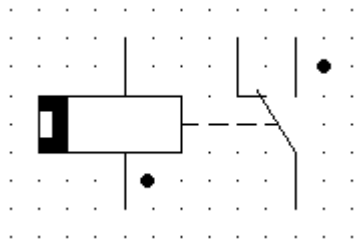
**Application notes:** A00090

**Shape class:** Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00320



**Name:** Polarized relay, self restoring

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-15-16

**Keywords:** all-or-nothing relays, operating devices

**Applies:** S00230; S00319

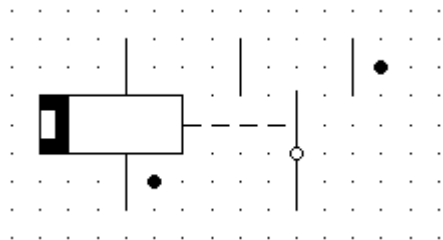
**Shape class:** Dots (points), Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

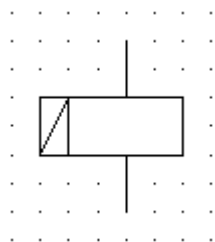
**Remarks:** Self restoring, operating for only one direction of current in the winding.

## S00321



|                       |                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------|
| Name:                 | Polarized relay with neutral position                                                            |
| Status level:         | Standard                                                                                         |
| Released on:          | 2001-07-01                                                                                       |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-15-17                                                                    |
| Keywords:             | all-or-nothing relays, operating devices                                                         |
| Applies:              | S00231; S00319                                                                                   |
| Shape class:          | Dots (points), Lines , Rectangles                                                                |
| Function class:       | K Processing signals or information                                                              |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                      |
| Remarks:              | With neutral position, self restoring, operating for either direction of current in the winding. |

## S00323



**Name:** Relay coil of a remanent relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-15-19

**Keywords:** all-or-nothing relays, operating devices

**Form:** Form 1

**Alternative forms:** S00324

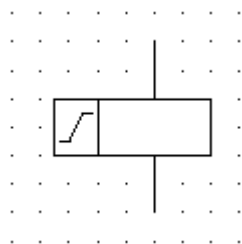
**Applies:** S00305

**Shape class:** Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00324



**Name:** Relay coil of a remanent relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-15-20

**Keywords:** all-or-nothing relays, operating devices

**Form:** Form 2

**Alternative forms:** S00323

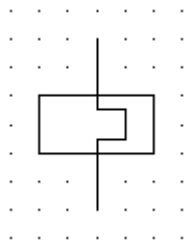
**Applies:** S00305

**Shape class:** Lines , Rectangles

**Function class:** K Processing signals or information

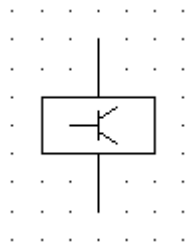
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00325



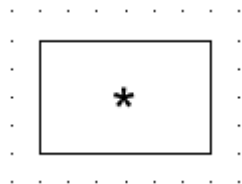
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Operating device of a thermal relay                                         |
| Status level:         | <b>Standard</b>                                                             |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-15-21                                               |
| Keywords:             | all-or-nothing relays, operating devices                                    |
| Applied in:           | S00294, S00295                                                              |
| Applies:              | S00120; S00305                                                              |
| Shape class:          | Lines , Rectangles                                                          |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00326



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Operating device of an electronic relay                                     |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-15-22                                               |
| Keywords:             | all-or-nothing relays, operating devices                                    |
| Applies:              | S00125; S00305                                                              |
| Shape class:          | Lines , Rectangles                                                          |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

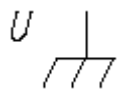
## S00327



|                       |                                                                                                                                |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Measuring relay; Device related to a measuring relay                                                                           |
| Status level:         | Standard                                                                                                                       |
| Released on:          | 2001-07-01                                                                                                                     |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-16-01                                                                                                  |
| Keywords:             | measuring relays, operating devices                                                                                            |
| Applied in:           | S00343, S00340, S00338, S00348, S00344, S00351, S00346, S00350, S00352, S00479, S00345, S00339, S00353, S00349, S00347, S00478 |
| Application notes:    | A00091, A00092, A00093, A00094, A00368                                                                                         |
| Shape class:          | Rectangles                                                                                                                     |
| Function class:       | B Converting variable to signal                                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                                                    |



**S00328**



**Name:** Voltage failure to frame; Frame potential in case of fault

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-16-02

**Keywords:** measuring relays

**Applies:** S00203

**Shape class:** Characters, Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**S00329**

$U_{rsd}$

Name: Residual voltage

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-16-03

Keywords: measuring relays

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

**S00330**



Name: Reverse current

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-16-04

Keywords: measuring relays

Applied in: S00339

Shape class: Arrows, Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

**S00331**

$I_d$

Name: Differential current

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-16-05

Keywords: measuring relays

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

**S00332**

$I_d / I$

Name: Percentage differential current

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-16-06

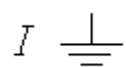
Keywords: measuring relays

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

**S00333**



- Name:** Earth fault current
- Status level:** **Standard**
- Released on:** 2001-07-01
- Earlier published in:** IEC 60617-7 (ed.2.0) 07-16-07
- Keywords:** measuring relays
- Applies:** S00200
- Shape class:** Characters, Lines
- Function class:** - Functional elements or attributes
- Application class:** Conceptual elements or qualifiers

**S00334**

$I_N$

Name: Current in the neutral conductor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-16-08

Keywords: measuring relays

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

**S00335**

$I_{N-N}$

**Name:** Current between neutrals of two polyphase systems

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-16-09

**Keywords:** measuring relays

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers



**S00336**

$P_{\alpha}$

Name: Power at phase angle "alpha"

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-16-10

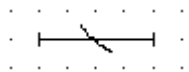
Keywords: measuring relays

Shape class: Characters

Function class: - Functional elements or attributes

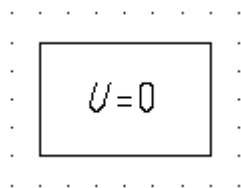
Application class: Conceptual elements or qualifiers

## S00337



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Inverse time-lag characteristic     |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-16-11       |
| Keywords:             | measuring relays                    |
| Applied in:           | S00351                              |
| Applies:              | S00124                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S00338



Name: No voltage relay

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-17-01

Keywords: measuring relays

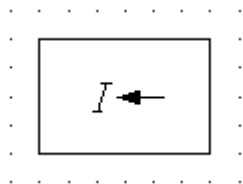
Applies: S00111; S00327

Shape class: Characters, Rectangles

Function class: B Converting variable to signal

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00339



Name: Reverse current relay

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-17-02

Keywords: measuring relays

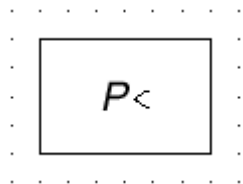
Applies: S00327; S00330

Shape class: Arrows, Characters, Rectangles

Function class: B Converting variable to signal

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00340



Name: Underpower relay

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-17-03

Keywords: measuring relays

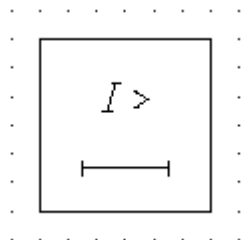
Applies: S00109; S00327

Shape class: Characters, Rectangles

Function class: B Converting variable to signal

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00341



**Name:** Delayed overcurrent relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-17-04

**Keywords:** measuring relays

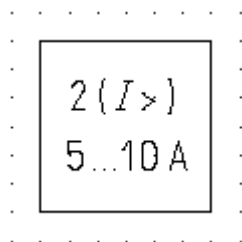
**Applies:** S00108; S00124

**Shape class:** Characters, Lines , Rectangles

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00342



**Name:** Overcurrent relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-17-05

**Keywords:** measuring relays

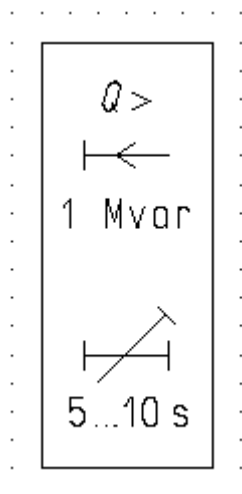
**Shape class:** Characters, Rectangles

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** Shown with two measuring elements and a setting range from 5 A to 10 A.

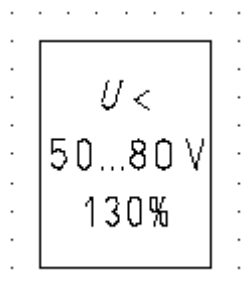
## S00343



|                       |                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Overpower relay for reactive power                                                                                                          |
| Status level:         | Standard                                                                                                                                    |
| Released on:          | 2001-07-01                                                                                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-17-06                                                                                                               |
| Keywords:             | measuring relays                                                                                                                            |
| Applies:              | S00085; S00105; S00108; S00124; S00327                                                                                                      |
| Shape class:          | Characters, Lines , Rectangles                                                                                                              |
| Function class:       | B Converting variable to signal                                                                                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                                                                 |
| Remarks:              | Overpower relay for reactive power: - energy-flow towards the busbars<br>- operating value 1 Mvar<br>- time-lag adjustable from 5 s to 10 s |



## S00344



**Name:** Undervoltage relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-17-07

**Keywords:** measuring relays

**Applies:** S00109; S00327

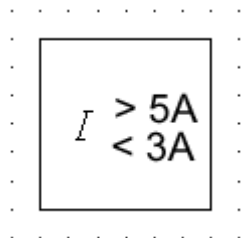
**Shape class:** Characters, Rectangles

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

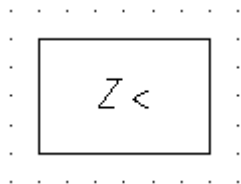
**Remarks:** Undervoltage relay shown with: - setting range from 50 V to 80 V  
- resetting ratio 130%

## S00345



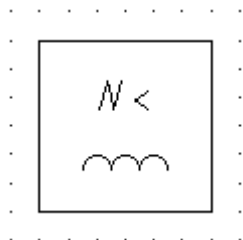
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Current relay                                                               |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-17-08                                               |
| Keywords:             | measuring relays                                                            |
| Applied in:           | S00294, S00295                                                              |
| Applies:              | S00108; S00109; S00327                                                      |
| Shape class:          | Characters, Rectangles                                                      |
| Function class:       | B Converting variable to signal                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | With maximum and minimum settings, shown with limits 3 A and 5 A.           |

## S00346



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Under-impedance relay                                                       |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-17-09                                               |
| Keywords:             | measuring relays                                                            |
| Applies:              | S00109; S00327                                                              |
| Shape class:          | Characters, Rectangles                                                      |
| Function class:       | B Converting variable to signal                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00347



**Name:** Relay detecting short-circuits between windings

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-17-10

**Keywords:** measuring relays

**Applies:** S00109; S00327; S00583

**Shape class:** Characters, Half-circles, Rectangles

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00348



**Name:** Divided-conductor detection relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-17-11

**Keywords:** measuring relays

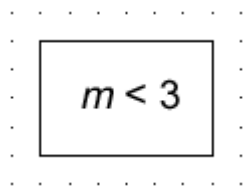
**Applies:** S00327; S00583

**Shape class:** Half-circles, Lines , Rectangles

**Function class:** B Converting variable to signal

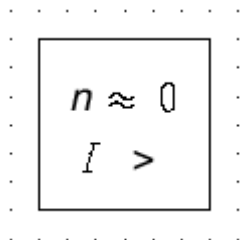
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00349



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Phase-failure detection relay                                               |
| Status level:         | <b>Standard</b>                                                             |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-17-12                                               |
| Keywords:             | measuring relays                                                            |
| Applies:              | S00109; S00327                                                              |
| Shape class:          | Characters, Rectangles                                                      |
| Function class:       | B Converting variable to signal                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Shown for a three-phase system.                                             |

## S00350



**Name:** Locked-rotor detection relay

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-17-13

**Keywords:** measuring relays

**Applies:** S00108; S00112; S00327

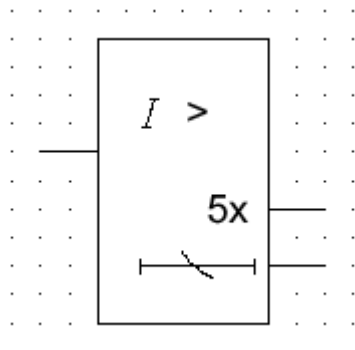
**Shape class:** Characters, Rectangles

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** Operating by current measuring.

## S00351



**Name:** Overcurrent relay

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-17-14

**Keywords:** measuring relays

**Applies:** S00109; S00327; S00337

**Shape class:** Characters, Lines , Rectangles

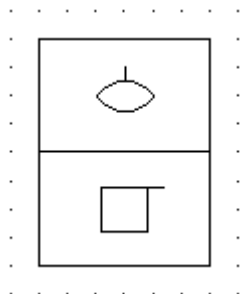
**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** With two outputs, one is active when the current is above five times the setting value, the other is active depending on the inverse time-lag characteristic setting of the device.

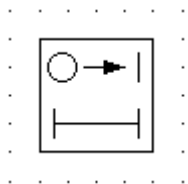


## S00352



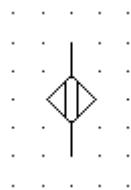
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Buchholz protective device; Gas relay                                       |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-18-01                                               |
| Keywords:             | Buchholz device, measuring relays                                           |
| Applies:              | S00195; S00198; S00327                                                      |
| Shape class:          | Circle segments, Rectangles, Squares                                        |
| Function class:       | B Converting variable to signal                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00353



|                              |                                                                             |
|------------------------------|-----------------------------------------------------------------------------|
| <b>Name:</b>                 | Device for auto-reclosing; Auto-reclose relay                               |
| <b>Status level:</b>         | <b>Standard</b>                                                             |
| <b>Released on:</b>          | 2001-07-01                                                                  |
| <b>Earlier published in:</b> | IEC 60617-7 (ed.2.0) 07-18-02                                               |
| <b>Keywords:</b>             | auto-reclosing devices                                                      |
| <b>Applies:</b>              | S00124; S00327                                                              |
| <b>Shape class:</b>          | Circles, Lines , Rectangles                                                 |
| <b>Function class:</b>       | K Processing signals or information                                         |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00354



Name: Proximity sensor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-19-01

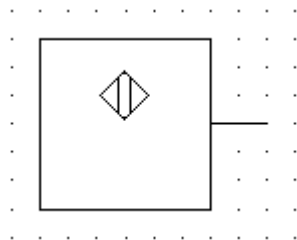
Keywords: proximity devices, touch-sensitive devices

Shape class: Lines , Squares

Function class: B Converting variable to signal

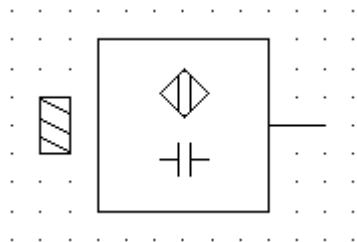
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00355



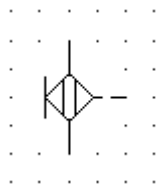
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Proximity sensing device                                                    |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-19-02                                               |
| Keywords:             | proximity devices, touch-sensitive devices                                  |
| Applied in:           | S00356                                                                      |
| Application notes:    | A00095                                                                      |
| Shape class:          | Lines , Squares                                                             |
| Function class:       | B Converting variable to signal                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00356



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Proximity sensing device, capacitive                                        |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-19-03                                               |
| Keywords:             | proximity devices, touch-sensitive devices                                  |
| Applies:              | S00114; S00355; S00567                                                      |
| Shape class:          | Lines , Rectangles, Squares                                                 |
| Function class:       | B Converting variable to signal                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Capacitive proximity detector operating on the approach of solid material.  |

## S00357



Name: Touch sensor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-19-04

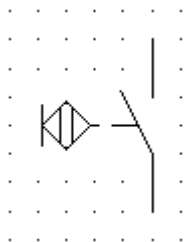
Keywords: proximity devices, touch-sensitive devices

Shape class: Lines , Squares

Function class: B Converting variable to signal

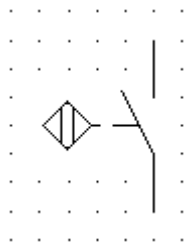
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00358



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Touch sensitive switch                                                                             |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-20-01                                                                      |
| Keywords:             | proximity devices, switches, touch-sensitive devices                                               |
| Applies:              | S00173; S00227                                                                                     |
| Shape class:          | Lines , Squares                                                                                    |
| Function class:       | B Converting variable to signal                                                                    |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |
| Remarks:              | Shown with make contact.                                                                           |

## S00359



Name: Proximity switch

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-20-02

Keywords: proximity devices, touch-sensitive devices

Applied in: S00360

Applies: S00172; S00227

Shape class: Lines , Squares

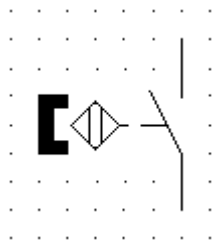
Function class: B Converting variable to signal

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

Remarks: Shown with make contact.



## S00360



**Name:** Proximity switch, magnetically controlled

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-20-03

**Keywords:** proximity devices, touch-sensitive devices

**Applies:** S00210; S00359

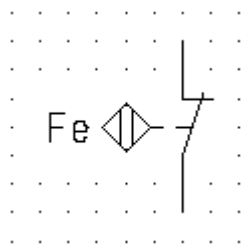
**Shape class:** Lines , Squares

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** Operated on the approach of a magnet, make contact shown.

## S00361



**Name:** Proximity switch, controlled by iron

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-20-04

**Keywords:** proximity devices, switches, touch-sensitive devices

**Applies:** S00172; S00229

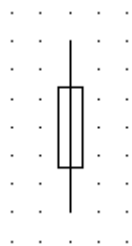
**Shape class:** Lines , Squares

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** Operated on the approach of iron, break contact shown.

## S00362



**Name:** Fuse, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-21-01

**Keywords:** fuses

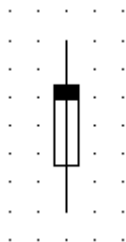
**Applied in:** S00363, S00364, S00366

**Shape class:** Lines , Rectangles

**Function class:** F Protecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00363



Name: Fuse

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-21-02

Keywords: fuses

Applies: S00362

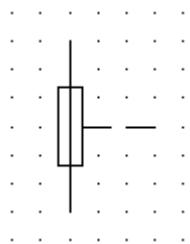
Shape class: Lines , Rectangles

Function class: F Protecting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

Remarks: The side that remains live after blowing is indicated by a thick line.

## S00364



Name: Fuse; Striker fuse

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-21-03

Keywords: fuses

Applied in: S00365, S00367

Applies: S00144; S00362

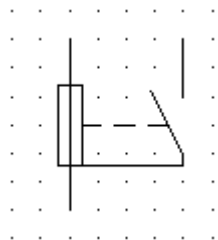
Shape class: Lines , Rectangles

Function class: F Protecting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

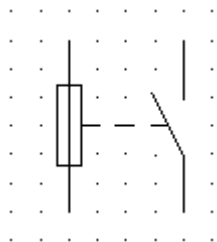
Remarks: With mechanical linkage.

## S00365



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Fuse with alarm contact                                                     |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-21-04                                               |
| Keywords:             | fuses                                                                       |
| Applies:              | S00227; S00364                                                              |
| Shape class:          | Lines , Rectangles                                                          |
| Function class:       | F Protecting                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | With alarm contact, three terminals.                                        |

## S00366



**Name:** Fuse with separate alarm

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-21-05

**Keywords:** fuses

**Applies:** S00227; S00362

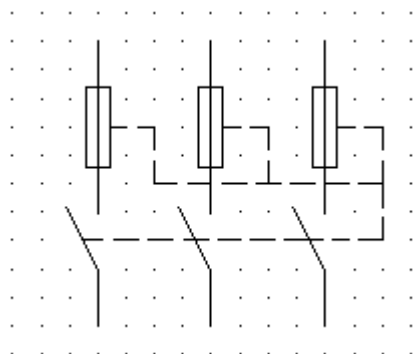
**Shape class:** Lines , Rectangles

**Function class:** F Protecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** With separate alarm circuit.

## S00367



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Three-pole switch with striker fuses                                        |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-21-06                                               |
| Keywords:             | fuse-switches                                                               |
| Applies:              | S00227; S00364                                                              |
| Shape class:          | Lines , Rectangles                                                          |
| Function class:       | F Protecting, Q Controlled switching or varying                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | With automatic release by any one of the striker fuses.                     |



## S00368



Name: Fuse-switch

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-21-07

Keywords: fuse-switches

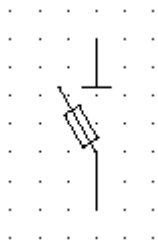
Applied in: S00370, S00369

Shape class: Lines , Rectangles

Function class: F Protecting, Q Controlled switching or varying

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00369



**Name:** Fuse-disconnector; Fuse isolator

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-21-08

**Keywords:** fuse-switches

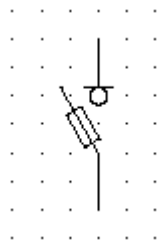
**Applies:** S00220; S00368

**Shape class:** Lines , Rectangles

**Function class:** F Protecting, Q Controlled switching or varying

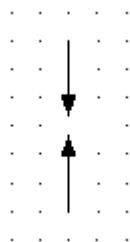
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00370



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Fuse switch-disconnector; On-load isolating fuse switch                     |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-21-09                                               |
| Keywords:             | fuse-switches                                                               |
| Applies:              | S00221; S00368                                                              |
| Shape class:          | Lines , Rectangles                                                          |
| Function class:       | F Protecting, Q Controlled switching or varying                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00371



Name: Spark gap

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-22-01

Keywords: arresters, spark gaps

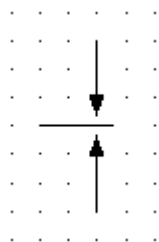
Applied in: S00374, S00372

Shape class: Arrows

Function class: F Protecting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00372



Name: Spark gap, double

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-22-02

Keywords: arresters, spark gaps

Applied in: S00375

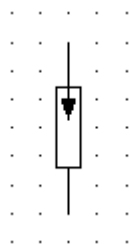
Applies: S00371

Shape class: Arrows

Function class: F Protecting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00373



**Name:** Surge diverter; Lightning arrester

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-22-03

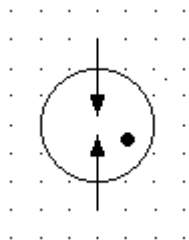
**Keywords:** arresters

**Shape class:** Arrows, Rectangles

**Function class:** F Protecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00374



**Name:** Protective gas discharge tube

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-22-04

**Keywords:** arresters, spark gaps

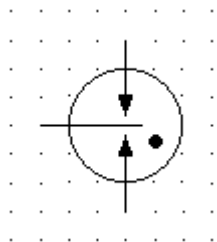
**Applies:** S00371; S00693

**Shape class:** Arrows, Circles, Dots (points)

**Function class:** F Protecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00375



**Name:** Protective gas discharge tube, symmetric

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-22-05

**Keywords:** arresters, spark gaps

**Applies:** S00372; S00693

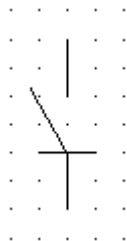
**Shape class:** Arrows, Circles, Dots (points)

**Function class:** F Protecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams



## S00376



Name: Static switch, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-25-01

Keywords: static switches

Applied in: S00380, S00377, S00379, S00378

Applies: S00227

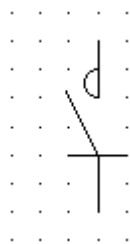
Application notes: A00096, A00097

Shape class: Lines

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00377



**Name:** Static (semiconductor) contactor

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-25-02

**Keywords:** contactors, static switches

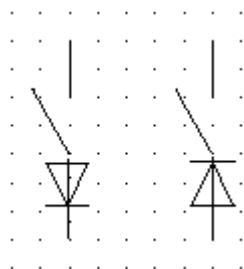
**Applies:** S00218; S00376

**Shape class:** Half-circles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00378



**Name:** Static switch, unidirectional

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-25-03

**Keywords:** static switches

**Applies:** S00376; S00619

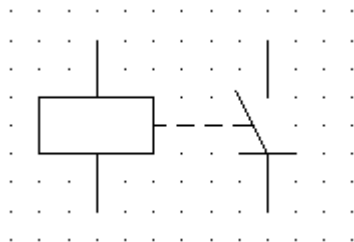
**Shape class:** Equilateral triangles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** Passing current in one direction only.

## S00379



Name: Static relay, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-26-01

Keywords: static switching devices

Applied in: S00382, S00381

Applies: S00305; S00376

Application notes: A00098

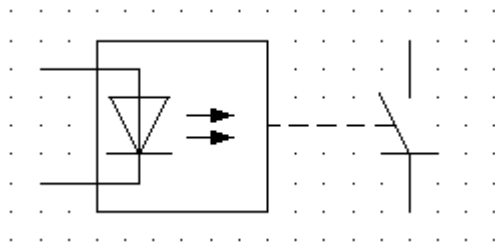
Shape class: Lines , Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

Remarks: Shown with semiconductor make contact.

## S00380



Name: Static relay

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-26-02

Keywords: static switching devices

Applies: S00376; S00642

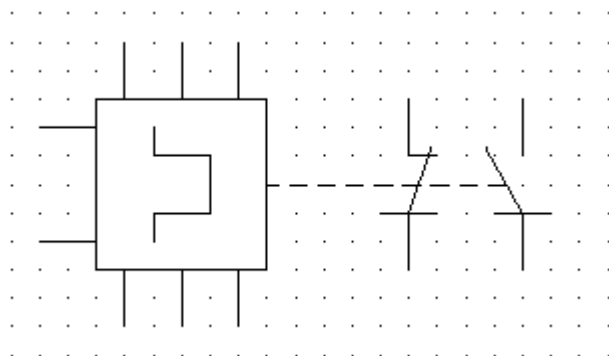
Shape class: Arrows, Equilateral triangles, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

Remarks: With light emitting diode as actuator shown with make contact semiconductor.

## S00381



**Name:** Static thermal overload relay

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-7 (ed.2.0) 07-26-03

**Keywords:** static switching devices

**Applies:** S00120; S00379

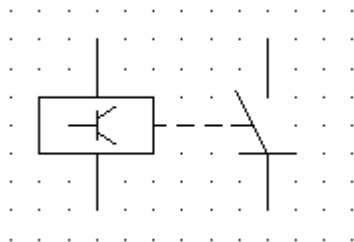
**Shape class:** Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** Three-pole thermal overload relay with two semiconductor contacts one semiconductor make contact and one semiconductor break contact; the actuator needs a separate auxiliary power supply.

## S00382



Name: Static relay

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-7 (ed.2.0) 07-26-04

Keywords: static switching devices

Applies: S00125; S00379

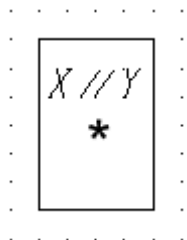
Shape class: Lines , Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

Remarks: Semiconductor operating device with semiconductor make contact.

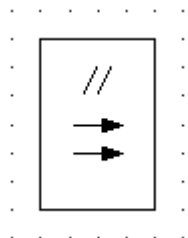
## S00383



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Coupling device with electrical separation                                  |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-27-01                                               |
| Keywords:             | coupling devices, static switching devices                                  |
| Applies:              | S00126                                                                      |
| Application notes:    | A00099                                                                      |
| Shape class:          | Characters, Rectangles                                                      |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

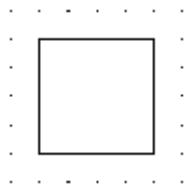


## S00384



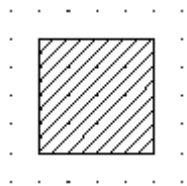
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Coupling device with electrical separation, optical                         |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-7 (ed.2.0) 07-27-02                                               |
| Keywords:             | coupling devices, static switching devices                                  |
| Applies:              | S00126; S00127                                                              |
| Shape class:          | Characters, Rectangles                                                      |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Optical coupling device with electrical separation.                         |

## S00385



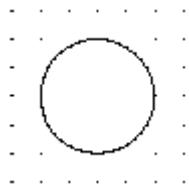
|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Generating station, planned                            |
| Status level:         | <b>Standard</b>                                        |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-01-01                         |
| Keywords:             | generating station                                     |
| Applied in:           | S00395, S00401, S00399, S00393, S00397, S00403, S00391 |
| Applies:              | S00059                                                 |
| Application notes:    | A00071                                                 |
| Shape class:          | Squares                                                |
| Function class:       | G Initiating a flow                                    |
| Application class:    | Network maps                                           |

## S00386



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Generating station, in service or unspecified          |
| Status level:         | <b>Standard</b>                                        |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-01-02                         |
| Keywords:             | generating station                                     |
| Applied in:           | S00392, S00398, S00394, S00404, S00402, S00396, S00400 |
| Applies:              | S00059                                                 |
| Application notes:    | A00071, A00072                                         |
| Shape class:          | Squares                                                |
| Function class:       | G Initiating a flow                                    |
| Application class:    | Network maps                                           |

## S00389



Name: Substation, planned

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-01-05

Keywords: substation

Applied in: S00405

Applies: S00061

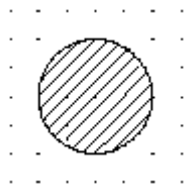
Application notes: A00267

Shape class: Circles

Function class: Q Controlled switching or varying, T Converting but maintaining kind

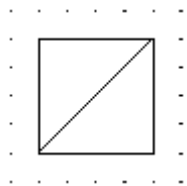
Application class: Network maps

## S00390



|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| Name:                 | Substation, in service or unspecified                                |
| Status level:         | <b>Standard</b>                                                      |
| Released on:          | 2001-07-01                                                           |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-01-06                                       |
| Keywords:             | substation                                                           |
| Applied in:           | S00406                                                               |
| Applies:              | S00061                                                               |
| Application notes:    | A00072, A00267                                                       |
| Shape class:          | Circles                                                              |
| Function class:       | Q Controlled switching or varying, T Converting but maintaining kind |
| Application class:    | Network maps                                                         |

## S00391



**Name:** Hydroelectric generating station, planned

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-01

**Keywords:** generating station

**Applies:** S00059; S00385

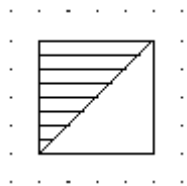
**Application notes:** A00071

**Shape class:** Right-angled triangle, Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

## S00392



**Name:** Hydroelectric generating station, in service or unspecified

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-02

**Keywords:** generating station

**Applies:** S00059; S00386

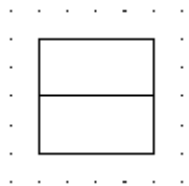
**Application notes:** A00071, A00072

**Shape class:** Right-angled triangle, Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

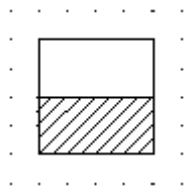
## S00393



|                       |                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Thermoelectric generating station, planned                                                                                                                      |
| Status level:         | <b>Standard</b>                                                                                                                                                 |
| Released on:          | 2001-07-01                                                                                                                                                      |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-02-03                                                                                                                                  |
| Alternative names:    | coal thermoelectric generating station; lignite thermoelectric generating station; oil thermoelectric generating station; gas thermoelectric generating station |
| Keywords:             | generating station                                                                                                                                              |
| Applies:              | S00059; S00385                                                                                                                                                  |
| Application notes:    | A00071                                                                                                                                                          |
| Shape class:          | Rectangles, Squares                                                                                                                                             |
| Function class:       | G Initiating a flow                                                                                                                                             |
| Application class:    | Network maps                                                                                                                                                    |

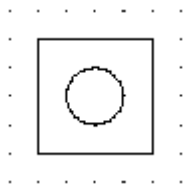


## S00394



|                       |                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Thermoelectric generating station, in service or unspecified                                                                                                    |
| Status level:         | Standard                                                                                                                                                        |
| Released on:          | 2001-07-01                                                                                                                                                      |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-02-04                                                                                                                                  |
| Alternative names:    | thermoelectric generating station coal; thermoelectric generating station lignite; thermoelectric generating station oil; thermoelectric generating station gas |
| Keywords:             | generating station                                                                                                                                              |
| Applies:              | S00059; S00386                                                                                                                                                  |
| Application notes:    | A00071, A00072                                                                                                                                                  |
| Shape class:          | Rectangles, Squares                                                                                                                                             |
| Function class:       | G Initiating a flow                                                                                                                                             |
| Application class:    | Network maps                                                                                                                                                    |

## S00395



**Name:** Nuclear energy generating station, planned

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-05

**Keywords:** generating station

**Applies:** S00059; S00385

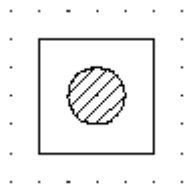
**Application notes:** A00071

**Shape class:** Circles, Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

## S00396



**Name:** Nuclear energy generating station, in service or unspecified

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-06

**Keywords:** generating station

**Applies:** S00059; S00386

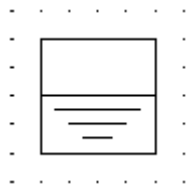
**Application notes:** A00071, A00072

**Shape class:** Circles, Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

## S00397



**Name:** Geothermic generating station, planned

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-07

**Keywords:** generating station

**Applies:** S00059; S00385

**Application notes:** A00071

**Shape class:** Lines , Rectangles, Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

## S00398



**Name:** Geothermic generating station, in service or unspecified

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-08

**Keywords:** generating station

**Applies:** S00059; S00386

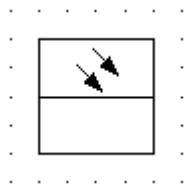
**Application notes:** A00071, A00072

**Shape class:** Lines , Rectangles, Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

## S00399



**Name:** Solar generating station, planned

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-09

**Keywords:** generating station

**Applies:** S00059; S00385

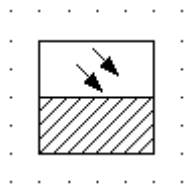
**Application notes:** A00071

**Shape class:** Arrows, Rectangles, Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

## S00400



**Name:** Solar generating station, in service or unspecified

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-10

**Keywords:** generating station

**Applies:** S00059; S00386

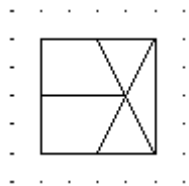
**Application notes:** A00071, A00072

**Shape class:** Arrows, Rectangles, Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

## S00401



**Name:** Wind generating station, planned

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-11

**Keywords:** generating station

**Applies:** S00059; S00385

**Application notes:** A00071

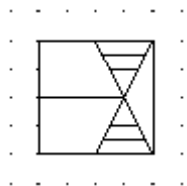
**Shape class:** Squares

**Function class:** G Initiating a flow

**Application class:** Network maps



## S00402



**Name:** Wind generating station, in service or unspecified

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-12

**Keywords:** generating station

**Applies:** S00059; S00386

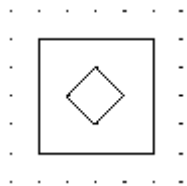
**Application notes:** A00071, A00072

**Shape class:** Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

## S00403



**Name:** Plasma generating station, planned; Magneto-hydrodynamic (MHD), planned

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-13

**Keywords:** generating station

**Applies:** S00059; S00385

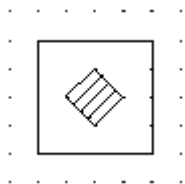
**Application notes:** A00071

**Shape class:** Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

## S00404



**Name:** Plasma generating station, in service or unspecified; Magneto-hydrodynamic (MHD), in service or unspecified

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-14

**Keywords:** generating station

**Applies:** S00059; S00386

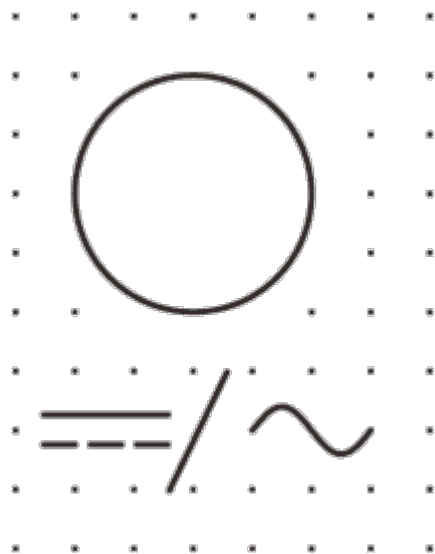
**Application notes:** A00071, A00072

**Shape class:** Squares

**Function class:** G Initiating a flow

**Application class:** Network maps

## S00405



Name: Converting substation, planned

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-02-15

Keywords: substation

Applies: S00061; S00389; S01401; S01403

Shape class: Circles, Depicting shapes

Function class: Q Controlled switching or varying, T Converting but maintaining kind

Application class: Network maps

Remarks: The symbol is shown with conversion from DC to AC

## S00406



**Name:** Converting substation, in service or unspecified

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-02-16

**Keywords:** substation

**Applies:** S00061; S00390; S01401; S01403

**Application notes:** A00072

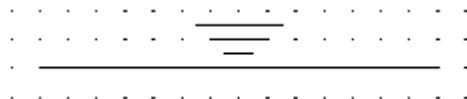
**Shape class:** Circles, Depicting shapes

**Function class:** Q Controlled switching or varying, T Converting but maintaining kind

**Application class:** Network maps

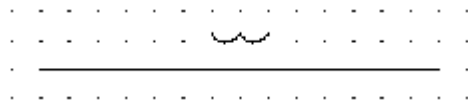
**Remarks:** The symbol is shown with conversion from DC to AC

## S00407



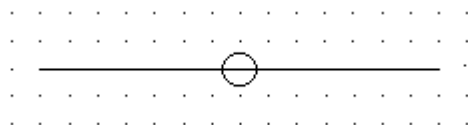
|                       |                                |
|-----------------------|--------------------------------|
| Name:                 | Underground line               |
| Status level:         | Standard                       |
| Released on:          | 2001-07-01                     |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-03-01 |
| Keywords:             | lines, networks                |
| Applied in:           | S00413                         |
| Applies:              | S00001                         |
| Application notes:    | A00073                         |
| Shape class:          | Lines                          |
| Function class:       | W Guiding or transporting      |
| Application class:    | Network maps                   |

## S00408



|                       |                                |
|-----------------------|--------------------------------|
| Name:                 | Submarine line                 |
| Status level:         | Standard                       |
| Released on:          | 2001-07-01                     |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-03-02 |
| Keywords:             | lines, networks                |
| Applies:              | S00001; S00115                 |
| Application notes:    | A00073                         |
| Shape class:          | Depicting shapes, Lines        |
| Function class:       | W Guiding or transporting      |
| Application class:    | Network maps                   |

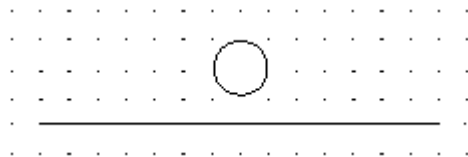
## S00409



|                       |                                |
|-----------------------|--------------------------------|
| Name:                 | Overhead line                  |
| Status level:         | Standard                       |
| Released on:          | 2001-07-01                     |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-03-03 |
| Keywords:             | lines, networks                |
| Applied in:           | S01453, S01452                 |
| Applies:              | S00001                         |
| Application notes:    | A00073                         |
| Shape class:          | Circles, Lines                 |
| Function class:       | W Guiding or transporting      |
| Application class:    | Network maps                   |



## S00410



**Name:** Line within a duct; Line within a pipe

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-03-04

**Keywords:** lines, networks

**Applied in:** S00411

**Applies:** S00001

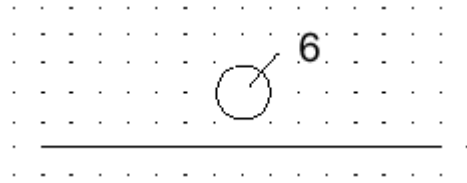
**Application notes:** A00073, A00074

**Shape class:** Circles, Lines

**Function class:** W Guiding or transporting

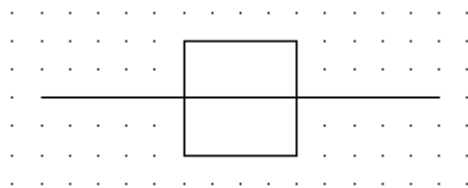
**Application class:** Network maps

## S00411



|                       |                                |
|-----------------------|--------------------------------|
| Name:                 | Line within a six-way-duct     |
| Status level:         | Standard                       |
| Released on:          | 2001-07-01                     |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-03-05 |
| Keywords:             | lines, networks                |
| Applies:              | S00001; S00410                 |
| Application notes:    | A00073                         |
| Shape class:          | Characters, Circles, Lines     |
| Function class:       | W Guiding or transporting      |
| Application class:    | Network maps                   |

## S00412



Name: Manhole for underground chamber

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-03-06

Keywords: lines, networks

Applied in: S00425, S00445

Applies: S00001

Application notes: A00073

Shape class: Lines , Squares

Function class: W Guiding or transporting

Application class: Network maps

## S00413



|                       |                                |
|-----------------------|--------------------------------|
| Name:                 | Line with buried joint         |
| Status level:         | Standard                       |
| Released on:          | 2001-07-01                     |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-03-07 |
| Keywords:             | lines, networks                |
| Applies:              | S00001; S00407                 |
| Application notes:    | A00073                         |
| Shape class:          | Dots (points), Lines           |
| Function class:       | W Guiding or transporting      |
| Application class:    | Network maps                   |

## S00414



Name: Line with gas or oil block

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-03-08

Keywords: lines, networks

Applied in: S00416

Applies: S00001

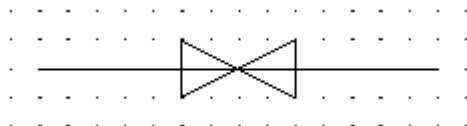
Application notes: A00073

Shape class: Lines

Function class: W Guiding or transporting

Application class: Network maps

## S00415



Name: Line with gas or oil stop valve

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-03-09

Keywords: lines, networks

Applies: S00001

Application notes: A00073

Shape class: Equilateral triangles, Lines

Function class: W Guiding or transporting

Application class: Network maps

## S00416



Name: Line with gas or oil block by-pass

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-03-10

Keywords: lines, networks

Applies: S00001; S00414

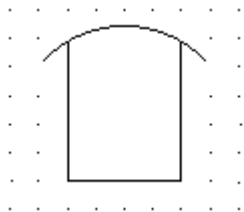
Application notes: A00073

Shape class: Circle segments, Lines

Function class: W Guiding or transporting

Application class: Network maps

## S00419



**Name:** Weather-proof enclosure, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-04-01

**Keywords:** junctions, networks

**Applied in:** S00420

**Application notes:** A00075

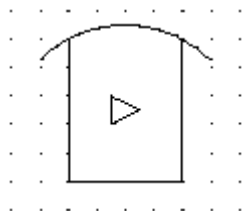
**Shape class:** Circle segments, Rectangles

**Function class:** W Guiding or transporting, X Connecting

**Application class:** Network maps



## S00420



**Name:** Amplifying point in a weather-proof enclosure

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-04-02

**Keywords:** junctions, networks

**Applies:** S00419; S01239

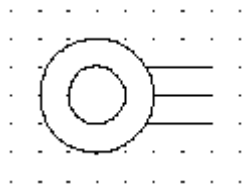
**Application notes:** A00075

**Shape class:** Circle segments, Equilateral triangles, Rectangles

**Function class:** W Guiding or transporting, X Connecting

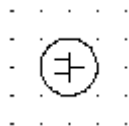
**Application class:** Network maps

## S00421



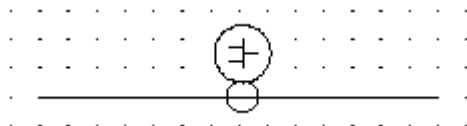
|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Cross-connection point                  |
| Status level:         | Standard                                |
| Released on:          | 2001-07-01                              |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-04-03          |
| Keywords:             | junctions, networks                     |
| Applies:              | S00062                                  |
| Application notes:    | A00076                                  |
| Shape class:          | Circles, Lines                          |
| Function class:       | W Guiding or transporting, X Connecting |
| Application class:    | Network maps                            |

## S00422



|                       |                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Line concentrator, automatic line connector                                                                                                  |
| Status level:         | Standard                                                                                                                                     |
| Released on:          | 2001-07-01                                                                                                                                   |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-04-04                                                                                                               |
| Keywords:             | connections, networks                                                                                                                        |
| Applied in:           | S00423                                                                                                                                       |
| Shape class:          | Circles, Depicting shapes                                                                                                                    |
| Function class:       | K Processing signals or information, X Connecting                                                                                            |
| Application class:    | Network maps                                                                                                                                 |
| Remarks:              | The symbol is shown for signal transmission from left to right. A number of lines on the left are concentrated for fewer lines on the right. |

## S00423



|                       |                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Line concentrator on a pole                                                                                                                  |
| Status level:         | Standard                                                                                                                                     |
| Released on:          | 2001-07-01                                                                                                                                   |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-04-05                                                                                                               |
| Keywords:             | connections, lines, networks                                                                                                                 |
| Applies:              | S00001; S00422                                                                                                                               |
| Shape class:          | Circles, Depicting shapes, Lines                                                                                                             |
| Function class:       | K Processing signals or information, X Connecting                                                                                            |
| Application class:    | Network maps                                                                                                                                 |
| Remarks:              | The symbol is shown for signal transmission from left to right. A number of lines on the left are concentrated for fewer lines on the right. |

## S00426



Name: Protective anode

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-04-08

Keywords: earth connection, galvanic protection, networks

Applied in: S00427

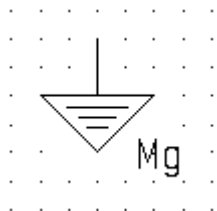
Application notes: A00079

Shape class: Lines , Right-angled triangle

Function class: F Protecting

Application class: Network maps

## S00427



**Name:** Magnesium protective anode

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-04-09

**Keywords:** earth connection, galvanic protection, networks

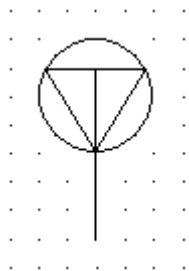
**Applies:** S00426

**Shape class:** Characters, Lines , Right-angled triangle

**Function class:** F Protecting

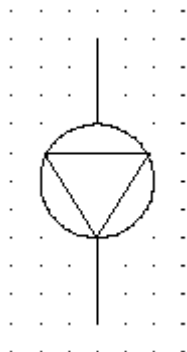
**Application class:** Network maps

## S00428



|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| Name:                 | Head end with local antenna                                  |
| Status level:         | Standard                                                     |
| Released on:          | 2001-07-01                                                   |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-05-01                               |
| Keywords:             | communication networks, head ends                            |
| Applies:              | S00061; S01102; S01239                                       |
| Shape class:          | Circles, Equilateral triangles, Lines                        |
| Function class:       | T Converting but maintaining kind, W Guiding or transporting |
| Application class:    | Installation diagrams, Network maps                          |
| Remarks:              | The symbol is shown with one branch feeder.                  |

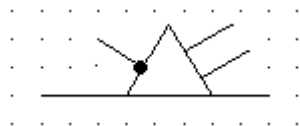
## S00429



|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Name:                 | Head end without local antenna                                  |
| Status level:         | Standard                                                        |
| Released on:          | 2001-07-01                                                      |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-05-02                                  |
| Keywords:             | communication networks, head ends                               |
| Applies:              | S00061; S01239                                                  |
| Shape class:          | Circles, Equilateral triangles, Lines                           |
| Function class:       | W Guiding or transporting                                       |
| Application class:    | Installation diagrams, Network maps                             |
| Remarks:              | The symbol is shown with one input and one output trunk feeder. |



## S00430



Name: Bridger amplifier

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-06-01

Keywords: amplifiers, communication networks

Applies: S01239

Application notes: A00101, A00102

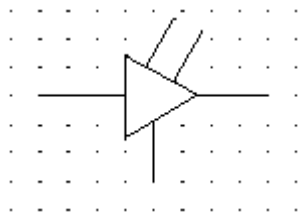
Shape class: Dots (points), Equilateral triangles, Lines

Function class: T Converting but maintaining kind

Application class: Installation diagrams, Network maps

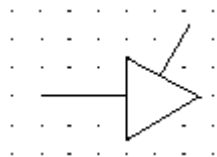
Remarks: The symbol is shown with three branch or spur feeder outputs.

## S00431



|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| Name:                 | Trunk bridging amplifier assembly                     |
| Status level:         | Standard                                              |
| Released on:          | 2001-07-01                                            |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-06-02                        |
| Keywords:             | amplifiers, communication networks                    |
| Applies:              | S01239                                                |
| Shape class:          | Equilateral triangles, Lines                          |
| Function class:       | T Converting but maintaining kind                     |
| Application class:    | Installation diagrams, Network maps                   |
| Remarks:              | The symbol is shown with three branch feeder outputs. |

## S00432



**Name:** End of amplifier (branch or spur feeder)

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-06-03

**Keywords:** amplifiers, communication networks

**Applies:** S01239

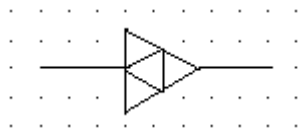
**Shape class:** Equilateral triangles, Lines

**Function class:** T Converting but maintaining kind

**Application class:** Installation diagrams, Network maps

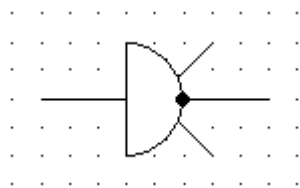
**Remarks:** The symbol is shown with one spur feeder output.

## S00433



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Amplifier with return channel       |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-06-04      |
| Keywords:             | amplifiers, communication networks  |
| Applies:              | S01239                              |
| Shape class:          | Equilateral triangles, Lines        |
| Function class:       | T Converting but maintaining kind   |
| Application class:    | Installation diagrams, Network maps |

## S00435



**Name:** Splitter, three-way

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-07-02

**Keywords:** cabled sound and television, splitters

**Applies:** S01334

**Application notes:** A00101, A00102

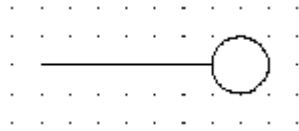
**Shape class:** Dots (points), Half-circles, Lines

**Function class:** K Processing signals or information, W Guiding or transporting

**Application class:** Installation diagrams, Network maps

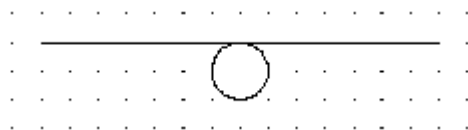
**Remarks:** The symbol is shown with one higher level output.

## S00438



|                       |                                             |
|-----------------------|---------------------------------------------|
| Name:                 | System outlet                               |
| Status level:         | Standard                                    |
| Released on:          | 2001-07-01                                  |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-08-02              |
| Keywords:             | cabled sound and television, system outlets |
| Applied in:           | S00439                                      |
| Shape class:          | Circles, Lines                              |
| Function class:       | X Connecting                                |
| Application class:    | Installation diagrams, Network maps         |

## S00439



**Name:** Looped system outlet; Serial wired outlet

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-08-03

**Keywords:** cabled sound and television, system outlets

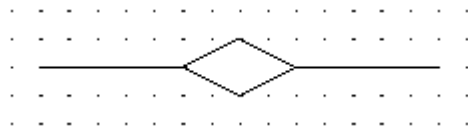
**Applies:** S00001; S00438

**Shape class:** Circles, Lines

**Function class:** X Connecting

**Application class:** Installation diagrams, Network maps

## S00440



Name: Equalizer

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-09-01

Keywords: cabled sound and television, equalizers

Applied in: S00441

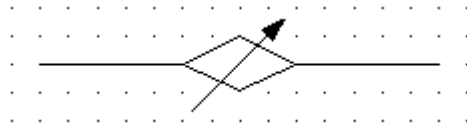
Shape class: Lines , Parallelograms

Function class: K Processing signals or information

Application class: Installation diagrams, Network maps

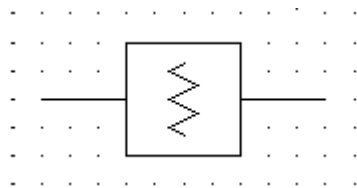


## S00441



|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Variable equalizer                      |
| Status level:         | Standard                                |
| Released on:          | 2001-07-01                              |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-09-02          |
| Keywords:             | cabled sound and television, equalizers |
| Applies:              | S00081; S00440                          |
| Shape class:          | Arrows, Lines , Parallelograms          |
| Function class:       | K Processing signals or information     |
| Application class:    | Installation diagrams, Network maps     |

## S00442



Name: Attenuator

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-09-03

Keywords: attenuators, cabled sound and television

Alternative forms: S01244

Applies: S00059; S01355

Application notes: A00105

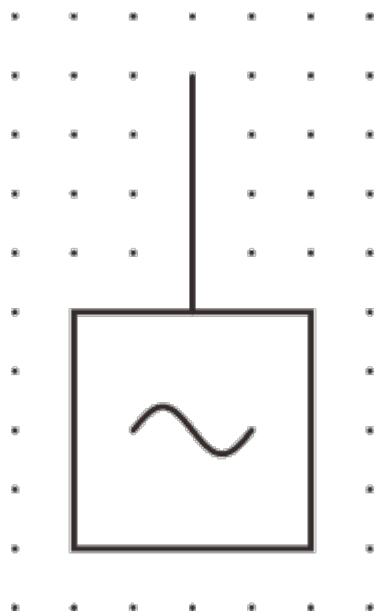
Replacing: S01168

Shape class: Lines , Squares

Function class: K Processing signals or information

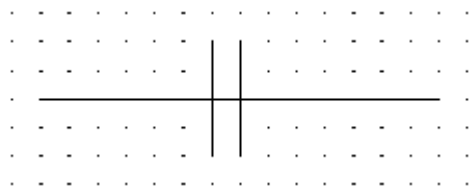
Application class: Installation diagrams, Network maps

## S00443



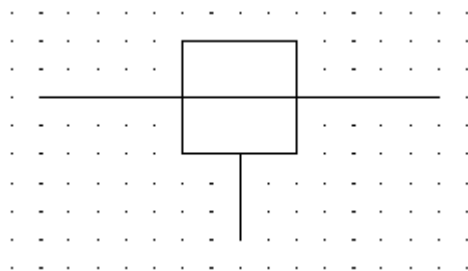
|                       |                                            |
|-----------------------|--------------------------------------------|
| Name:                 | Line power unit                            |
| Status level:         | Standard                                   |
| Released on:          | 2001-07-01                                 |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-10-01             |
| Keywords:             | cabled sound and television, power feeding |
| Applies:              | S00059; S01403                             |
| Shape class:          | Depicting shapes, Lines , Squares          |
| Function class:       | G Initiating a flow                        |
| Application class:    | Installation diagrams, Network maps        |
| Remarks:              | AC type shown.                             |

## S00444



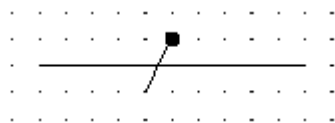
|                       |                                               |
|-----------------------|-----------------------------------------------|
| Name:                 | Power block                                   |
| Status level:         | Standard                                      |
| Released on:          | 2001-07-01                                    |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-10-02                |
| Keywords:             | cabled sound and television, power feeding    |
| Applies:              | S00001                                        |
| Shape class:          | Lines                                         |
| Function class:       | R Restricting or stabilising                  |
| Application class:    | Installation diagrams, Network maps           |
| Remarks:              | The symbol is shown in a distribution feeder. |

## S00445



|                       |                                            |
|-----------------------|--------------------------------------------|
| Name:                 | Power feeding injection point              |
| Status level:         | Standard                                   |
| Released on:          | 2001-07-01                                 |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-10-03             |
| Keywords:             | cabled sound and television, power feeding |
| Applies:              | S00001; S00412                             |
| Shape class:          | Lines , Squares                            |
| Function class:       | G Initiating a flow                        |
| Application class:    | Installation diagrams, Network maps        |

## S00446



Name: Neutral conductor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-11-01

Keywords: electrical installations, identification of conductors, installations in buildings

Applied in: S01927, S00448, S01929, S00449, S00866

Applies: S00001

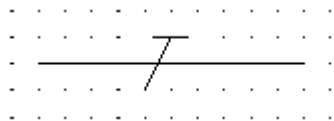
Application notes: A00106

Shape class: Dots (points), Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams, Installation diagrams, Overview diagrams

## S00447



Name: Protective earthing conductor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-11-02

Keywords: electrical installations, identification of conductors, installations in buildings

Applied in: S01927, S01928, S00448, S01929, S00449

Applies: S00001

Application notes: A00106

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams, Installation diagrams, Overview diagrams

## S00449



**Name:** Three-phase wiring with neutral conductor and protective conductor

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-11-04

**Keywords:** electrical installations, identification of conductors, installations in buildings

**Applies:** S00001; S00002; S00446; S00447

**Application notes:** A00106

**Shape class:** Dots (points), Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams, Installation diagrams, Overview diagrams



## S00450



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Wiring going upwards                |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-12-01      |
| Keywords:             | installations in buildings, wiring  |
| Application notes:    | A00107                              |
| Shape class:          | Arrows, Dots (points), Lines        |
| Function class:       | - Functional elements or attributes |
| Application class:    | Installation diagrams               |

## S00451



Name: Wiring going downwards

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-12-02

Keywords: installations in buildings, wiring

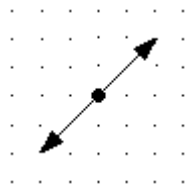
Application notes: A00108

Shape class: Arrows, Dots (points), Lines

Function class: - Functional elements or attributes

Application class: Installation diagrams

## S00452



**Name:** Wiring passing through vertically

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-12-03

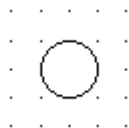
**Keywords:** installations in buildings, wiring

**Shape class:** Arrows, Dots (points)

**Function class:** - Functional elements or attributes

**Application class:** Installation diagrams

## S00453



Name: Box, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-12-04

Keywords: installations in buildings, wiring

Applied in: S00454, S00521, S00522

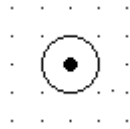
Applies: S00061

Shape class: Circles

Function class: X Connecting

Application class: Installation diagrams

## S00454



**Name:** Connection box; Junction box

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-12-05

**Keywords:** installations in buildings, wiring

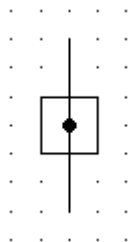
**Applies:** S00016; S00453

**Shape class:** Circles, Dots (points)

**Function class:** X Connecting

**Application class:** Installation diagrams

## S00455



**Name:** Consumers terminal, Service entrance equipment

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-12-06

**Keywords:** installations in buildings, wiring

**Applies:** S00016; S00060

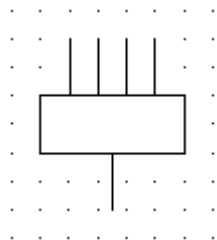
**Shape class:** Dots (points), Lines , Squares

**Function class:** X Connecting

**Application class:** Installation diagrams, Network maps

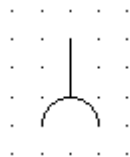
**Remarks:** The symbol is shown with wiring.

## S00456



|                       |                                        |
|-----------------------|----------------------------------------|
| Name:                 | Distribution centre                    |
| Status level:         | Standard                               |
| Released on:          | 2001-07-01                             |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-12-07         |
| Keywords:             | installations in buildings, wiring     |
| Applies:              | S00060                                 |
| Shape class:          | Lines , Squares                        |
| Function class:       | X Connecting                           |
| Application class:    | Installation diagrams                  |
| Remarks:              | The symbol is shown with five wirings. |

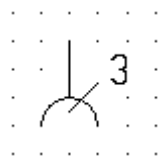
## S00457



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Socket outlet (power) general symbol                   |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-13-01                         |
| Alternative names:    | Receptacle outlet (power), general symbol              |
| Keywords:             | installations in buildings, socket outlets             |
| Applied in:           | S00458, S00464, S00460, S00459, S00461, S00463, S00462 |
| Applies:              | S00031                                                 |
| Shape class:          | Half-circles, Lines                                    |
| Function class:       | X Connecting                                           |
| Application class:    | Installation diagrams                                  |

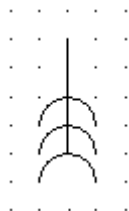


## S00458



|                       |                                            |
|-----------------------|--------------------------------------------|
| Name:                 | Multiple socket outlet (power)             |
| Status level:         | Standard                                   |
| Released on:          | 2001-07-01                                 |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-13-02             |
| Keywords:             | installations in buildings, socket outlets |
| Form:                 | Form 1                                     |
| Alternative forms:    | S00459                                     |
| Applies:              | S00457                                     |
| Shape class:          | Characters, Half-circles, Lines            |
| Function class:       | X Connecting                               |
| Application class:    | Installation diagrams                      |
| Remarks:              | The symbol is shown with three outlets.    |

## S00459



Name: Multiple socket outlet (power)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-13-03

Keywords: installations in buildings, socket outlets

Form: Form 2

Alternative forms: S00458

Applies: S00457

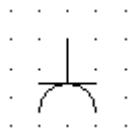
Shape class: Half-circles, Lines

Function class: X Connecting

Application class: Installation diagrams

Remarks: The symbol is shown with three outlets.

## S00460



**Name:** Socket outlet (power) with protective contact

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-13-04

**Keywords:** installations in buildings, socket outlets

**Applied in:** S00528, S01892, S01891, S01897

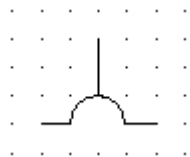
**Applies:** S00457

**Shape class:** Half-circles, Lines

**Function class:** X Connecting

**Application class:** Installation diagrams

## S00461



Name: Socket outlet (power) with sliding shutter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-13-05

Keywords: installations in buildings, socket outlets

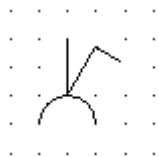
Applies: S00457

Shape class: Half-circles, Lines

Function class: X Connecting

Application class: Installation diagrams

## S00462



**Name:** Socket outlet (power) with single-pole switch

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-13-06

**Keywords:** installations in buildings, socket outlets

**Applied in:** S00463

**Applies:** S00457

**Shape class:** Half-circles, Lines

**Function class:** X Connecting

**Application class:** Installation diagrams

## S00463



**Name:** Socket outlet (power) with interlocked switch

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-13-07

**Keywords:** installations in buildings, socket outlets

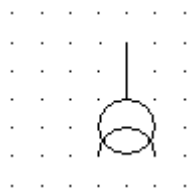
**Applies:** S00457; S00462

**Shape class:** Half-circles, Lines

**Function class:** X Connecting

**Application class:** Installation diagrams

## S00464



**Name:** Socket outlet (power) with isolating transformer

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-13-08

**Alternative names:** Shaver outlet

**Keywords:** installations in buildings, socket outlets

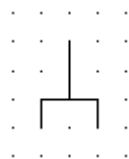
**Applies:** S00457

**Shape class:** Circles, Half-circles, Lines

**Function class:** X Connecting

**Application class:** Installation diagrams

## S00465



**Name:** Socket outlet (telecommunications), general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-13-09

**Keywords:** installations in buildings, socket outlets

**Applied in:** S01812

**Application notes:** A00109

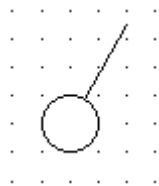
**Shape class:** Lines

**Function class:** X Connecting

**Application class:** Installation diagrams

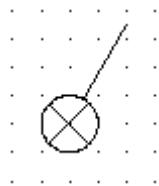


## S00466



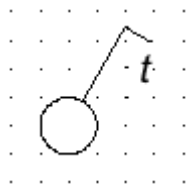
|                       |                                                                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | On/Off switch, general symbol for installation diagrams                                                                                        |
| Status level:         | Standard                                                                                                                                       |
| Released on:          | 2001-07-01                                                                                                                                     |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-14-01                                                                                                                 |
| Alternative names:    | Switch, general symbol for installation diagrams                                                                                               |
| Keywords:             | installations in buildings, switches                                                                                                           |
| Applied in:           | S01456, S01455, S01862, S01830, S00473, S00471, S01909, S01905, S01907, S01915, S00470, S01899, S00468, S00472, S01864, S00474, S00467, S00469 |
| Application notes:    | A00372, A00373                                                                                                                                 |
| Shape class:          | Circles, Lines                                                                                                                                 |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal                                                               |
| Application class:    | Installation diagrams                                                                                                                          |
| Remarks:              | In this graphical symbol number of poles is not presented                                                                                      |

## S00467



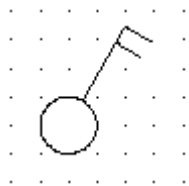
|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Switch with signal lamp, general symbol for installation diagram                 |
| Status level:         | Standard                                                                         |
| Released on:          | 2001-07-01                                                                       |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-14-02                                                   |
| Alternative names:    | Switch with pilot light, general symbol installation diagram                     |
| Keywords:             | indicator lamps, installations in buildings, switches                            |
| Applied in:           | S01907                                                                           |
| Applies:              | S00466; S00965                                                                   |
| Application notes:    | A00364, A00373                                                                   |
| Shape class:          | Circles, Lines                                                                   |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |
| Remarks:              | In this graphical symbol number of poles is not presented                        |

## S00468



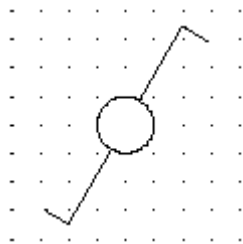
|                       |                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------|
| Name:                 | Period limiting switch, single pole                                                                                   |
| Status level:         | Standard                                                                                                              |
| Released on:          | 2001-07-01                                                                                                            |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-14-03                                                                                        |
| Keywords:             | installations in buildings, switches                                                                                  |
| Applies:              | S00466                                                                                                                |
| Shape class:          | Characters, Circles, Lines                                                                                            |
| Function class:       | K Processing signals or information, Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                                                                 |
| Remarks:              | Letter symbol "t" stands for switching function is time controlled                                                    |

## S00469



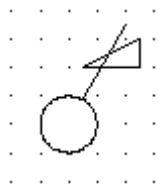
|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Two pole switch                                                                  |
| Status level:         | <b>Standard</b>                                                                  |
| Released on:          | 2001-07-01                                                                       |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-14-04                                                   |
| Keywords:             | installations in buildings, switches                                             |
| Applied in:           | S01890                                                                           |
| Applies:              | S00466                                                                           |
| Application notes:    | A00266, A00365                                                                   |
| Shape class:          | Circles, Lines                                                                   |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |

## S00471



|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Two-way single pole switch                                                       |
| Status level:         | Standard                                                                         |
| Released on:          | 2001-07-01                                                                       |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-14-06                                                   |
| Alternative names:    | Change over single pole switch                                                   |
| Keywords:             | installations in buildings, switches                                             |
| Applied in:           | S01868, S01901, S01908, S01869                                                   |
| Applies:              | S00466                                                                           |
| Application notes:    | A00266, A00366                                                                   |
| Shape class:          | Circles, Lines                                                                   |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |

## S00473



Name: Dimmer

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-14-08

Keywords: installations in buildings, switches

Applied in: S01888, S01869

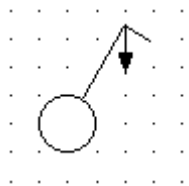
Applies: S00466

Shape class: Circles, Lines , Right-angled triangle

Function class: Q Controlled switching or varying, R Restricting or stabilising, S Converting a manual operation into a signal

Application class: Installation diagrams

## S00474



|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Pull-cord single pole switch                                                     |
| Status level:         | <b>Standard</b>                                                                  |
| Released on:          | 2001-07-01                                                                       |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-14-09                                                   |
| Keywords:             | installations in buildings, switches                                             |
| Applied in:           | S01889                                                                           |
| Applies:              | S00093; S00466                                                                   |
| Application notes:    | A00266, A00367                                                                   |
| Shape class:          | Arrows, Circles, Lines                                                           |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |

## S00475



Name: Push-button

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-14-10

Keywords: installations in buildings, switches

Applied in: S00477, S01865, S01866, S00476

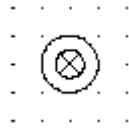
Shape class: Circles

Function class: S Converting a manual operation into a signal

Application class: Installation diagrams



## S00476



**Name:** Push-button with indicator lamp

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-14-11

**Keywords:** indicator lamps, installations in buildings, switches

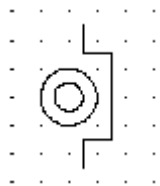
**Applies:** S00475; S00965

**Shape class:** Circles, Lines

**Function class:** P Presenting information, S Converting a manual operation into a signal

**Application class:** Installation diagrams

## S00477



**Name:** Push-button protected against unintentional operation

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-14-12

**Keywords:** installations in buildings, switches

**Applies:** S00168; S00475

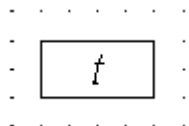
**Application notes:** A00110

**Shape class:** Circles, Lines

**Function class:** S Converting a manual operation into a signal

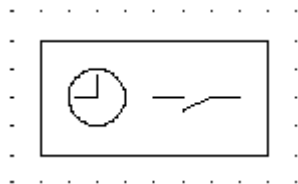
**Application class:** Installation diagrams

## S00478



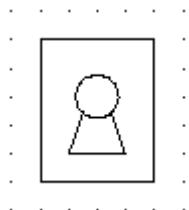
|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Timer                                                                  |
| Status level:         | Standard                                                               |
| Released on:          | 2001-07-01                                                             |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-14-13                                         |
| Alternative names:    | Period limiting equipment                                              |
| Keywords:             | installations in buildings, switches                                   |
| Applies:              | S00060; S00327                                                         |
| Shape class:          | Characters, Squares                                                    |
| Function class:       | K Processing signals or information, Q Controlled switching or varying |
| Application class:    | Installation diagrams                                                  |

## S00479



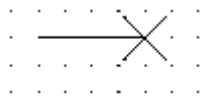
|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Time switch                                                            |
| Status level:         | Standard                                                               |
| Released on:          | 2001-07-01                                                             |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-14-14                                         |
| Keywords:             | installations in buildings, switches                                   |
| Applied in:           | S01888                                                                 |
| Applies:              | S00060; S00327; S00959                                                 |
| Shape class:          | Depicting shapes, Squares                                              |
| Function class:       | K Processing signals or information, Q Controlled switching or varying |
| Application class:    | Installation diagrams                                                  |

## S00480



|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Key-operated switch                                                              |
| Status level:         | <b>Standard</b>                                                                  |
| Released on:          | 2001-07-01                                                                       |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-14-15                                                   |
| Alternative names:    | Watchman's system device                                                         |
| Keywords:             | installations in buildings, locks, switches                                      |
| Applies:              | S00060; S00179                                                                   |
| Shape class:          | Depicting shapes, Squares                                                        |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |

## S00481



Name: Lighting outlet position

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-15-01

Keywords: installations in buildings, lightning outlets and fittings

Applied in: S01889, S01886, S00482, S00491

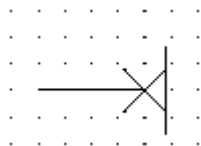
Shape class: Lines

Function class: U Keeping in defined position, X Connecting

Application class: Installation diagrams

Remarks: The symbol is shown with wiring.

## S00482



Name: Lighting outlet on wall

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-15-02

Keywords: installations in buildings, lightning outlets and fittings

Applies: S00481

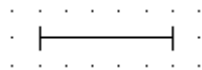
Shape class: Lines

Function class: U Keeping in defined position, X Connecting

Application class: Installation diagrams

Remarks: The symbol is shown with wiring from the left.

## S00484



**Name:** Luminaire, general symbol; Fluorescent lamp, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-15-04

**Keywords:** installations in buildings, lamps, lightning outlets and fittings

**Applied in:** S01861, S00485, S00486, S01889, S01886

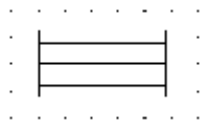
**Shape class:** Lines

**Function class:** E Providing radiant or thermal energy

**Application class:** Installation diagrams

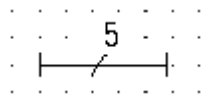


## S00485



|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| Name:                 | Luminaire with many fluorescent tubes                             |
| Status level:         | Standard                                                          |
| Released on:          | 2001-07-01                                                        |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-15-05                                    |
| Keywords:             | installations in buildings, lamps, lightning outlets and fittings |
| Form:                 | Form 1                                                            |
| Alternative forms:    | S00486                                                            |
| Applies:              | S00484                                                            |
| Shape class:          | Lines                                                             |
| Function class:       | E Providing radiant or thermal energy                             |
| Application class:    | Installation diagrams                                             |
| Remarks:              | Shown with three fluorescent tubes.                               |

## S00486



|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| Name:                 | Luminaire with many fluorescent tubes                             |
| Status level:         | Standard                                                          |
| Released on:          | 2001-07-01                                                        |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-15-06                                    |
| Keywords:             | installations in buildings, lamps, lightning outlets and fittings |
| Form:                 | Form 2                                                            |
| Alternative forms:    | S00485                                                            |
| Applies:              | S00484                                                            |
| Shape class:          | Lines                                                             |
| Function class:       | E Providing radiant or thermal energy                             |
| Application class:    | Installation diagrams                                             |
| Remarks:              | Shown with five fluorescent tubes.                                |

## S00487



Name: Projector, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-15-07

Keywords: installations in buildings, lamps, lightning outlets and fittings

Applied in: S00488, S00489

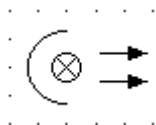
Applies: S00965

Shape class: Circles, Half-circles, Lines

Function class: E Providing radiant or thermal energy

Application class: Installation diagrams

## S00488



Name: Spot light

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-15-08

Keywords: installations in buildings, lamps, lightning outlets and fittings

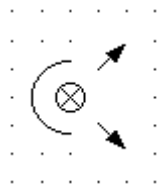
Applies: S00127; S00487

Shape class: Arrows, Circles, Half-circles, Lines

Function class: E Providing radiant or thermal energy

Application class: Installation diagrams

## S00489



Name: Flood light

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-15-09

Keywords: installations in buildings, lamps, lightning outlets and fittings

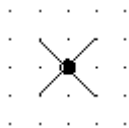
Applies: S00127; S00487

Shape class: Arrows, Circles, Half-circles, Lines

Function class: E Providing radiant or thermal energy

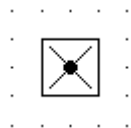
Application class: Installation diagrams

## S00491



|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| Name:                 | Emergency lighting luminaire on special circuit                   |
| Status level:         | Standard                                                          |
| Released on:          | 2001-07-01                                                        |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-15-11                                    |
| Keywords:             | installations in buildings, lamps, lightning outlets and fittings |
| Applied in:           | S00492                                                            |
| Applies:              | S00481                                                            |
| Shape class:          | Dots (points), Lines                                              |
| Function class:       | E Providing radiant or thermal energy                             |
| Application class:    | Installation diagrams                                             |

## S00492



**Name:** Self-contained emergency lighting luminaire

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-15-12

**Keywords:** installations in buildings, lamps, lightning outlets and fittings

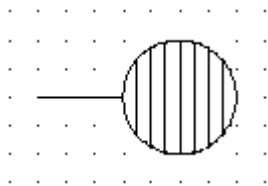
**Applies:** S00059; S00491

**Shape class:** Dots (points), Lines , Squares

**Function class:** E Providing radiant or thermal energy

**Application class:** Installation diagrams

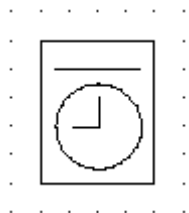
## S00493



|                       |                                       |
|-----------------------|---------------------------------------|
| Name:                 | Water heater                          |
| Status level:         | Standard                              |
| Released on:          | 2001-07-01                            |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-16-01        |
| Keywords:             | heaters, installations in buildings   |
| Applies:              | S00061                                |
| Shape class:          | Circles, Lines                        |
| Function class:       | E Providing radiant or thermal energy |
| Application class:    | Installation diagrams                 |
| Remarks:              | The symbol is shown with wiring.      |



## S00495



**Name:** Time clock, time recorder

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-16-03

**Keywords:** clocks, installations in buildings

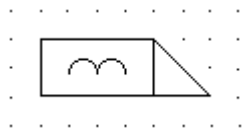
**Applies:** S00060; S00138; S00959

**Shape class:** Depicting shapes, Rectangles

**Function class:** K Processing signals or information, P Presenting information

**Application class:** Installation diagrams

## S00496



Name: Electric lock

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-16-04

Keywords: installations in buildings, locks

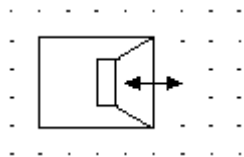
Applies: S00583

Shape class: Depicting shapes, Rectangles, Right-angled triangle

Function class: Q Controlled switching or varying, U Keeping in defined position

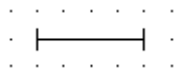
Application class: Installation diagrams

## S00497



|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| Name:                 | Audio intercommunication equipment                        |
| Status level:         | Standard                                                  |
| Released on:          | 2001-07-01                                                |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-16-05                            |
| Keywords:             | entry phones, installations in buildings                  |
| Applies:              | S00101; S01060                                            |
| Shape class:          | Arrows, Depicting shapes, Rectangles                      |
| Function class:       | B Converting variable to signal, P Presenting information |
| Application class:    | Installation diagrams                                     |
| Remarks:              | For example an entry phone.                               |

## S00498



Name: Straight section, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-17-01

Keywords: trunking systems

Applied in: S00532, S00508, S00527, S00512, S00530, S00499, S00521, S00506, S00507, S00513, S00514, S00502, S00518, S00509, S00520, S00525, S00531, S00504, S00503, S00516, S00529, S00522, S00505, S00515

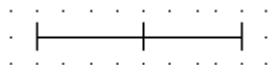
Application notes: A00228

Shape class: Lines

Function class: W Guiding or transporting

Application class: Installation diagrams, Overview diagrams

## S00499



Name: Assembled straight section

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-17-02

Keywords: trunking systems

Applies: S00498

Application notes: A00228

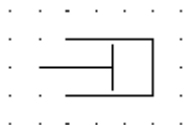
Shape class: Lines

Function class: W Guiding or transporting

Application class: Installation diagrams, Overview diagrams

Remarks: The symbol shown is two assembled sections.

## S00500



Name: End cover

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-17-03

Keywords: trunking systems

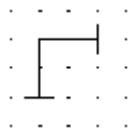
Application notes: A00228

Shape class: Lines

Function class: W Guiding or transporting

Application class: Installation diagrams, Overview diagrams

**S00501**



Name: Elbow

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-17-04

Keywords: trunking systems

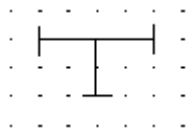
Application notes: A00228

Shape class: Lines

Function class: W Guiding or transporting

Application class: Installation diagrams, Overview diagrams

## S00502



Name: Tee (three way connection)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-17-05

Keywords: trunking systems

Applies: S00019; S00498

Application notes: A00228

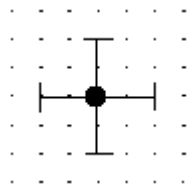
Shape class: Lines

Function class: W Guiding or transporting

Application class: Installation diagrams, Overview diagrams

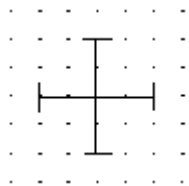


## S00503



|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Cross (four way connection)              |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-06           |
| Keywords:             | trunking systems                         |
| Applies:              | S00022; S00498                           |
| Application notes:    | A00228                                   |
| Shape class:          | Dots (points), Lines                     |
| Function class:       | W Guiding or transporting                |
| Application class:    | Installation diagrams, Overview diagrams |

## S00504



Name: Crossing of two systems without connection

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-17-07

Keywords: trunking systems

Applied in: S00505

Applies: S00498

Application notes: A00228

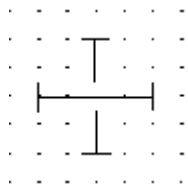
Shape class: Lines

Function class: W Guiding or transporting

Application class: Installation diagrams, Overview diagrams

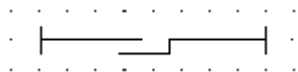
Remarks: For example two systems at different levels.

## S00505



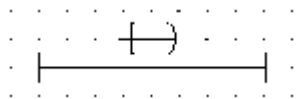
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Crossing of two independent systems      |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-08           |
| Keywords:             | trunking systems                         |
| Applies:              | S00498; S00504                           |
| Application notes:    | A00228                                   |
| Shape class:          | Lines                                    |
| Function class:       | W Guiding or transporting                |
| Application class:    | Installation diagrams, Overview diagrams |

## S00506



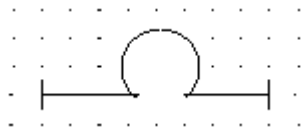
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Straight section adjustable in length    |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-09           |
| Keywords:             | trunking systems                         |
| Applies:              | S00498                                   |
| Application notes:    | A00228                                   |
| Shape class:          | Lines                                    |
| Function class:       | W Guiding or transporting                |
| Application class:    | Installation diagrams, Overview diagrams |

## S00507



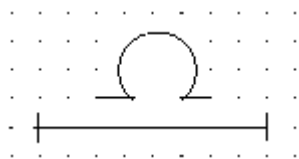
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Straight section internally anchored     |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-10           |
| Keywords:             | trunking systems                         |
| Applies:              | S00424; S00498                           |
| Application notes:    | A00228                                   |
| Shape class:          | Depicting shapes, Lines                  |
| Function class:       | W Guiding or transporting                |
| Application class:    | Installation diagrams, Overview diagrams |

## S00508



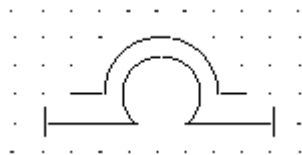
|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| Name:                 | Expansion unit for enclosure                                        |
| Status level:         | Standard                                                            |
| Released on:          | 2001-07-01                                                          |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-11                                      |
| Keywords:             | trunking systems                                                    |
| Applied in:           | S00510                                                              |
| Applies:              | S00498                                                              |
| Application notes:    | A00228                                                              |
| Shape class:          | Circle segments, Lines                                              |
| Function class:       | W Guiding or transporting                                           |
| Application class:    | Installation diagrams, Overview diagrams                            |
| Remarks:              | This unit accomodates mechanical movement of the enclosure or tray. |

## S00509



|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| Name:                 | Expansion unit for conductors                               |
| Status level:         | Standard                                                    |
| Released on:          | 2001-07-01                                                  |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-12                              |
| Keywords:             | trunking systems                                            |
| Applied in:           | S00510                                                      |
| Applies:              | S00498                                                      |
| Application notes:    | A00228                                                      |
| Shape class:          | Circle segments, Depicting shapes, Lines                    |
| Function class:       | W Guiding or transporting                                   |
| Application class:    | Installation diagrams, Overview diagrams                    |
| Remarks:              | This unit accommodates thermal expansion of the conductors. |

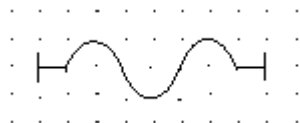
## S00510



|                       |                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------|
| Name:                 | Expansion unit for enclosure and conductors                                                                    |
| Status level:         | Standard                                                                                                       |
| Released on:          | 2001-07-01                                                                                                     |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-13                                                                                 |
| Keywords:             | trunking systems                                                                                               |
| Applies:              | S00508; S00509                                                                                                 |
| Application notes:    | A00228                                                                                                         |
| Shape class:          | Circle segments, Depicting shapes, Lines                                                                       |
| Function class:       | W Guiding or transporting                                                                                      |
| Application class:    | Installation diagrams, Overview diagrams                                                                       |
| Remarks:              | This unit accommodates mechanical movement and expansion of both the enclosure or the tray and the conductors. |



## S00511



Name: Flexible unit

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-17-14

Keywords: trunking systems

Application notes: A00228

Shape class: Depicting shapes, Lines

Function class: W Guiding or transporting

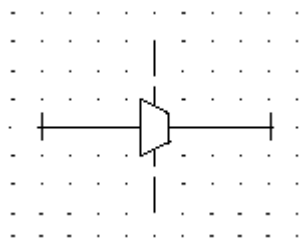
Application class: Installation diagrams, Overview diagrams

## S00512



|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Reduction unit                           |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-15           |
| Keywords:             | trunking systems                         |
| Applies:              | S00498; S01282; S01283                   |
| Application notes:    | A00228                                   |
| Shape class:          | Lines , Trapezoids                       |
| Function class:       | W Guiding or transporting                |
| Application class:    | Installation diagrams, Overview diagrams |

## S00513



**Name:** Straight section with internal pressure tight barrier

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-17-16

**Keywords:** trunking systems

**Applies:** S00056; S00498

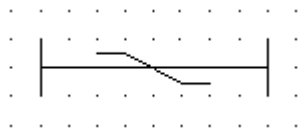
**Application notes:** A00012, A00228

**Shape class:** Lines , Trapezoids

**Function class:** W Guiding or transporting

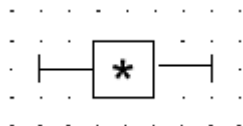
**Application class:** Installation diagrams, Overview diagrams

## S00514



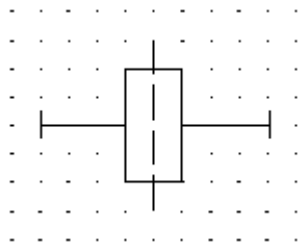
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Phase transposition unit                 |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-17           |
| Keywords:             | trunking systems                         |
| Applies:              | S00024; S00498                           |
| Application notes:    | A00228                                   |
| Shape class:          | Lines                                    |
| Function class:       | W Guiding or transporting                |
| Application class:    | Installation diagrams, Overview diagrams |

## S00515



|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Equipment box                            |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-18           |
| Keywords:             | trunking systems                         |
| Applied in:           | S00527, S00526, S00520, S00519           |
| Applies:              | S00059; S00498                           |
| Application notes:    | A00113, A00228                           |
| Shape class:          | Lines , Squares                          |
| Function class:       | W Guiding or transporting, X Connecting  |
| Application class:    | Installation diagrams, Overview diagrams |

## S00516



**Name:** Straight section with internal fire barrier

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-17-19

**Keywords:** trunking systems

**Applies:** S00060; S00498

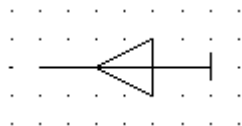
**Application notes:** A00228

**Shape class:** Lines , Rectangles

**Function class:** W Guiding or transporting

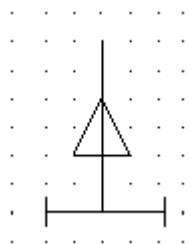
**Application class:** Installation diagrams, Overview diagrams

## S00517



|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | End feeder unit                                |
| Status level:         | Standard                                       |
| Released on:          | 2001-07-01                                     |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-20                 |
| Keywords:             | trunking systems                               |
| Applied in:           | S00519                                         |
| Application notes:    | A00228                                         |
| Shape class:          | Equilateral triangles, Lines                   |
| Function class:       | W Guiding or transporting                      |
| Application class:    | Installation diagrams, Overview diagrams       |
| Remarks:              | The symbol is shown with supply from the left. |

## S00518



Name: Central feeder unit

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-11 (ed.2.0) 11-17-21

Keywords: trunking systems

Applied in: S00520

Applies: S00498

Application notes: A00228

Shape class: Equilateral triangles, Lines

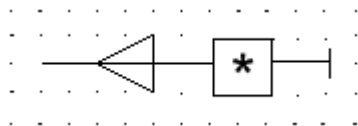
Function class: W Guiding or transporting

Application class: Installation diagrams, Overview diagrams

Remarks: The symbol is shown with supply from the top.

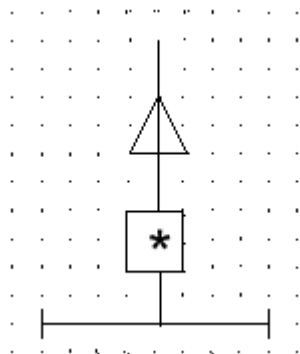


## S00519



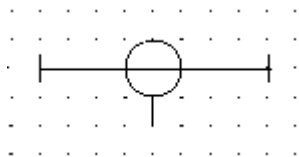
|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | End feeder unit with equipment box             |
| Status level:         | Standard                                       |
| Released on:          | 2001-07-01                                     |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-22                 |
| Keywords:             | trunking systems                               |
| Applies:              | S00059; S00515; S00517                         |
| Application notes:    | A00113, A00228                                 |
| Shape class:          | Equilateral triangles, Lines , Squares         |
| Function class:       | W Guiding or transporting, X Connecting        |
| Application class:    | Installation diagrams, Overview diagrams       |
| Remarks:              | The symbol is shown with supply from the left. |

## S00520



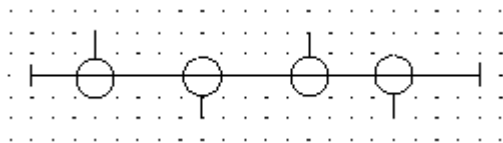
|                       |                                               |
|-----------------------|-----------------------------------------------|
| Name:                 | Central feeder unit with equipment box        |
| Status level:         | Standard                                      |
| Released on:          | 2001-07-01                                    |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-23                |
| Keywords:             | trunking systems                              |
| Applies:              | S00498; S00515; S00518                        |
| Application notes:    | A00113, A00228                                |
| Shape class:          | Equilateral triangles, Lines , Squares        |
| Function class:       | W Guiding or transporting, X Connecting       |
| Application class:    | Installation diagrams, Overview diagrams      |
| Remarks:              | The symbol is shown with supply from the top. |

## S00521



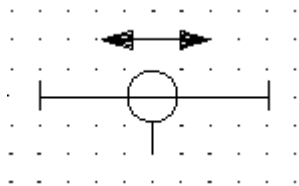
|                       |                                             |
|-----------------------|---------------------------------------------|
| Name:                 | Straight section with fixed tap-off         |
| Status level:         | Standard                                    |
| Released on:          | 2001-07-01                                  |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-24              |
| Keywords:             | trunking systems                            |
| Applied in:           | S00524, S00528, S00526, S00523, S00522      |
| Applies:              | S00453; S00498                              |
| Application notes:    | A00228                                      |
| Shape class:          | Circles, Lines                              |
| Function class:       | W Guiding or transporting, X Connecting     |
| Application class:    | Installation diagrams, Overview diagrams    |
| Remarks:              | The symbol is shown with tap-off downwards. |

## S00522



|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| Name:                 | Straight section with several tap-offs                    |
| Status level:         | Standard                                                  |
| Released on:          | 2001-07-01                                                |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-25                            |
| Keywords:             | trunking systems                                          |
| Applies:              | S00453; S00498; S00521                                    |
| Application notes:    | A00228                                                    |
| Shape class:          | Circles, Lines                                            |
| Function class:       | W Guiding or transporting, X Connecting                   |
| Application class:    | Installation diagrams, Overview diagrams                  |
| Remarks:              | The symbol is shown with four tap-offs, two on each side. |

## S00523



**Name:** Straight section with continuously movable tap-off

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-17-26

**Keywords:** trunking systems

**Applies:** S00094; S00521

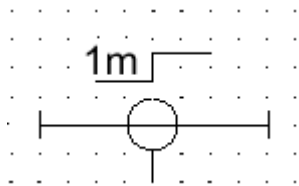
**Application notes:** A00228

**Shape class:** Arrows, Circles, Lines

**Function class:** W Guiding or transporting, X Connecting

**Application class:** Installation diagrams, Overview diagrams

## S00524



**Name:** Straight section with tap-off adjustable in steps

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-17-27

**Keywords:** trunking systems

**Applies:** S00087; S00521

**Application notes:** A00228

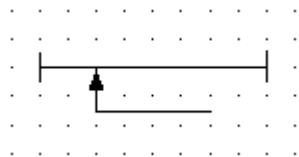
**Shape class:** Characters, Circles, Lines

**Function class:** W Guiding or transporting, X Connecting

**Application class:** Installation diagrams, Overview diagrams

**Remarks:** The symbol is shown with 1 meter steps.

## S00525



**Name:** Straight section with tap-off by movable contact

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-17-28

**Keywords:** trunking systems

**Applies:** S00211; S00498

**Application notes:** A00228

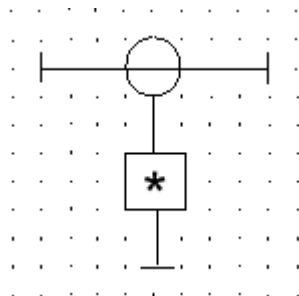
**Shape class:** Arrows, Lines

**Function class:** W Guiding or transporting, X Connecting

**Application class:** Installation diagrams, Overview diagrams

**Remarks:** For example sliding contact.

## S00526



**Name:** Straight section with fixed tap-off with equipment box

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-17-29

**Keywords:** trunking systems

**Applies:** S00515; S00521

**Application notes:** A00113, A00228

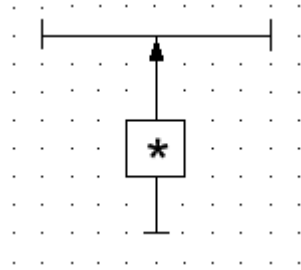
**Shape class:** Circles, Lines , Squares

**Function class:** W Guiding or transporting, X Connecting

**Application class:** Installation diagrams, Overview diagrams



## S00527



**Name:** Straight section with adjustable tap-off with equipment box

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-17-30

**Keywords:** trunking systems

**Applies:** S00081; S00498; S00515

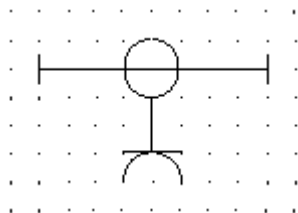
**Application notes:** A00113, A00228

**Shape class:** Arrows, Lines , Squares

**Function class:** W Guiding or transporting, X Connecting

**Application class:** Installation diagrams, Overview diagrams

## S00528



**Name:** Straight section with fixed tap-off having socket-outlet with protective contact.

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-17-31

**Keywords:** trunking systems

**Applies:** S00460; S00521

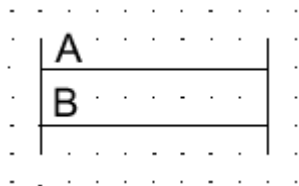
**Application notes:** A00228

**Shape class:** Circles, Half-circles, Lines

**Function class:** W Guiding or transporting, X Connecting

**Application class:** Installation diagrams, Overview diagrams

## S00529



**Name:** Straight section consisting of two wiring systems

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-17-32

**Keywords:** trunking systems

**Alternative forms:** S00530

**Applies:** S00498

**Application notes:** A00228

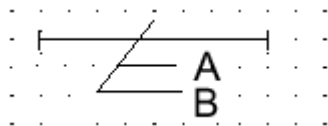
**Shape class:** Characters, Lines

**Function class:** W Guiding or transporting

**Application class:** Installation diagrams, Overview diagrams

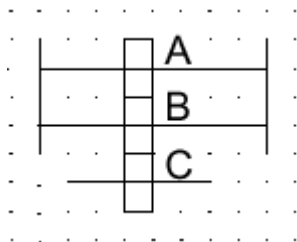
**Remarks:** The two wiring systems are in this symbol called A and B.

## S00530



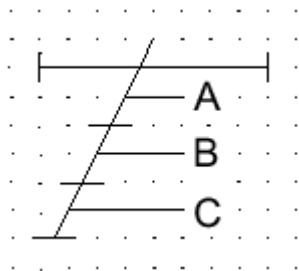
|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| Name:                 | Straight section consisting of two wiring systems         |
| Status level:         | Standard                                                  |
| Released on:          | 2001-07-01                                                |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-33                            |
| Keywords:             | trunking systems                                          |
| Form:                 | Simplified form                                           |
| Alternative forms:    | S00529                                                    |
| Applies:              | S00498                                                    |
| Application notes:    | A00228                                                    |
| Shape class:          | Characters, Lines                                         |
| Function class:       | W Guiding or transporting                                 |
| Application class:    | Installation diagrams, Overview diagrams                  |
| Remarks:              | The two wiring systems are in this symbol called A and B. |

## S00531



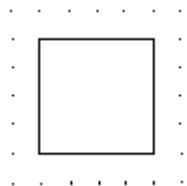
|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Straight section consisting of several separate compartments                                                                                           |
| Status level:         | Standard                                                                                                                                               |
| Released on:          | 2001-07-01                                                                                                                                             |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-34                                                                                                                         |
| Keywords:             | trunking systems                                                                                                                                       |
| Alternative forms:    | S00532                                                                                                                                                 |
| Applies:              | S00001; S00498                                                                                                                                         |
| Application notes:    | A00228                                                                                                                                                 |
| Shape class:          | Characters, Lines                                                                                                                                      |
| Function class:       | W Guiding or transporting                                                                                                                              |
| Application class:    | Installation diagrams, Overview diagrams                                                                                                               |
| Remarks:              | The symbol is shown with three compartments, one compartment for wiring system A, one for wiring system B and one for on-site installation of cable C. |

## S00532



|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Straight section consisting of several separate compartments                                                                                           |
| Status level:         | Standard                                                                                                                                               |
| Released on:          | 2001-07-01                                                                                                                                             |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-17-35                                                                                                                         |
| Keywords:             | trunking systems                                                                                                                                       |
| Form:                 | Simplified form                                                                                                                                        |
| Alternative forms:    | S00531                                                                                                                                                 |
| Applies:              | S00498                                                                                                                                                 |
| Application notes:    | A00228                                                                                                                                                 |
| Shape class:          | Characters, Lines                                                                                                                                      |
| Function class:       | W Guiding or transporting                                                                                                                              |
| Application class:    | Installation diagrams, Overview diagrams                                                                                                               |
| Remarks:              | The symbol is shown with three compartments, one compartment for wiring system A, one for wiring system B and one for on-site installation of cable C. |

## S00533



**Name:** Aeronautical ground light, elevated, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-01

**Keywords:** airport lights indicators, outdoor installations

**Applied in:** S00535, S00539, S00537

**Applies:** S00059

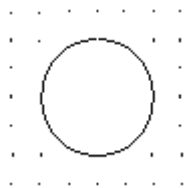
**Application notes:** A00114, A00116, A00119

**Shape class:** Squares

**Function class:** E Providing radiant or thermal energy

**Application class:** Installation diagrams

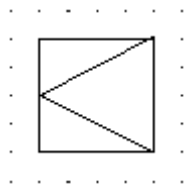
## S00534



|                       |                                                    |
|-----------------------|----------------------------------------------------|
| Name:                 | Aeronautical ground light, surface, general symbol |
| Status level:         | <b>Standard</b>                                    |
| Released on:          | 2001-07-01                                         |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-18-02                     |
| Keywords:             | airport lights indicators, outdoor installations   |
| Applied in:           | S00542, S00536, S00539, S00538, S00540, S00541     |
| Applies:              | S00061                                             |
| Application notes:    | A00114, A00116, A00119                             |
| Shape class:          | Circles                                            |
| Function class:       | E Providing radiant or thermal energy              |
| Application class:    | Installation diagrams                              |

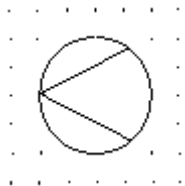


## S00535



|                       |                                                                            |
|-----------------------|----------------------------------------------------------------------------|
| Name:                 | Aeronautical ground light, white colour and uni-directional beam, elevated |
| Status level:         | Standard                                                                   |
| Released on:          | 2001-07-01                                                                 |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-18-03                                             |
| Keywords:             | airport lights indicators, outdoor installations                           |
| Applied in:           | S00547, S00545, S00543                                                     |
| Applies:              | S00533                                                                     |
| Application notes:    | A00114, A00116                                                             |
| Shape class:          | Equilateral triangles, Right-angled triangle, Squares                      |
| Function class:       | E Providing radiant or thermal energy                                      |
| Application class:    | Installation diagrams                                                      |

## S00536



**Name:** Aeronautical ground light, white colour and uni-directional beam, surface

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-04

**Keywords:** airport lights indicators, outdoor installations

**Applied in:** S00546

**Applies:** S00534

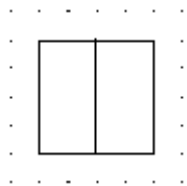
**Application notes:** A00114, A00116

**Shape class:** Circles, Lines

**Function class:** E Providing radiant or thermal energy

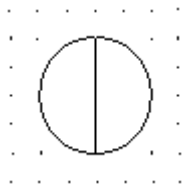
**Application class:** Installation diagrams

## S00537



|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| Name:                 | Aeronautical ground light, white/white colour and bi-directional beam, elevated |
| Status level:         | Standard                                                                        |
| Released on:          | 2001-07-01                                                                      |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-18-05                                                  |
| Keywords:             | airport lights indicators, outdoor installations                                |
| Applied in:           | S00544                                                                          |
| Applies:              | S00533                                                                          |
| Application notes:    | A00114, A00116                                                                  |
| Shape class:          | Rectangles, Squares                                                             |
| Function class:       | E Providing radiant or thermal energy                                           |
| Application class:    | Installation diagrams                                                           |

## S00538



**Name:** Aeronautical ground light, white/white colour and bi-directional beam, surface

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-06

**Keywords:** airport lights indicators, outdoor installations

**Applies:** S00534

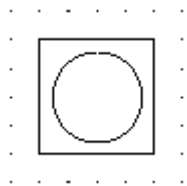
**Application notes:** A00114, A00116

**Shape class:** Circles, Lines

**Function class:** E Providing radiant or thermal energy

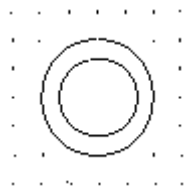
**Application class:** Installation diagrams

## S00539



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Aeronautical ground light, white colour and omni-directional beam, elevated |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-18-07                                              |
| Keywords:             | airport lights indicators, outdoor installations                            |
| Applied in:           | S00550, S00544, S00551, S00543                                              |
| Applies:              | S00533; S00534                                                              |
| Application notes:    | A00114, A00116                                                              |
| Shape class:          | Circles, Squares                                                            |
| Function class:       | E Providing radiant or thermal energy                                       |
| Application class:    | Installation diagrams                                                       |

## S00540



**Name:** Aeronautical ground light, white colour and omni-directional beam, surface

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-08

**Keywords:** airport lights indicators, outdoor installations

**Applies:** S00534

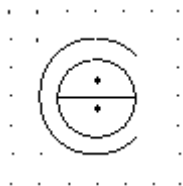
**Application notes:** A00114, A00116

**Shape class:** Circles

**Function class:** E Providing radiant or thermal energy

**Application class:** Installation diagrams

## S00541



**Name:** Curve light, green/green colour and bi-directional beam, surface

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-09

**Keywords:** airport lights indicators, outdoor installations

**Applies:** S00534

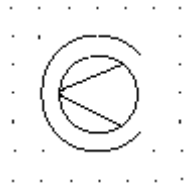
**Application notes:** A00114, A00116

**Shape class:** Circle segments, Circles, Dots (points), Lines

**Function class:** E Providing radiant or thermal energy

**Application class:** Installation diagrams

## S00542



**Name:** Curve light, white colour and uni-directional beam, surface

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-10

**Keywords:** airport lights indicators, outdoor installations

**Applies:** S00534

**Application notes:** A00114, A00116

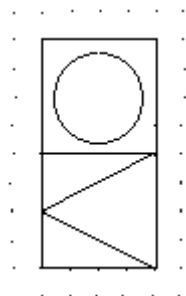
**Shape class:** Circle segments, Circles, Lines

**Function class:** E Providing radiant or thermal energy

**Application class:** Installation diagrams

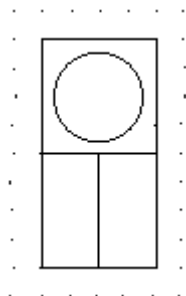


## S00543



|                              |                                                                                                               |
|------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Aeronautical ground light, white omni-directional beam on top, and white uni-directional beam below, elevated |
| <b>Status level:</b>         | <b>Standard</b>                                                                                               |
| <b>Released on:</b>          | 2001-07-01                                                                                                    |
| <b>Earlier published in:</b> | IEC 60617-11 (ed.2.0) 11-18-11                                                                                |
| <b>Keywords:</b>             | airport lights indicators, outdoor installations                                                              |
| <b>Applies:</b>              | S00535; S00539                                                                                                |
| <b>Application notes:</b>    | A00114, A00116                                                                                                |
| <b>Shape class:</b>          | Circles, Equilateral triangles, Right-angled triangle, Squares                                                |
| <b>Function class:</b>       | E Providing radiant or thermal energy                                                                         |
| <b>Application class:</b>    | Installation diagrams                                                                                         |

## S00544



**Name:** Aeronautical ground light, white omni-directional beam on top, and white/white bi-directional beam below, elevated

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-12

**Keywords:** airport lights indicators, outdoor installations

**Applies:** S00537; S00539

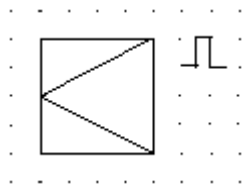
**Application notes:** A00114, A00116

**Shape class:** Circles, Rectangles, Squares

**Function class:** E Providing radiant or thermal energy

**Application class:** Installation diagrams

## S00545



**Name:** Aeronautical ground light, white flashing uni-directional beam, elevated

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-13

**Keywords:** airport lights indicators, outdoor installations

**Applies:** S00132; S00535

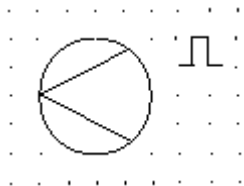
**Application notes:** A00114, A00116

**Shape class:** Equilateral triangles, Lines , Right-angled triangle, Squares

**Function class:** E Providing radiant or thermal energy

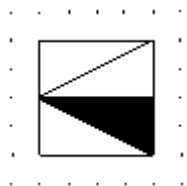
**Application class:** Installation diagrams

## S00546



|                       |                                                                         |
|-----------------------|-------------------------------------------------------------------------|
| Name:                 | Aeronautical ground light, white flashing uni-directional beam, surface |
| Status level:         | Standard                                                                |
| Released on:          | 2001-07-01                                                              |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-18-14                                          |
| Keywords:             | airport lights indicators, outdoor installations                        |
| Applies:              | S00132; S00536                                                          |
| Application notes:    | A00114, A00116                                                          |
| Shape class:          | Circles, Lines                                                          |
| Function class:       | E Providing radiant or thermal energy                                   |
| Application class:    | Installation diagrams                                                   |

## S00547



**Name:** Precision approach path indicator white/red uni-directional beam

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-15

**Keywords:** airport lights indicators, outdoor installations

**Applies:** S00535

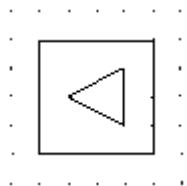
**Application notes:** A00114, A00116

**Shape class:** Right-angled triangle, Squares

**Function class:** E Providing radiant or thermal energy

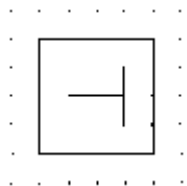
**Application class:** Installation diagrams

## S00548



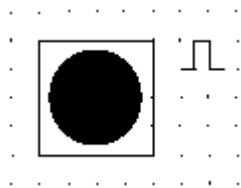
|                       |                                                  |
|-----------------------|--------------------------------------------------|
| Name:                 | Wind direction indicator                         |
| Status level:         | Standard                                         |
| Released on:          | 2001-07-01                                       |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-18-16                   |
| Keywords:             | airport lights indicators, outdoor installations |
| Applies:              | S00059                                           |
| Application notes:    | A00114                                           |
| Shape class:          | Equilateral triangles, Squares                   |
| Function class:       | P Presenting information                         |
| Application class:    | Installation diagrams                            |

## S00549



|                       |                                                  |
|-----------------------|--------------------------------------------------|
| Name:                 | Landing direction indicator                      |
| Status level:         | Standard                                         |
| Released on:          | 2001-07-01                                       |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-18-17                   |
| Keywords:             | airport lights indicators, outdoor installations |
| Applies:              | S00059                                           |
| Application notes:    | A00114                                           |
| Shape class:          | Lines , Squares                                  |
| Function class:       | P Presenting information                         |
| Application class:    | Installation diagrams                            |

## S00550



**Name:** Obstacle light; Hazard light; Red flashing omni-directional beam

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-18

**Keywords:** airport lights indicators, outdoor installations

**Applies:** S00132; S00539

**Application notes:** A00114, A00116

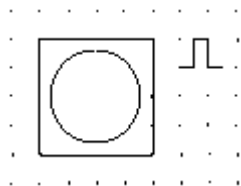
**Shape class:** Circles, Lines , Squares

**Function class:** E Providing radiant or thermal energy

**Application class:** Installation diagrams



## S00551



**Name:** Aeronautical ground light, white flashing omni-directional beam

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-19

**Keywords:** airport lights indicators, outdoor installations

**Applies:** S00132; S00539

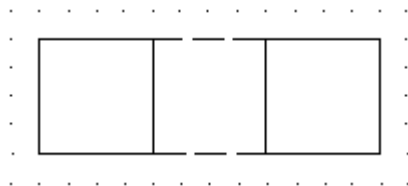
**Application notes:** A00114, A00116

**Shape class:** Circles, Lines , Squares

**Function class:** E Providing radiant or thermal energy

**Application class:** Installation diagrams

## S00552



**Name:** Warning sign, general symbol; Guidance sign, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-11 (ed.2.0) 11-18-20

**Keywords:** airport lights indicators, outdoor installations

**Applied in:** S00553, S00554

**Applies:** S00059

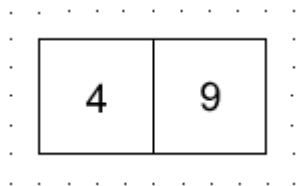
**Application notes:** A00114

**Shape class:** Squares

**Function class:** P Presenting information

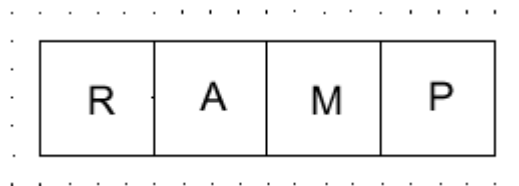
**Application class:** Installation diagrams

## S00553



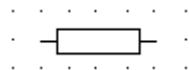
|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| Name:                 | Distance warning sign                               |
| Status level:         | Standard                                            |
| Released on:          | 2001-07-01                                          |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-18-21                      |
| Keywords:             | airport lights indicators, outdoor installations    |
| Applies:              | S00552                                              |
| Application notes:    | A00114                                              |
| Shape class:          | Characters, Squares                                 |
| Function class:       | P Presenting information                            |
| Application class:    | Installation diagrams                               |
| Remarks:              | Distance warning sign shown "4000/9000 feet" shown. |

## S00554



|                       |                                                  |
|-----------------------|--------------------------------------------------|
| Name:                 | Taxiing guidance sign                            |
| Status level:         | Standard                                         |
| Released on:          | 2001-07-01                                       |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-18-22                   |
| Keywords:             | airport lights indicators, outdoor installations |
| Applies:              | S00552                                           |
| Application notes:    | A00114                                           |
| Shape class:          | Characters, Squares                              |
| Function class:       | P Presenting information                         |
| Application class:    | Installation diagrams                            |
| Remarks:              | Taxiing guidance sign "RAMP" shown.              |

## S00555



Name: Resistor, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-01-01

Keywords: resistors

Applied in: S01740, S01799, S00558, S00689, S00564, S00560, S00559, S00684, S00562, S00563, S00565, S00566, S01112, S00561, S00557

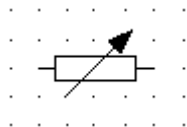
Replacing: S01355

Shape class: Rectangles

Function class: R Restricting or stabilising

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00557



Name: Resistor, adjustable

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-01-03

Keywords: resistors

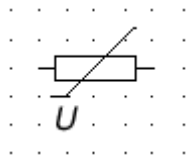
Applies: S00081; S00555

Shape class: Arrows, Rectangles

Function class: R Restricting or stabilising

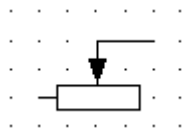
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00558



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Resistor, voltage dependent                                                                                      |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-01-04                                                                                    |
| Alternative names:    | Varistor                                                                                                         |
| Keywords:             | resistors, varistors                                                                                             |
| Applies:              | S00084; S00555                                                                                                   |
| Shape class:          | Lines , Rectangles                                                                                               |
| Function class:       | R Restricting or stabilising                                                                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

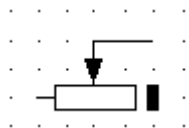
## S00559



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Resistor with movable contact                                                                                    |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-01-05                                                                                    |
| Keywords:             | resistors                                                                                                        |
| Applies:              | S00211; S00555                                                                                                   |
| Shape class:          | Arrows, Lines , Rectangles                                                                                       |
| Function class:       | R Restricting or stabilising                                                                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |



## S00560



**Name:** Resistor with movable contact and off position

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-01-06

**Keywords:** resistors

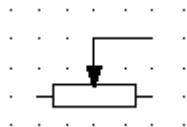
**Applies:** S00211; S00555

**Shape class:** Arrows, Lines , Rectangles

**Function class:** R Restricting or stabilising

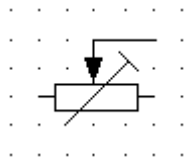
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00561



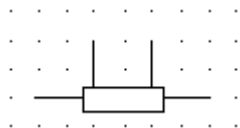
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Potentiometer with movable contact                                                                               |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-01-07                                                                                    |
| Keywords:             | potentiometers, resistors                                                                                        |
| Applies:              | S00211; S00555                                                                                                   |
| Shape class:          | Lines , Rectangles                                                                                               |
| Function class:       | R Restricting or stabilising                                                                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00562



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Potentiometer with movable contact and pre-set adjustment                                                        |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-01-08                                                                                    |
| Keywords:             | potentiometers, resistors                                                                                        |
| Applies:              | S00085; S00211; S00555                                                                                           |
| Shape class:          | Arrows, Lines , Rectangles                                                                                       |
| Function class:       | R Restricting or stabilising                                                                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00563



Name: Resistor with fixed tapplings

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-01-09

Keywords: resistors

Applies: S00555

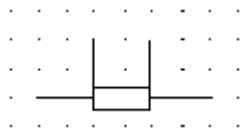
Shape class: Lines , Rectangles

Function class: R Restricting or stabilising

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

Remarks: The symbol is shown with two tapplings.

## S00564



**Name:** Resistor with separate current and voltage terminals

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-01-10

**Alternative names:** Shunt

**Keywords:** resistors, shunts

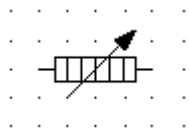
**Applies:** S00555

**Shape class:** Lines , Rectangles

**Function class:** R Restricting or stabilising

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00565



**Name:** Carbon-pile resistor

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-01-11

**Keywords:** resistors

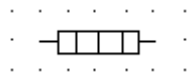
**Applies:** S00081; S00555

**Shape class:** Arrows, Lines , Rectangles

**Function class:** R Restricting or stabilising

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00566



Name: Heating element

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-01-12

Keywords: resistors

Applied in: S01825, S01823, S00759

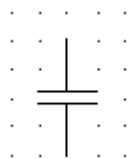
Applies: S00555

Shape class: Lines , Rectangles

Function class: R Restricting or stabilising

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00567



Name: Capacitor, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-02-01

Keywords: capacitors

Applied in: S00582, S00789, S01165, S01163, S00579, S00644, S00573, S01164, S00577, S00356, S00581, S00571, S01054, S00575

Replacing: S01356

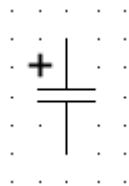
Shape class: Lines

Function class: C Storing

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams



## S00571



Name: Capacitor, polarized

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-02-05

Alternative names: Electrolytic capacitor

Keywords: capacitors

Applies: S00077; S00567

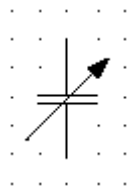
Replacing: S01358

Shape class: Lines

Function class: C Storing

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00573



Name: Capacitor, adjustable

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-02-07

Keywords: capacitors

Applies: S00081; S00567

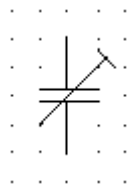
Replacing: S01359

Shape class: Arrows, Lines

Function class: C Storing

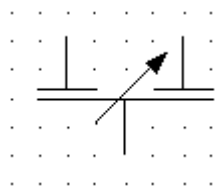
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00575



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Capacitor with pre-set adjustment                                                                                |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-02-09                                                                                    |
| Keywords:             | capacitors                                                                                                       |
| Applies:              | S00085; S00567                                                                                                   |
| Replacing:            | S01360                                                                                                           |
| Shape class:          | Lines                                                                                                            |
| Function class:       | C Storing                                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00577



Name: Capacitor, differential

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-02-11

Keywords: capacitors

Applies: S00081; S00567

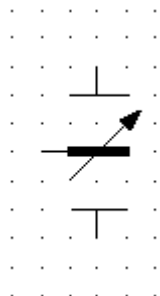
Replacing: S01361

Shape class: Arrows, Lines

Function class: C Storing

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00579



**Name:** Capacitor, split and adjustable

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-02-13

**Keywords:** capacitors

**Applies:** S00081; S00567

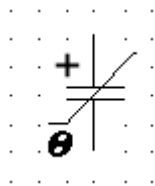
**Replacing:** S01362

**Shape class:** Arrows, Lines

**Function class:** C Storing

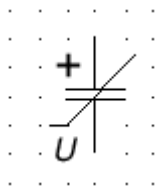
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00581



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Capacitor, temperature dependent and polarised                                                                   |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-02-15                                                                                    |
| Alternative names:    | Ceramic capacitor                                                                                                |
| Keywords:             | capacitors                                                                                                       |
| Applies:              | S00077; S00084; S00567                                                                                           |
| Application notes:    | A00231                                                                                                           |
| Shape class:          | Lines                                                                                                            |
| Function class:       | C Storing                                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00582



**Name:** Capacitor, voltage dependent and polarised

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-02-16

**Alternative names:** Semiconductor capacitor

**Keywords:** capacitors

**Applies:** S00077; S00084; S00567

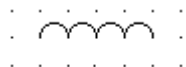
**Application notes:** A00230

**Shape class:** Lines

**Function class:** C Storing

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00583



**Name:** Coil, general symbol; Winding, general symbol

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-03-01

**Alternative names:** Inductor; Choke

**Keywords:** chokes, coils, inductors, windings

**Applied in:** S00348, S00828, S01165, S01086, S00847, S00823, S00832, S00845, S00690, S00829, S00588, S00749, S00824, S00586, S00739, S00735, S00833, S00817, S00753, S00842, S00589, S00585, S01164, S00815, S00849, S00755, S00816, S00835, S00830, S00591, S00827, S00590, S00496, S00347, S01198, S00825, S00834

**Application notes:** A00127, A00263

**Replacing:** S00815; S00816; S00817; S01363

**Shape class:** Half-circles

**Function class:** R Restricting or stabilising

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams



## S00585



**Name:** Inductor with magnetic core

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-03-03

**Keywords:** inductors

**Applied in:** S01114, S00591, S00587

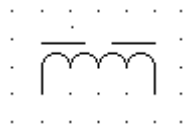
**Applies:** S00583

**Shape class:** Half-circles, Lines

**Function class:** R Restricting or stabilising

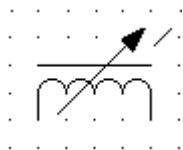
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00586



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Inductor with gap in magnetic core                                                                               |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-03-04                                                                                    |
| Keywords:             | inductors                                                                                                        |
| Applies:              | S00583                                                                                                           |
| Shape class:          | Half-circles, Lines                                                                                              |
| Function class:       | R Restricting or stabilising                                                                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00587



**Name:** Inductor, continuously variable

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-03-05

**Keywords:** inductors

**Applies:** S00081; S00585

**Shape class:** Arrows, Half-circles, Lines

**Function class:** R Restricting or stabilising

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

**Remarks:** The symbol is shown with magnetic core.

## S00588



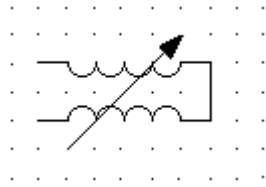
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Inductor with fixed tapplings                                                                                    |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-03-06                                                                                    |
| Keywords:             | inductors                                                                                                        |
| Applies:              | S00583                                                                                                           |
| Shape class:          | Half-circles, Lines                                                                                              |
| Function class:       | R Restricting or stabilising                                                                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |
| Remarks:              | The symbol is shown with two tapplings (taps).                                                                   |

## S00589



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Inductor with moveable contact, variable in steps                                                                |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-03-07                                                                                    |
| Keywords:             | inductors                                                                                                        |
| Applies:              | S00087; S00211; S00583                                                                                           |
| Shape class:          | Arrows, Half-circles, Lines                                                                                      |
| Function class:       | R Restricting or stabilising                                                                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00590



Name: Variometer

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-03-08

Keywords: inductors, variometers

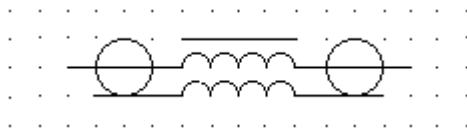
Applies: S00081; S00583

Shape class: Arrows, Half-circles

Function class: R Restricting or stabilising

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00591



**Name:** Coaxial choke with magnetic core

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-03-09

**Keywords:** chokes, coaxial cables

**Applies:** S00011; S00583; S00585

**Shape class:** Circles, Half-circles, Lines

**Function class:** R Restricting or stabilising

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00592



Name: Ferrite bead

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-03-10

Keywords: ferrite beads

Applies: S00001

Shape class: Lines

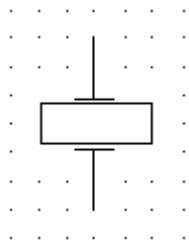
Function class: R Restricting or stabilising

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

Remarks: Teh ferrite bead is shown on a conductor.

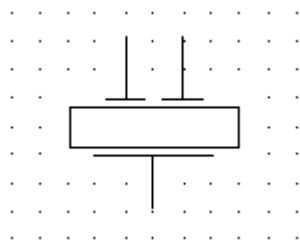


## S00600



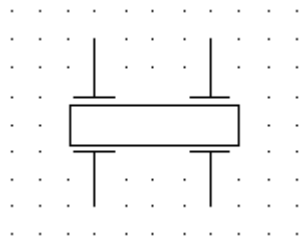
|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Piezoelectric crystal with two electrodes                |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-07-01                            |
| Keywords:             | piezoelectrical crystals                                 |
| Applied in:           | S00602, S00601, S00607, S00611                           |
| Applies:              | S01405                                                   |
| Shape class:          | Lines , Rectangles                                       |
| Function class:       | R Restricting or stabilising                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams |

## S00601



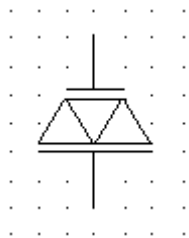
|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Piezoelectric crystal with three electrodes              |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-07-02                            |
| Keywords:             | piezoelectrical crystals                                 |
| Applies:              | S00600; S01405                                           |
| Shape class:          | Lines , Rectangles                                       |
| Function class:       | R Restricting or stabilising                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams |

## S00602



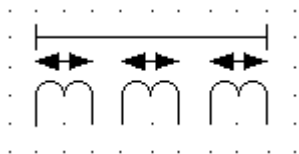
|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Piezoelectric crystal with two pairs of electrodes       |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-07-03                            |
| Keywords:             | piezoelectrical crystals                                 |
| Applies:              | S00600; S01405                                           |
| Shape class:          | Lines , Rectangles                                       |
| Function class:       | R Restricting or stabilising                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams |

## S00603

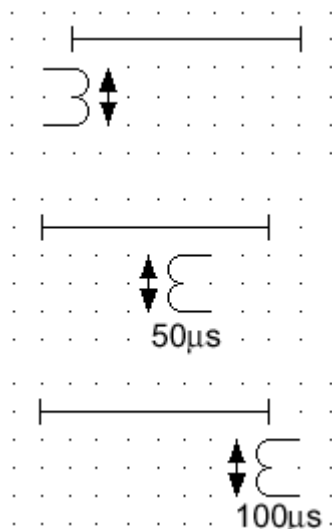


|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Electret with electrodes and connections                 |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-07-04                            |
| Keywords:             | electrets                                                |
| Applies:              | S00117                                                   |
| Shape class:          | Equilateral triangles, Lines                             |
| Function class:       | R Restricting or stabilising                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams |
| Remarks:              | The longer line represents the positive pole.            |

## S00604



|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| Name:                 | Delay line, magnetostrictive with windings                               |
| Status level:         | Standard                                                                 |
| Released on:          | 2001-07-01                                                               |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-08-01                                            |
| Keywords:             | delay lines                                                              |
| Form:                 | Assembled form                                                           |
| Applies:              | S00122; S00124                                                           |
| Shape class:          | Arrows, Half-circles, Lines                                              |
| Function class:       | R Restricting or stabilising                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams                 |
| Remarks:              | The symbol is shown three windings shown in an assembled representation. |

**S00605**

**Name:** Delay line, magnetostrictive with windings

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-08-02

**Keywords:** delay lines

**Form:** Detached form

**Applies:** S00122; S00124

**Shape class:** Arrows, Half-circles, Lines

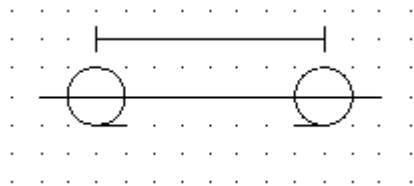
**Function class:** R Restricting or stabilising

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams

**Remarks:** The delay line is shown with one input and two outputs windings, in detached representation. The windings are from top to bottom:

- Input
- Intermediate output with 50 µs delay
- Final output with 100 µs delay

## S00606



Name: Delay line, coaxial

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-08-03

Keywords: delay lines

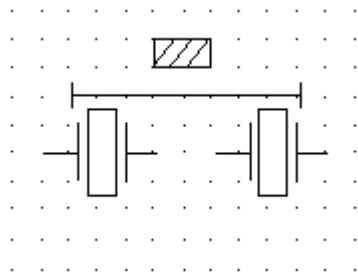
Applies: S00011

Shape class: Circles, Lines

Function class: R Restricting or stabilising

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00607



**Name:** Delay line, solid material type with piezoelectric transducers

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-08-04

**Keywords:** delay lines, piezoelectrical crystals, transducers

**Applies:** S00114; S00124; S00600

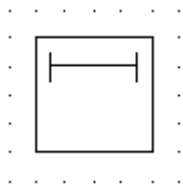
**Shape class:** Lines , Rectangles

**Function class:** R Restricting or stabilising

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams

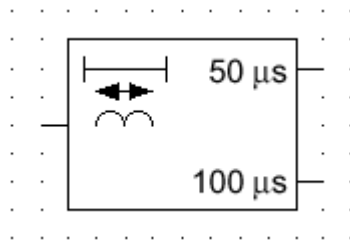


## S00608



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Delay line, general symbol; Delay element, general symbol                                                        |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-09-01                                                                                    |
| Keywords:             | delay lines                                                                                                      |
| Applied in:           | S00612, S00610, S00611                                                                                           |
| Applies:              | S00059; S00124                                                                                                   |
| Shape class:          | Lines , Squares                                                                                                  |
| Function class:       | R Restricting or stabilising                                                                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00609



**Name:** Delay line, magnetostrictive type

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-4 (ed.2.0) 04-09-02

**Keywords:** delay lines

**Applies:** S00060; S00122; S00124

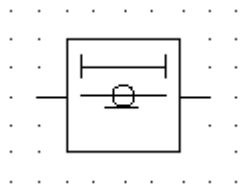
**Shape class:** Arrows, Characters, Half-circles, Lines

**Function class:** R Restricting or stabilising

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

**Remarks:** The symbol is shown with two outputs. The output signals are delayed 50 microseconds and 100 microseconds respectively.

## S00610



Name: Delay line, coaxial type

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-09-03

Keywords: delay lines

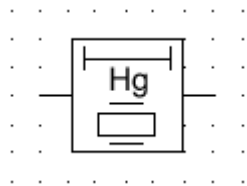
Applies: S00011; S00608

Shape class: Circles, Lines , Squares

Function class: R Restricting or stabilising

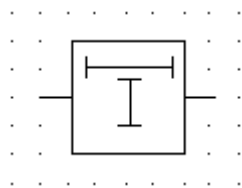
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00611



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Delay line, mercury type with piezoelectric transducers                                                          |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-4 (ed.2.0) 04-09-04                                                                                    |
| Keywords:             | delay lines                                                                                                      |
| Applies:              | S00600; S00608                                                                                                   |
| Shape class:          | Lines , Squares                                                                                                  |
| Function class:       | R Restricting or stabilising                                                                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00612



Name: Delay line, artificial line type

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-4 (ed.2.0) 04-09-05

Keywords: delay lines

Applies: S00608

Shape class: Lines , Squares

Function class: R Restricting or stabilising

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S00613



**Name:** Semiconductor region, one connection

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-01

**Keywords:** connections, ohmic connections, semiconductor regions, semiconductors, transistors

**Applied in:** S00057, S00651, S00653, S00657, S00655, S00641, S00659, S00648, S00663, S00665, S00646, S00661, S00614, S00650, S00656, S00658, S00664, S00660, S00652, S00662, S00654, S00645, S00649, S00615, S00616

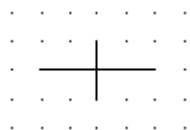
**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

**Remarks:** The vertical line is the semiconductor region and the perpendicular line is the ohmic connection.

## S00614



**Name:** Semiconductor region, several connections

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-02

**Keywords:** ohmic connections, semiconductor regions, semiconductors, transistors

**Form:** Form 1

**Alternative forms:** S00615; S00616

**Applies:** S00613

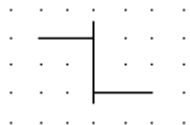
**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

**Remarks:** Two connections are shown.

## S00615



|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| Name:                 | Semiconductor region, several connections                             |
| Status level:         | Standard                                                              |
| Released on:          | 2001-07-01                                                            |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-01-03                                         |
| Keywords:             | ohmic connections, semiconductor regions, semiconductors, transistors |
| Form:                 | Form 2                                                                |
| Alternative forms:    | S00614; S00616                                                        |
| Applies:              | S00613                                                                |
| Shape class:          | Lines                                                                 |
| Function class:       | - Functional elements or attributes                                   |
| Application class:    | Circuit diagrams                                                      |
| Remarks:              | Two connections shown.                                                |

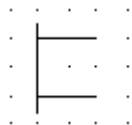


## S00616



|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| Name:                 | Semiconductor region, several connections                             |
| Status level:         | Standard                                                              |
| Released on:          | 2001-07-01                                                            |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-01-04                                         |
| Keywords:             | ohmic connections, semiconductor regions, semiconductors, transistors |
| Form:                 | Form 3                                                                |
| Alternative forms:    | S00614; S00615                                                        |
| Applied in:           | S00668, S00667, S00671, S00670, S00672, S00669, S00666                |
| Applies:              | S00613                                                                |
| Shape class:          | Lines                                                                 |
| Function class:       | - Functional elements or attributes                                   |
| Application class:    | Conceptual elements or qualifiers                                     |
| Remarks:              | Two connections shown.                                                |

## S00617



**Name:** Conduction channel for depletion devices

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-05

**Keywords:** conduction channels, depletion type, semiconductors, transistors

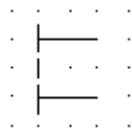
**Applied in:** S00682, S00678, S00683, S00671, S00677, S00672, S00679

**Shape class:** Lines

**Function class:** - Functional elements or attributes

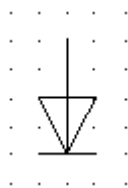
**Application class:** Circuit diagrams

## S00618



|                       |                                                                    |
|-----------------------|--------------------------------------------------------------------|
| Name:                 | Conduction channel for enhancement devices                         |
| Status level:         | Standard                                                           |
| Released on:          | 2001-07-01                                                         |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-01-06                                      |
| Keywords:             | conduction channels, enhancement type, semiconductors, transistors |
| Applied in:           | S00673, S00676, S00680, S00675, S00674, S00681                     |
| Shape class:          | Lines                                                              |
| Function class:       | - Functional elements or attributes                                |
| Application class:    | Circuit diagrams                                                   |

## S00619



Name: Rectifying junction

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-01-07

Keywords: junctions, rectifiers, semiconductors

Applied in: S00057, S00651, S00653, S00657, S00655, S00641, S00648, S00646, S00661, S00647, S00650, S00656, S00658, S00660, S00662, S00654, S00378, S00645

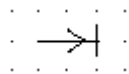
Replacing: S01364

Shape class: Equilateral triangles, Lines

Function class: - Functional elements or attributes

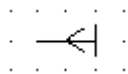
Application class: Circuit diagrams

## S00620



|                       |                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------|
| Name:                 | Junction which influences a semiconductor layer, P-region which influences an N-layer      |
| Status level:         | Standard                                                                                   |
| Released on:          | 2001-07-01                                                                                 |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-01-09                                                              |
| Keywords:             | field effect transistors, gates, junctions, N-layer, P-region, semiconductors, transistors |
| Applied in:           | S00671                                                                                     |
| Application notes:    | A00176                                                                                     |
| Shape class:          | Arrows, Lines                                                                              |
| Function class:       | - Functional elements or attributes                                                        |
| Application class:    | Circuit diagrams                                                                           |

## S00621



**Name:** Junction which influences a semiconductor layer, N-region which influences a P-layer

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-10

**Keywords:** field effect transistors, gates, junctions, N-region, P-layer, semiconductors, transistors

**Applied in:** S00672

**Application notes:** A00176

**Shape class:** Arrows, Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

## S00622



**Name:** Conductivity type of the channel, N-type channel on a P-type substrate

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-11

**Keywords:** conduction channels, field effect transistors, IGFET, N-type channel, semiconductors, transistors

**Applied in:** S00676, S00677, S00674

**Application notes:** A00177

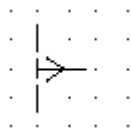
**Shape class:** Arrows, Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

**Remarks:** N-type channel on a P-type substrate for a depletion type IGFET is shown.

## S00623



**Name:** Conductivity type of the channel, P-type channel on an N-type substrate

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-12

**Keywords:** conduction channels, field effect transistors, IGFET, insulated gate, P-type channel, semiconductors, transistors

**Applied in:** S00673, S00678, S00675, S00679

**Application notes:** A00177

**Shape class:** Arrows, Lines

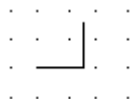
**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

**Remarks:** P-type channel on an N-type substrate for an enhancement type IGFET is shown.



## S00624



Name: Insulated gate

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-01-13

Keywords: field effect transistors, gates, IGFET, insulated gate, semiconductors, transistors

Applied in: S00682, S00673, S00676, S00678, S00683, S00680, S00677, S00675, S00674, S00679, S00681, S01931

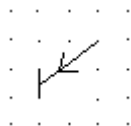
Shape class: Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams

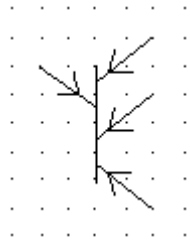
Remarks: For an example with multiple gates see symbol S00679.

## S00625



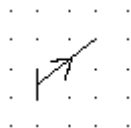
|                              |                                                                                        |
|------------------------------|----------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Emitter on a region of dissimilar conductivity type, P emitter on an N region          |
| <b>Status level:</b>         | <b>Standard</b>                                                                        |
| <b>Released on:</b>          | 2001-07-01                                                                             |
| <b>Earlier published in:</b> | IEC 60617-5 (ed.2.0) 05-01-14                                                          |
| <b>Keywords:</b>             | bipolar transistors, emitters, semiconductors, transistors                             |
| <b>Applied in:</b>           | S00682, S00667, S00663, S00683, S00680, S00670, S00687, S00669, S00681, S00626, S01931 |
| <b>Application notes:</b>    | A00178                                                                                 |
| <b>Shape class:</b>          | Arrows, Lines                                                                          |
| <b>Function class:</b>       | - Functional elements or attributes                                                    |
| <b>Application class:</b>    | Circuit diagrams                                                                       |

## S00626



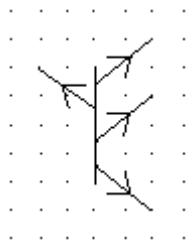
|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| Name:                 | Emitters on a region of dissimilar conductivity type, P emitters on an N region |
| Status level:         | Standard                                                                        |
| Released on:          | 2001-07-01                                                                      |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-01-15                                                   |
| Keywords:             | bipolar transistors, emitters, semiconductors, transistors                      |
| Applies:              | S00625                                                                          |
| Application notes:    | A00178                                                                          |
| Shape class:          | Arrows, Lines                                                                   |
| Function class:       | - Functional elements or attributes                                             |
| Application class:    | Circuit diagrams                                                                |

## S00627



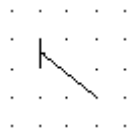
|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Name:                 | Emitter on a region of dissimilar conductivity type, N emitter on a P region   |
| Status level:         | Standard                                                                       |
| Released on:          | 2001-07-01                                                                     |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-01-16                                                  |
| Keywords:             | bipolar transistors, emitters, semiconductors, transistors                     |
| Applied in:           | S00668, S00682, S00665, S00683, S00680, S00664, S00666, S00628, S00681, S01931 |
| Application notes:    | A00178                                                                         |
| Shape class:          | Arrows, Lines                                                                  |
| Function class:       | - Functional elements or attributes                                            |
| Application class:    | Circuit diagrams                                                               |

## S00628



|                              |                                                                                |
|------------------------------|--------------------------------------------------------------------------------|
| <b>Name:</b>                 | Emitters on a region of dissimilar conductivity type, N emitters on a P region |
| <b>Status level:</b>         | <b>Standard</b>                                                                |
| <b>Released on:</b>          | 2001-07-01                                                                     |
| <b>Earlier published in:</b> | IEC 60617-5 (ed.2.0) 05-01-17                                                  |
| <b>Keywords:</b>             | bipolar transistors, emitters, semiconductors, transistors                     |
| <b>Applies:</b>              | S00627                                                                         |
| <b>Application notes:</b>    | A00178                                                                         |
| <b>Shape class:</b>          | Arrows, Lines                                                                  |
| <b>Function class:</b>       | - Functional elements or attributes                                            |
| <b>Application class:</b>    | Circuit diagrams                                                               |

## S00629



**Name:** Collector on a region of dissimilar conductivity type

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-18

**Keywords:** bipolar transistors, collectors, semiconductors, transistors

**Applied in:** S00668, S00663, S00665, S00630, S00664, S00687

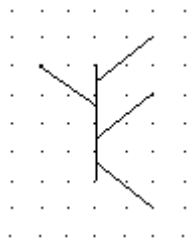
**Application notes:** A00179

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

## S00630



**Name:** Collectors on a region of dissimilar conductivity type

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-19

**Keywords:** bipolar transistors, collectors, semiconductors, transistors

**Applies:** S00629

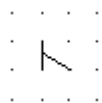
**Application notes:** A00179

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

## S00631



**Name:** Transition between regions of dissimilar conductivity types

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-20

**Keywords:** semiconductor regions, semiconductors, transistors

**Applied in:** S00682, S00683, S00680, S00681

**Application notes:** A00180

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams



## S00632



**Name:** Intrinsic region separating regions of dissimilar conductivity type

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-21

**Keywords:** intrinsic region, NIP, PIN, semiconductor regions, semiconductors, transistors

**Application notes:** A00181

**Shape class:** Lines , Parallelograms

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

**Remarks:** A PIN or NIP structure is shown.

## S00633



|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Name:                 | Intrinsic region between regions of similar conductivity type                  |
| Status level:         | Standard                                                                       |
| Released on:          | 2001-07-01                                                                     |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-01-22                                                  |
| Keywords:             | intrinsic region, NIN, PIP, semiconductor regions, semiconductors, transistors |
| Application notes:    | A00181                                                                         |
| Shape class:          | Lines , Parallelograms                                                         |
| Function class:       | - Functional elements or attributes                                            |
| Application class:    | Circuit diagrams                                                               |
| Remarks:              | A PIP or NIN structure is shown.                                               |

## S00634



**Name:** Intrinsic region between a collector and a region of dissimilar conductivity type

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-01-23

**Keywords:** collectors, intrinsic region, NIP, PIN, semiconductor regions, semiconductors, transistors

**Applied in:** S00669

**Application notes:** A00182

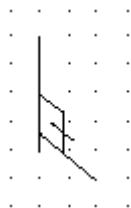
**Shape class:** Lines , Parallelograms

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams

**Remarks:** A PIN or NIP structure is shown.

## S00635



|                              |                                                                                            |
|------------------------------|--------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Intrinsic region between a collector and a region of similar conductivity type             |
| <b>Status level:</b>         | <b>Standard</b>                                                                            |
| <b>Released on:</b>          | 2001-07-01                                                                                 |
| <b>Earlier published in:</b> | IEC 60617-5 (ed.2.0) 05-01-24                                                              |
| <b>Keywords:</b>             | collectors, intrinsic region, NIN, PIP, semiconductor regions, semiconductors, transistors |
| <b>Applied in:</b>           | S00670                                                                                     |
| <b>Application notes:</b>    | A00182                                                                                     |
| <b>Shape class:</b>          | Lines , Parallelograms                                                                     |
| <b>Function class:</b>       | - Functional elements or attributes                                                        |
| <b>Application class:</b>    | Circuit diagrams                                                                           |
| <b>Remarks:</b>              | A PIP or NIN structure is shown.                                                           |

## S00636



Name: Schottky effect

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-02-01

Keywords: diodes, Schottky, semiconductors, transistors

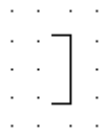
Application notes: A00150

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams

## S00637



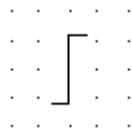
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Tunnel effect                       |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-02-02       |
| Keywords:             | diodes, semiconductors, tunnel      |
| Applied in:           | S00645                              |
| Application notes:    | A00150                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00638



|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Unidirectional breakdown effect                |
| Status level:         | Standard                                       |
| Released on:          | 2001-07-01                                     |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-02-03                  |
| Alternative names:    | Zener effect                                   |
| Keywords:             | diodes, semiconductors, Zener                  |
| Applied in:           | S00651, S00665, S00646, S00661, S00660, S00662 |
| Application notes:    | A00150                                         |
| Shape class:          | Lines                                          |
| Function class:       | - Functional elements or attributes            |
| Application class:    | Circuit diagrams                               |

## S00639



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Bidirectional breakdown effect      |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-02-04       |
| Keywords:             | diodes, semiconductors              |
| Applied in:           | S00647                              |
| Application notes:    | A00150                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

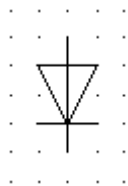


## S00640



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Backward effect                     |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-02-05       |
| Alternative names:    | Unitunnel effect                    |
| Keywords:             | diodes, semiconductors, tunnel      |
| Applied in:           | S00648                              |
| Application notes:    | A00150                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Circuit diagrams                    |

## S00641



**Name:** Semiconductor diode, general symbol

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-03-01

**Keywords:** diodes, semiconductors

**Applied in:** S00304, S01263, S00785, S00907, S00685, S01327, S01920, S00644, S00643, S00642, S00906, S01326, S01919, S00895, S01328

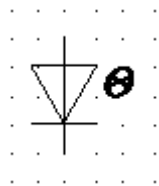
**Applies:** S00613; S00619

**Shape class:** Equilateral triangles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

## S00643



Name: Temperature sensing diode

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-03-03

Keywords: diodes, semiconductors, temperature

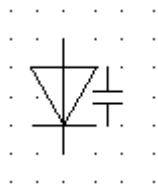
Applies: S00641

Shape class: Characters, Equilateral triangles, Lines

Function class: B Converting variable to signal

Application class: Circuit diagrams

## S00644



Name: Variable capacitance diode

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-03-04

Alternative names: Varactor

Keywords: capacitors, diodes, semiconductors

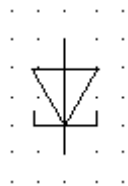
Applies: S00567; S00641

Shape class: Equilateral triangles, Lines

Function class: K Processing signals or information

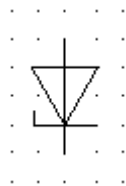
Application class: Circuit diagrams

## S00645



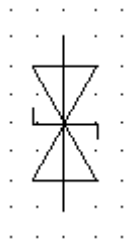
|                       |                                       |
|-----------------------|---------------------------------------|
| Name:                 | Tunnel diode                          |
| Status level:         | Standard                              |
| Released on:          | 2001-07-01                            |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-03-05         |
| Alternative names:    | Esaki diode                           |
| Keywords:             | diodes, Esaki, semiconductors, tunnel |
| Applies:              | S00613; S00619; S00637                |
| Shape class:          | Equilateral triangles, Lines          |
| Function class:       | K Processing signals or information   |
| Application class:    | Circuit diagrams                      |

## S00646



|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Breakdown diode, unidirectional                   |
| Status level:         | Standard                                          |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-03-06                     |
| Alternative names:    | Zener diode; Voltage regulator diode              |
| Keywords:             | diodes, semiconductors, voltage regulators, Zener |
| Applied in:           | S00651                                            |
| Applies:              | S00613; S00619; S00638                            |
| Shape class:          | Equilateral triangles, Lines                      |
| Function class:       | R Restricting or stabilising                      |
| Application class:    | Circuit diagrams                                  |

## S00647



**Name:** Breakdown diode, bidirectional

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-03-07

**Keywords:** diodes, semiconductors

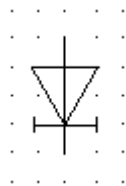
**Applies:** S00619; S00639

**Shape class:** Equilateral triangles, Lines

**Function class:** R Restricting or stabilising

**Application class:** Circuit diagrams

## S00648



Name: Backward diode (unitunnel diode)

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-03-08

Keywords: diodes, semiconductors

Applies: S00613; S00619; S00640

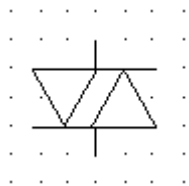
Shape class: Equilateral triangles, Lines

Function class: K Processing signals or information

Application class: Circuit diagrams



## S00649



Name: Bidirectional diode

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-03-09

Keywords: diodes, semiconductors

Applied in: S00652

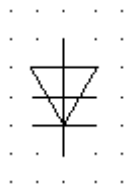
Applies: S00613

Shape class: Equilateral triangles, Lines

Function class: K Processing signals or information

Application class: Circuit diagrams

## S00650



Name: Reverse blocking diode thyristor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-04-01

Keywords: diodes, semiconductors, thyristors

Applies: S00613; S00619

Shape class: Equilateral triangles, Lines

Function class: Q Controlled switching or varying

Application class: Circuit diagrams

## S00651



**Name:** Reverse conducting diode thyristor

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-02

**Keywords:** diodes, semiconductors, thyristors

**Applies:** S00613; S00619; S00638; S00646

**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

## S00652



**Name:** Bidirectional diode thyristor; Diac

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-03

**Keywords:** diacs, semiconductors, thyristors

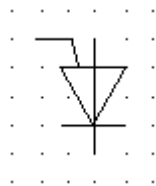
**Applies:** S00613; S00649

**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

## S00653



**Name:** Reverse blocking triode thyristor, N-gate (anode-side controlled)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-05

**Keywords:** semiconductors, thyristors

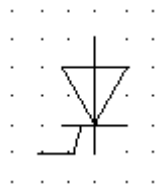
**Applies:** S00613; S00619

**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

## S00654



**Name:** Reverse blocking triode thyristor, P-gate (cathode-side controlled)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-06

**Keywords:** semiconductors, thyristors

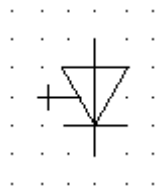
**Applies:** S00613; S00619

**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

## S00655



**Name:** Turn-off thyristor, gate not specified

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-07

**Keywords:** semiconductors, thyristors

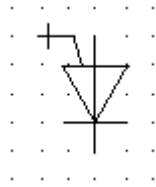
**Applies:** S00613; S00619

**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

## S00656



**Name:** Turn-off triode thyristor, N-gate (anode-side)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-08

**Keywords:** semiconductors, thyristors

**Applies:** S00613; S00619

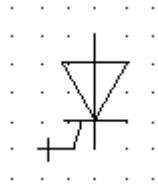
**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams



## S00657



**Name:** Turn-off triode thyristor, P-gate (cathode-side controlled)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-09

**Keywords:** semiconductors, thyristors

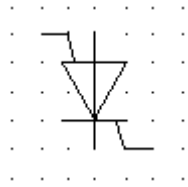
**Applies:** S00613; S00619

**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

## S00658



**Name:** Reverse blocking thyristor, tetrode type

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-10

**Keywords:** semiconductors, thyristors

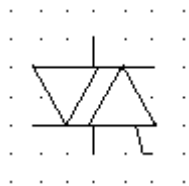
**Applies:** S00613; S00619

**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

## S00659



Name: Bidirectional triode thyristor; Triac

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-04-11

Keywords: semiconductors, thyristors, triacs

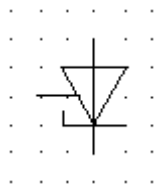
Applies: S00613

Shape class: Equilateral triangles, Lines

Function class: Q Controlled switching or varying

Application class: Circuit diagrams

## S00660



**Name:** Reverse conducting triode thyristor, gate not specified

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-12

**Keywords:** semiconductors, thyristors

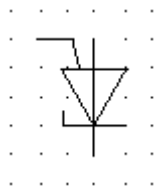
**Applies:** S00613; S00619; S00638

**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

## S00661



**Name:** Reverse conducting triode thyristor, N-gate (anode-side controlled)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-13

**Keywords:** semiconductors, thyristors

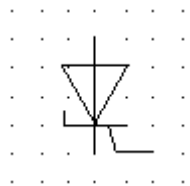
**Applies:** S00613; S00619; S00638

**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

## S00662



**Name:** Reverse conducting triode thyristor, P-gate (cathode-side controlled)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-04-14

**Keywords:** semiconductors, thyristors

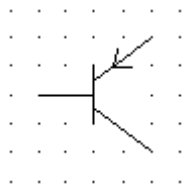
**Applies:** S00613; S00619; S00638

**Shape class:** Equilateral triangles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams

## S00663



Name: PNP transistor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-05-01

Keywords: PNP, semiconductors, transistors

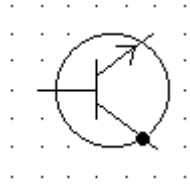
Applies: S00613; S00625; S00629

Shape class: Arrows, Lines

Function class: K Processing signals or information

Application class: Circuit diagrams

## S00664



**Name:** NPN transistor with collector connected to the envelope

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-02

**Keywords:** NPN, semiconductors, transistors

**Applies:** S00016; S00062; S00613; S00627; S00629

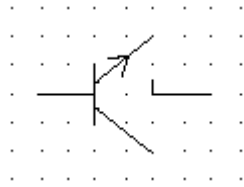
**Shape class:** Arrows, Circles, Dots (points), Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams



## S00665



Name: NPN avalanche transistor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-05-03

Keywords: avalanche, NPN, semiconductors, transistors

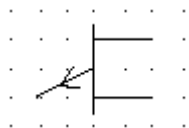
Applies: S00613; S00627; S00629; S00638

Shape class: Arrows, Lines

Function class: K Processing signals or information

Application class: Circuit diagrams

## S00666



**Name:** Unijunction transistor with P-type base

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-04

**Keywords:** P-type base, semiconductors, transistors, unijunction

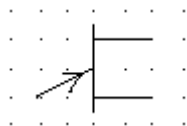
**Applies:** S00616; S00627

**Shape class:** Arrows, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

## S00667



**Name:** Unijunction transistor with N-type base

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-05

**Keywords:** N-type base, semiconductors, transmission devices, unijunction

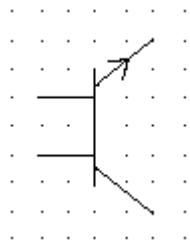
**Applies:** S00616; S00625

**Shape class:** Arrows, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

## S00668



**Name:** NPN transistor with transverse biased base

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-06

**Keywords:** NPN, semiconductors, transistors, transverse biased base

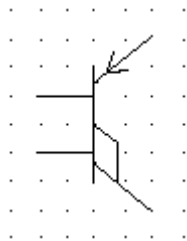
**Applies:** S00616; S00627; S00629

**Shape class:** Arrows, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

## S00669



**Name:** PNIP transistor with connection to the intrinsic region

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-07

**Keywords:** intrinsic region, PNIP, semiconductors, transistors

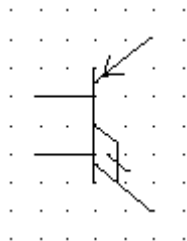
**Applies:** S00616; S00625; S00634

**Shape class:** Arrows, Lines , Parallelograms

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

## S00670



**Name:** PNIN transistor with connection to the intrinsic region

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-08

**Keywords:** intrinsic region, PNIN, semiconductors, transistors

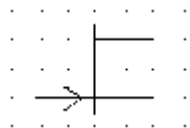
**Applies:** S00616; S00625; S00635

**Shape class:** Arrows, Lines , Parallelograms

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

## S00671



**Name:** Junction field effect transistor with N-type channel

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-09

**Keywords:** field effect transistors, junction field effect, N-type channel, semiconductors, transistors

**Applies:** S00616; S00617; S00620

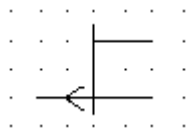
**Application notes:** A00164

**Shape class:** Arrows, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

## S00672



**Name:** Junction field effect transistor with P-type channel

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-10

**Keywords:** field effect transistors, junction field effect, P-type channel, semiconductors, transistors

**Applies:** S00616; S00617; S00621

**Application notes:** A00164

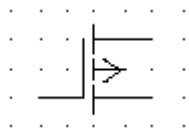
**Shape class:** Arrows, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

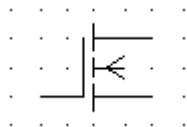


## S00673



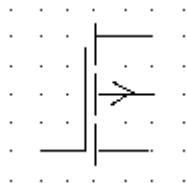
|                              |                                                                                                                         |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Insulated gate field effect transistor IGFET enhancement type, single gate, P-type channel without substrate connection |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                         |
| <b>Released on:</b>          | 2001-07-01                                                                                                              |
| <b>Earlier published in:</b> | IEC 60617-5 (ed.2.0) 05-05-11                                                                                           |
| <b>Keywords:</b>             | enhancement type, field effect transistors, IGFET, insulated gate, P-type channel, semiconductors, transistors          |
| <b>Applied in:</b>           | S00675                                                                                                                  |
| <b>Applies:</b>              | S00618; S00623; S00624                                                                                                  |
| <b>Shape class:</b>          | Arrows, Lines                                                                                                           |
| <b>Function class:</b>       | K Processing signals or information                                                                                     |
| <b>Application class:</b>    | Circuit diagrams                                                                                                        |
| <b>Remarks:</b>              | For an example with multiple gates, see symbol S00679.                                                                  |

## S00674



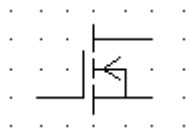
|                              |                                                                                                                         |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Insulated gate field effect transistor IGFET enhancement type, single gate, N-type channel without substrate connection |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                         |
| <b>Released on:</b>          | 2001-07-01                                                                                                              |
| <b>Earlier published in:</b> | IEC 60617-5 (ed.2.0) 05-05-12                                                                                           |
| <b>Keywords:</b>             | enhancement type, field effect transistors, IGFET, insulated gate, N-type channel, semiconductors, transistors          |
| <b>Applied in:</b>           | S00676                                                                                                                  |
| <b>Applies:</b>              | S00618; S00622; S00624                                                                                                  |
| <b>Shape class:</b>          | Arrows, Lines                                                                                                           |
| <b>Function class:</b>       | K Processing signals or information                                                                                     |
| <b>Application class:</b>    | Circuit diagrams                                                                                                        |

## S00675



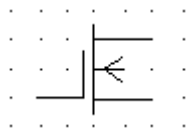
|                              |                                                                                                                                  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Insulated gate field effect transistor IGFET enhancement type, single gate, P-type channel with substrate connection brought out |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                  |
| <b>Released on:</b>          | 2001-07-01                                                                                                                       |
| <b>Earlier published in:</b> | IEC 60617-5 (ed.2.0) 05-05-13                                                                                                    |
| <b>Keywords:</b>             | enhancement type, field effect transistors, IGFET, insulated gate, P-type channel, semiconductors, transistors                   |
| <b>Applies:</b>              | S00618; S00623; S00624; S00673                                                                                                   |
| <b>Shape class:</b>          | Arrows, Lines                                                                                                                    |
| <b>Function class:</b>       | K Processing signals or information                                                                                              |
| <b>Application class:</b>    | Circuit diagrams                                                                                                                 |

## S00676



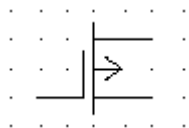
|                              |                                                                                                                                          |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Insulated gate field effect transistor IGFET enhancement type, single gate, N-type channel with substrate internally connected to source |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                          |
| <b>Released on:</b>          | 2001-07-01                                                                                                                               |
| <b>Earlier published in:</b> | IEC 60617-5 (ed.2.0) 05-05-14                                                                                                            |
| <b>Keywords:</b>             | enhancement type, field effect transistors, IGFET, insulated gate, N-type channel, semiconductors, transistors                           |
| <b>Applies:</b>              | S00618; S00622; S00624; S00674                                                                                                           |
| <b>Shape class:</b>          | Arrows, Lines                                                                                                                            |
| <b>Function class:</b>       | K Processing signals or information                                                                                                      |
| <b>Application class:</b>    | Circuit diagrams                                                                                                                         |

## S00677



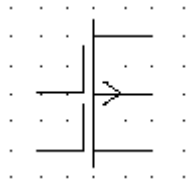
|                              |                                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Insulated gate field effect transistor IGFET, depletion type, single gate, N-type channel without substrate connection |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                        |
| <b>Released on:</b>          | 2001-07-01                                                                                                             |
| <b>Earlier published in:</b> | IEC 60617-5 (ed.2.0) 05-05-15                                                                                          |
| <b>Keywords:</b>             | depletion type, field effect transistors, IGFET, insulated gate, N-type channel, semiconductors, transistors           |
| <b>Applies:</b>              | S00617; S00622; S00624                                                                                                 |
| <b>Shape class:</b>          | Arrows, Lines                                                                                                          |
| <b>Function class:</b>       | K Processing signals or information                                                                                    |
| <b>Application class:</b>    | Circuit diagrams                                                                                                       |

## S00678



|                       |                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Insulated gate field effect transistor IGFET, depletion type, single gate, P-type channel without substrate connection |
| Status level:         | Standard                                                                                                               |
| Released on:          | 2001-07-01                                                                                                             |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-05-16                                                                                          |
| Keywords:             | depletion type, field effect transistors, IGFET, insulated gate, P-type channel, semiconductors, transistors           |
| Applied in:           | S00679                                                                                                                 |
| Applies:              | S00617; S00623; S00624                                                                                                 |
| Shape class:          | Arrows, Lines                                                                                                          |
| Function class:       | K Processing signals or information                                                                                    |
| Application class:    | Circuit diagrams                                                                                                       |

## S00679



**Name:** Insulated gate field effect transistor IGFET, depletion type, two gates, P-type channel with substrate connection brought out

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-17

**Keywords:** depletion type, field effect transistors, IGFET, insulated gate, P-type channel, semiconductors, transistors

**Applies:** S00617; S00623; S00624; S00678

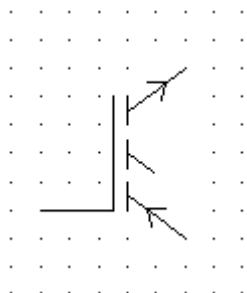
**Application notes:** A00183

**Shape class:** Arrows, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

## S00680



**Name:** Insulated-gate bipolar transistor (IGBT) enhancement type, P channel

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-18

**Keywords:** bipolar transistors, enhancement type, IGBT, insulated gate, P-type channel, semiconductors, transistors

**Applies:** S00618; S00624; S00625; S00627; S00631

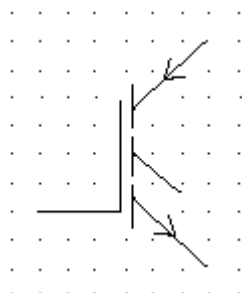
**Shape class:** Arrows, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams



## S00681



**Name:** Insulated-gate bipolar transistor (IGBT) enhancement type, N channel

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-05-19

**Keywords:** bipolar transistors, enhancement type, IGBT, insulated gate, N-type channel, semiconductors, transistors

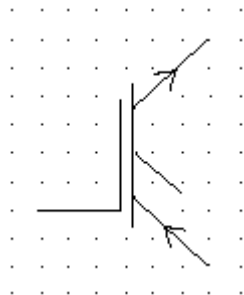
**Applies:** S00618; S00624; S00625; S00627; S00631

**Shape class:** Arrows, Lines

**Function class:** K Processing signals or information

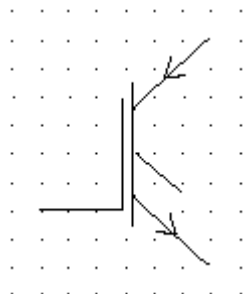
**Application class:** Circuit diagrams

## S00682



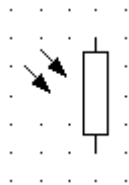
|                       |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| Name:                 | Insulated-gate bipolar transistor (IGBT) depletion type, P channel                                     |
| Status level:         | Standard                                                                                               |
| Released on:          | 2001-07-01                                                                                             |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-05-20                                                                          |
| Keywords:             | bipolar transistors, depletion type, IGBT, insulated gate, P-type channel, semiconductors, transistors |
| Applies:              | S00617; S00624; S00625; S00627; S00631                                                                 |
| Shape class:          | Arrows, Lines                                                                                          |
| Function class:       | K Processing signals or information                                                                    |
| Application class:    | Circuit diagrams                                                                                       |

## S00683



|                       |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| Name:                 | Insulated-gate bipolar transistor (IGBT) depletion type, N channel                                     |
| Status level:         | <b>Standard</b>                                                                                        |
| Released on:          | 2001-07-01                                                                                             |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-05-21                                                                          |
| Keywords:             | bipolar transistors, depletion type, IGBT, insulated gate, N-type channel, semiconductors, transistors |
| Applies:              | S00617; S00624; S00625; S00627; S00631                                                                 |
| Shape class:          | Arrows, Lines                                                                                          |
| Function class:       | K Processing signals or information                                                                    |
| Application class:    | Circuit diagrams                                                                                       |

## S00684



**Name:** Light dependent resistor (LDR); Photo resistor

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-06-01

**Keywords:** light dependant devices, photo-conductive devices, photo-sensitive devices, resistors

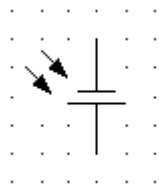
**Applies:** S00127; S00555

**Shape class:** Arrows, Rectangles

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams

## S00686



Name: Photovoltaic cell

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-06-03

Keywords: photo-sensitive devices, photovoltaic devices, semiconductors

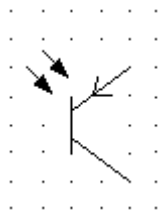
Applies: S00127; S00898

Shape class: Arrows, Lines

Function class: B Converting variable to signal

Application class: Circuit diagrams

## S00687



Name: Phototransistor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-06-04

Keywords: photo-sensitive devices, phototransistors, PNP, semiconductors

Applied in: S00692, S00691

Applies: S00127; S00625; S00629

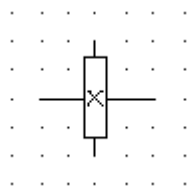
Shape class: Arrows, Lines

Function class: B Converting variable to signal

Application class: Circuit diagrams

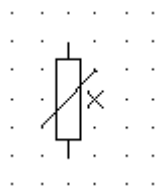
Remarks: PNP type is shown

## S00688



|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Hall generator with four connections              |
| Status level:         | Standard                                          |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-06-05                     |
| Keywords:             | Hall generators, magnetic field sensitive devices |
| Applies:              | S00123                                            |
| Shape class:          | Lines , Rectangles                                |
| Function class:       | B Converting variable to signal                   |
| Application class:    | Circuit diagrams                                  |

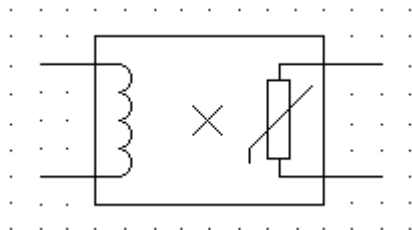
## S00689



|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| Name:                 | Magnetoresistor                                               |
| Status level:         | Standard                                                      |
| Released on:          | 2001-07-01                                                    |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-06-06                                 |
| Keywords:             | magnetic field sensitive devices, magnetoresistors, resistors |
| Applied in:           | S00690                                                        |
| Applies:              | S00083; S00123; S00555                                        |
| Shape class:          | Lines , Rectangles                                            |
| Function class:       | B Converting variable to signal                               |
| Application class:    | Circuit diagrams                                              |
| Remarks:              | A linear type is shown.                                       |

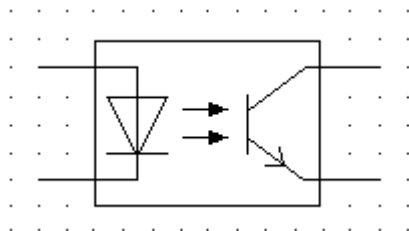


## S00690



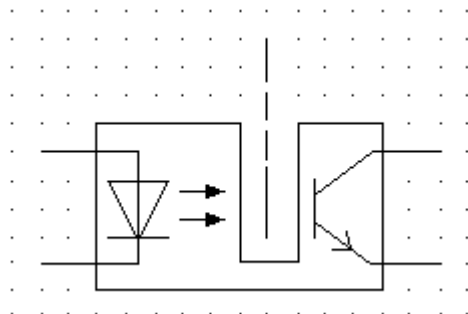
|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| Name:                 | Magnetic coupling device                                      |
| Status level:         | Standard                                                      |
| Released on:          | 2001-07-01                                                    |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-06-07                                 |
| Alternative names:    | Magnetic isolator                                             |
| Keywords:             | coupling devices, isolators, magnetic field sensitive devices |
| Applies:              | S00084; S00123; S00583; S00689                                |
| Shape class:          | Half-circles, Lines , Rectangles                              |
| Function class:       | T Converting but maintaining kind                             |
| Application class:    | Circuit diagrams                                              |

## S00691



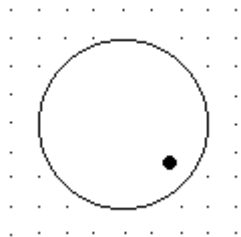
|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| Name:                 | Optocoupler                                                         |
| Status level:         | <b>Standard</b>                                                     |
| Released on:          | 2001-07-01                                                          |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-06-08                                       |
| Alternative names:    | Photocoupler; Opto isolator                                         |
| Keywords:             | coupling devices, isolators, photo-sensitive devices                |
| Applies:              | S00642; S00687                                                      |
| Shape class:          | Arrows, Equilateral triangles, Lines , Rectangles                   |
| Function class:       | T Converting but maintaining kind                                   |
| Application class:    | Circuit diagrams                                                    |
| Remarks:              | The symbol is shown with light-emitting diode and photo-transistor. |

## S00692



|                       |                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------|
| Name:                 | Optical coupling device with slot for light-barrier                                                         |
| Status level:         | Standard                                                                                                    |
| Released on:          | 2001-07-01                                                                                                  |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-06-09                                                                               |
| Keywords:             | coupling devices, photo-sensitive devices                                                                   |
| Applies:              | S00642; S00687                                                                                              |
| Shape class:          | Arrows, Depicting shapes, Equilateral triangles, Lines                                                      |
| Function class:       | T Converting but maintaining kind                                                                           |
| Application class:    | Circuit diagrams                                                                                            |
| Remarks:              | This symbol is shown with a light-emitting diode and a photo-transistor together with a mechanical barrier. |

## S00693



Name: Gas-filled envelope

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-07-01

Keywords: electron tubes, envelopes

Applied in: S00374, S00375, S00790, S00780, S00771, S00772, S00769, S00791

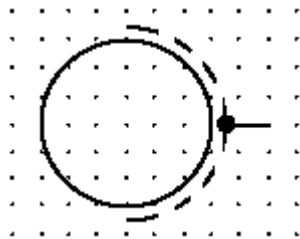
Applies: S00062; S00116

Shape class: Circles, Dots (points)

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00694



**Name:** Envelope with external screen (shield)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-07-02

**Keywords:** electron tubes, envelopes, shields

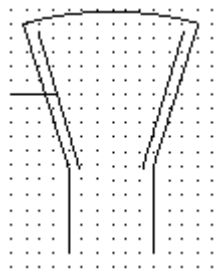
**Applies:** S00062; S00065

**Shape class:** Circles, Half-circles

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00695



**Name:** Envelope, conductive coating on internal surface

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-07-03

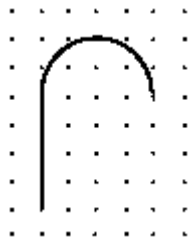
**Keywords:** electron tubes, envelopes

**Shape class:** Depicting shapes, Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00696



Name: Hot cathode, indirectly heated

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-07-04

Keywords: cathodes, electron tubes

Alternative forms: S00697

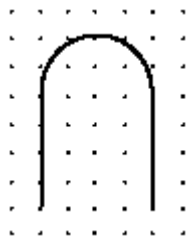
Applied in: S00745, S00751, S00765, S00763, S00749, S00757, S00756, S00759, S00748, S00750, S00753, S00746, S00755, S00767, S00747

Shape class: Half-circles, Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

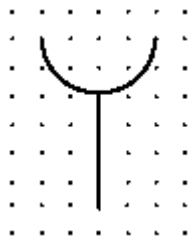
## S00698



|                       |                                                                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Hot cathode, directly heated                                                                                                                                                           |
| Status level:         | <b>Standard</b>                                                                                                                                                                        |
| Released on:          | 2001-07-01                                                                                                                                                                             |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-07-06                                                                                                                                                          |
| Alternative names:    | Heater for hot cathode, indirectly heated; Heater for thermocouple                                                                                                                     |
| Keywords:             | cathodes, electron tubes, heaters                                                                                                                                                      |
| Alternative forms:    | S00699                                                                                                                                                                                 |
| Applied in:           | S00745, S00744, S00751, S00776, S00765, S00763, S00771, S00749, S00955, S00757, S00756, S00759, S00748, S00750, S00753, S00746, S00957, S00755, S00761, S00767, S00956, S00954, S00747 |
| Shape class:          | Half-circles, Lines                                                                                                                                                                    |
| Function class:       | - Functional elements or attributes                                                                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                      |

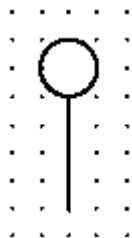


## S00700



|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Photoelectric cathode                   |
| Status level:         | Standard                                |
| Released on:          | 2001-07-01                              |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-07-08           |
| Keywords:             | cathodes, electron tubes, photoelectric |
| Applied in:           | S00777                                  |
| Shape class:          | Half-circles, Lines                     |
| Function class:       | - Functional elements or attributes     |
| Application class:    | Conceptual elements or qualifiers       |

## S00701



Name: Cold cathode

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-07-09

Alternative names: Ionically heated cathode

Keywords: cathodes, electron tubes

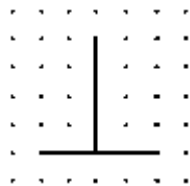
Applied in: S00774, S00772, S00770, S00769, S00775, S00773

Shape class: Circles, Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00703



Name: Anode

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-07-11

Alternative names: Plate; Collector (microwave devices)

Keywords: anodes, collectors, electron tubes

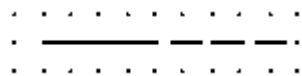
Applied in: S00745, S00744, S00774, S00778, S00777, S00763, S00771, S00770, S00769, S00757, S00756, S00759, S00748, S00753, S00775, S00779, S00746, S00718, S00755, S00754, S00758, S00760, S00747, S00773, S00764

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00705



**Name:** Grid

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-07-13

**Keywords:** electron tubes, grids

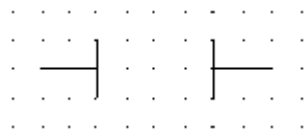
**Applied in:** S00745, S00744, S00751, S00748, S00750, S00746, S00782, S00747, S00717

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00707



**Name:** Lateral deflecting electrodes

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-08-01

**Keywords:** cathode ray tubes, electrodes, electron tubes, television tubes

**Alternative forms:** S00708

**Applied in:** S00781, S00783, S00750, S00782, S00784

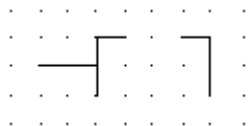
**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** One pair of electrodes is shown.

## S00709



Name: Intensity modulating electrode

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-08-03

Keywords: cathode ray tubes, electron tubes, television tubes

Applied in: S00763, S00749, S00757, S00756, S00759, S00753, S00755, S00767

Application notes: A00167

Shape class: Lines

Function class: - Functional elements or attributes

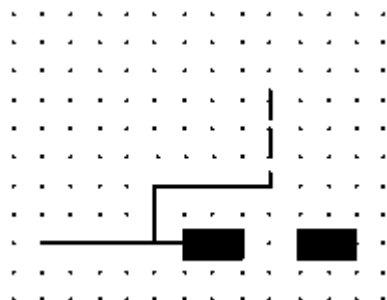
Application class: Conceptual elements or qualifiers

## S00710



|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Name:                 | Focusing electrode with aperture                                               |
| Status level:         | Standard                                                                       |
| Released on:          | 2001-07-01                                                                     |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-08-04                                                  |
| Alternative names:    | Beam-forming plate                                                             |
| Keywords:             | cathode ray tubes, electron tubes, television tubes                            |
| Applied in:           | S00751, S00763, S00749, S00757, S00756, S00759, S00750, S00753, S00755, S00767 |
| Application notes:    | A00168                                                                         |
| Shape class:          | Lines , Rectangles                                                             |
| Function class:       | - Functional elements or attributes                                            |
| Application class:    | Conceptual elements or qualifiers                                              |

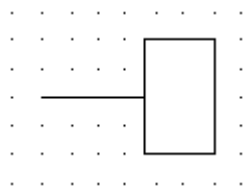
## S00711



- Name:** Beam-splitting electrode
- Status level:** **Standard**
- Released on:** 2001-07-01
- Earlier published in:** IEC 60617-5 (ed.2.0) 05-08-05
- Keywords:** cathode ray tubes, electron guns, electron tubes
- Applied in:** S00750
- Shape class:** Lines , Rectangles
- Function class:** - Functional elements or attributes
- Application class:** Conceptual elements or qualifiers
- Remarks:** Beam-splitting electrode internally connected to the final focusing electrode of the electron gun.



## S00712



Name: Cylindrical focusing electrode

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-08-06

Alternative names: Drift space electrode; Electronic lens element

Keywords: cathode ray tubes, electron tubes, electronic lenses

Applied in: S00749, S00753

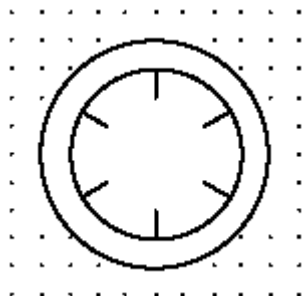
Application notes: A00168

Shape class: Lines , Rectangles

Function class: - Functional elements or attributes

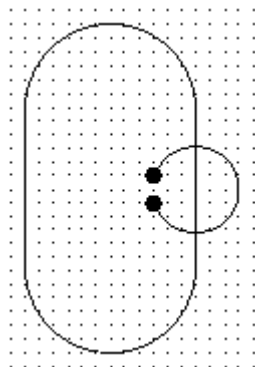
Application class: Conceptual elements or qualifiers

## S00731



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Closed slow-wave structure          |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-09-08       |
| Keywords:             | microwave tubes                     |
| Applied in:           | S00765                              |
| Applies:              | S00062                              |
| Shape class:          | Circles, Lines                      |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |
| Remarks:              | The symbol is shown with envelope.  |

## S00732



**Name:** Cavity resonator forming an integral part of the tube

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-09-09

**Keywords:** microwave tubes

**Applied in:** S00751, S00752

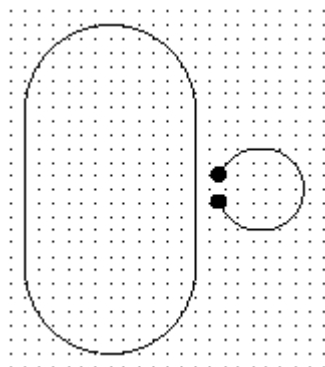
**Applies:** S00063; S01172

**Shape class:** Dots (points), Half-circles, Ovals

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00733



**Name:** Cavity resonator, partly or wholly external to the tube

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-09-10

**Keywords:** microwave tubes

**Applied in:** S00753, S00754

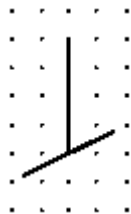
**Applies:** S00063; S01172

**Shape class:** Circle segments, Dots (points), Ovals

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00740



Name: X-ray tube anode

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-10-01

Keywords: anodes, electrodes, electron tubes

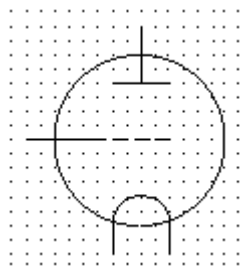
Applied in: S00776

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00744



**Name:** Triode, with directly heated cathode

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-11-01

**Keywords:** electron tubes

**Applies:** S00062; S00698; S00703; S00705

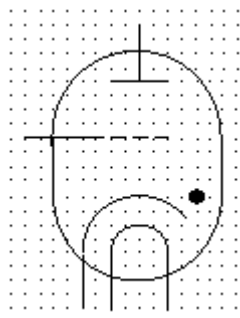
**Application notes:** A00248

**Shape class:** Circles, Half-circles, Lines

**Function class:** K Processing signals or information

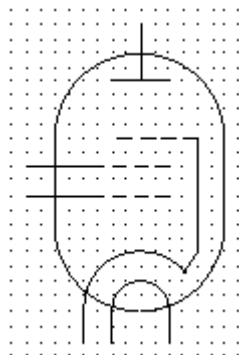
**Application class:** Circuit diagrams

## S00745



|                       |                                                  |
|-----------------------|--------------------------------------------------|
| Name:                 | Triode, gasfilled with indirectly heated cathode |
| Status level:         | Standard                                         |
| Released on:          | 2001-07-01                                       |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-11-02                    |
| Alternative names:    | Thyratron                                        |
| Keywords:             | thyatrones, triodes                              |
| Applies:              | S00063; S00116; S00696; S00698; S00703; S00705   |
| Application notes:    | A00248                                           |
| Shape class:          | Dots (points), Half-circles, Lines               |
| Function class:       | K Processing signals or information              |
| Application class:    | Circuit diagrams                                 |

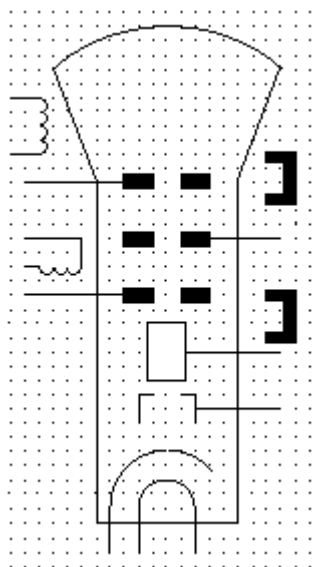
## S00746



|                       |                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------|
| Name:                 | Pentode                                                                                         |
| Status level:         | Standard                                                                                        |
| Released on:          | 2001-07-01                                                                                      |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-11-03                                                                   |
| Keywords:             | electron tubes                                                                                  |
| Applies:              | S00063; S00696; S00698; S00703; S00705                                                          |
| Application notes:    | A00248                                                                                          |
| Shape class:          | Half-circles, Lines , Ovals                                                                     |
| Function class:       | K Processing signals or information                                                             |
| Application class:    | Circuit diagrams                                                                                |
| Remarks:              | Pentode, with indirectly heated cathode and internal strap between suppressor-grid and cathode. |



## S00749



**Name:** Cathode-ray tube with electromagnetic deviation

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-12-01

**Alternative names:** Television picture tube

**Keywords:** cathode ray tubes, electron tubes, television tubes

**Applies:** S00210; S00583; S00696; S00698; S00709; S00710; S00712

**Application notes:** A00248

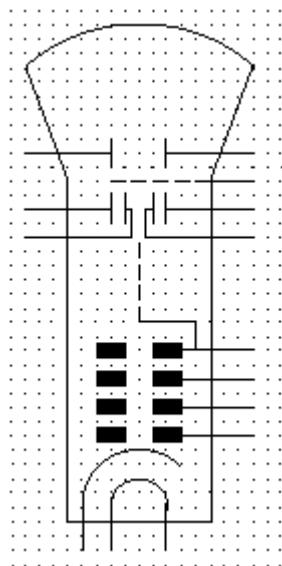
**Shape class:** Depicting shapes

**Function class:** K Processing signals or information, P Presenting information

**Application class:** Circuit diagrams

**Remarks:** The symbol is shown with: - permanent magnet focusing and ion trap  
- intensity modulating electrode  
- indirectly heated cathode.

## S00750



**Name:** Double-beam cathode-ray tube, split-beam type

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-12-02

**Keywords:** cathode ray tubes, electron tubes

**Applies:** S00696; S00698; S00705; S00707; S00710; S00711

**Application notes:** A00248

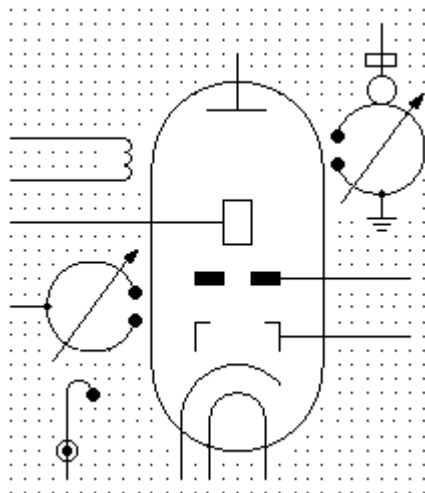
**Shape class:** Depicting shapes

**Function class:** K Processing signals or information, P Presenting information

**Application class:** Circuit diagrams

**Remarks:** The symbol is shown with: - electrostatic deflection  
- indirectly heated cathode.

## S00753



Name: Reflex klystron

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-13-03

Keywords: electron tubes, klystrons, microwave tubes

Alternative forms: S00754

Applies: S00063; S00081; S00200; S00583; S00696; S00698; S00703; S00709; S00710; S00712; S00733; S01138; S01142; S01172; S01207; S01209

Application notes: A00248

Shape class: Arrows, Circle segments, Circles, Dots (points), Lines , Rectangles

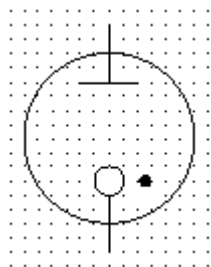
Function class: E Providing radiant or thermal energy, K Processing signals or information

Application class: Circuit diagrams

Remarks: The symbol is shown with: - indirectly heated cathode  
- intensity modulating electrode  
- beam-forming plate  
- external tunable input cavity resonator  
- drift space electrode  
- external tunable output cavity resonator with DC connection  
- collector  
- focusing coil  
- input loop coupler to coaxial waveguide

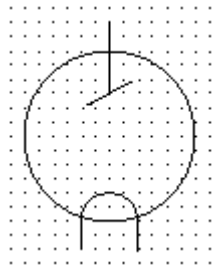
- output window coupler to rectangular waveguide.

## S00769



|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Cold-cathode tube, gas-filled           |
| Status level:         | <b>Standard</b>                         |
| Released on:          | 2001-07-01                              |
| Earlier published in: | IEC 60617-5 (ed.2.0) 05-14-01           |
| Alternative names:    | Voltage stabilizer                      |
| Keywords:             | cold-cathode tubes, voltage stabilizers |
| Applied in:           | S00770, S01217                          |
| Applies:              | S00062; S00116; S00693; S00701; S00703  |
| Application notes:    | A00248                                  |
| Shape class:          | Circles, Dots (points), Lines           |
| Function class:       | R Restricting or stabilising            |
| Application class:    | Circuit diagrams                        |

## S00776



**Name:** X-ray tube with directly heated cathode

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-14-08

**Keywords:** electron tubes, X-ray tubes

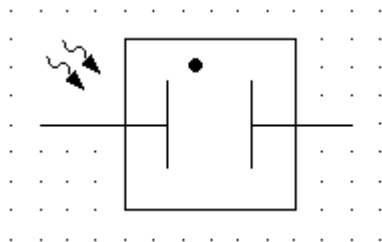
**Applies:** S00062; S00698; S00740

**Shape class:** Circles, Half-circles, Lines

**Function class:** E Providing radiant or thermal energy

**Application class:** Circuit diagrams

## S00781



Name: Ionization chamber

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-5 (ed.2.0) 05-15-01

Keywords: radiation detectors

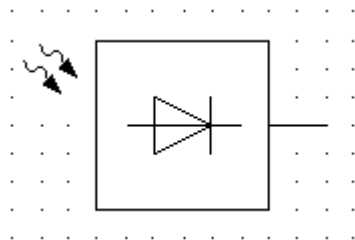
Applies: S00059; S00116; S00129; S00707

Shape class: Arrows, Dots (points), Lines , Rectangles

Function class: B Converting variable to signal

Application class: Circuit diagrams

## S00785



**Name:** Detector, semiconductor type

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-5 (ed.2.0) 05-15-05

**Keywords:** radiation detectors, semiconductors

**Applies:** S00059; S00118; S00129; S00641

**Shape class:** Arrows, Equilateral triangles, Lines , Rectangles

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams



## S00796



Name: One winding

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-01-01

Keywords: winding interconnections, windings - qualifying symbols, windings - separate

Applied in: S00797, S00798, S00800, S00799

Application notes: A00120, A00122

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00797



**Name:** Three separate windings

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-01-02

**Keywords:** winding interconnections, windings - qualifying symbols, windings - separate

**Applied in:** S00028, S00027, S00834

**Applies:** S00796

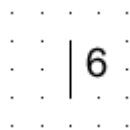
**Application notes:** A00120

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00798



Name: Six separate windings

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-01-03

Keywords: winding interconnections, windings - qualifying symbols, windings - separate

Applies: S00796

Application notes: A00120

Shape class: Characters, Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00799



**Name:** Three-phase winding, phases not interconnected

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-01-04

**Keywords:** winding interconnections, windings - qualifying symbols, windings - separate

**Applies:** S00796; S01403

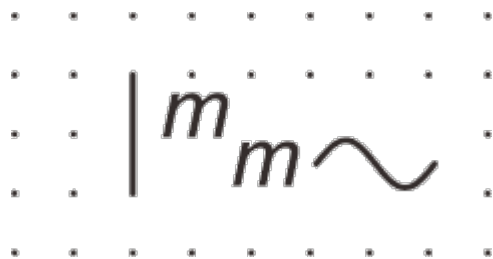
**Application notes:** A00120, A00122

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**S00800**



Name: m-phase winding, phases not interconnected

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-01-05

Keywords: winding interconnections, windings - qualifying symbols, windings - separate

Applies: S00796; S01403

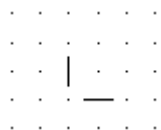
Application notes: A00122

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00801



**Name:** Two-phase winding, four-wire

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-01-06

**Keywords:** winding interconnections, windings - qualifying symbols, windings - separate

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00802



Name: Two-phase winding

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-02-01

Keywords: winding interconnections, windings - internally connected, windings - qualifying symbols

Application notes: A00135

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S00803



**Name:** Three-phase winding, V (60°)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-02

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

**Application notes:** A00135

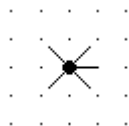
**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers



## S00804



**Name:** Four-phase winding with neutral brought out

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-03

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

**Application notes:** A00135

**Shape class:** Dots (points), Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00805



**Name:** Three-phase winding, T

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-04

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

**Application notes:** A00135

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00806



**Name:** Three-phase winding, delta

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-05

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

**Applied in:** S00302, S00868, S01913, S00864, S00862, S00858

**Application notes:** A00121, A00135

**Shape class:** Equilateral triangles

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00807



**Name:** Three-phase winding, open delta

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-06

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

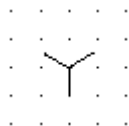
**Application notes:** A00135

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00808



**Name:** Three-phase winding, star

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-07

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

**Applied in:** S00302, S00872, S00868, S01913, S00839, S00864, S00866, S00862, S00860, S00858

**Application notes:** A00123, A00135

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00809



**Name:** Three-phase winding, star, with neutral brought out

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-08

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

**Applied in:** S00833

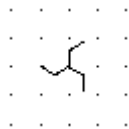
**Application notes:** A00135

**Shape class:** Dots (points), Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00810



**Name:** Three-phase winding, zigzag or interconnected star

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-09

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

**Applied in:** S00866

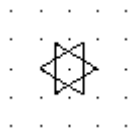
**Application notes:** A00135

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00811



**Name:** Six-phase winding, double delta

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-10

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

**Application notes:** A00135

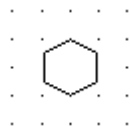
**Shape class:** Equilateral triangles

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers



## S00812



**Name:** Six-phase winding, polygon

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-11

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

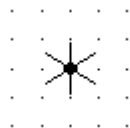
**Application notes:** A00135

**Shape class:** Hexagons

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00813



**Name:** Six-phase winding, star

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-12

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

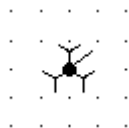
**Application notes:** A00135

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00814



**Name:** Six-phase winding, fork with neutral brought out

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-02-13

**Keywords:** winding interconnections, windings - internally connected, windings - qualifying symbols

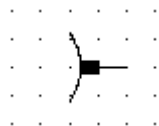
**Application notes:** A00135

**Shape class:** Dots (points), Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S00818



**Name:** Brush (on slip-ring or commutator)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-03-04

**Keywords:** brushes, machines - elements of

**Applied in:** S00825

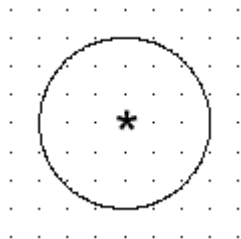
**Application notes:** A00124

**Shape class:** Squares

**Function class:** - Functional elements or attributes

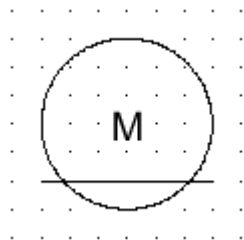
**Application class:** Conceptual elements or qualifiers

## S00819



|                       |                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Machine, general symbol                                                                                                                                                                                        |
| Status level:         | Standard                                                                                                                                                                                                       |
| Released on:          | 2001-07-01                                                                                                                                                                                                     |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-04-01                                                                                                                                                                                  |
| Alternative names:    | Rotary converter; Generator; Synchronous generator; Motor; Synchronous motor                                                                                                                                   |
| Keywords:             | converters, generators, machines - types of, motors, power generators                                                                                                                                          |
| Applied in:           | S00028, S00828, S00823, S00027, S00832, S00829, S00824, S00833, S00831, S00836, S01009, S00826, S00192, S00839, S00837, S00164, S00165, S00838, S00835, S00830, S00827, S00820, S00821, S00825, S00822, S00834 |
| Application notes:    | A00125, A00126, A00191                                                                                                                                                                                         |
| Shape class:          | Circles                                                                                                                                                                                                        |
| Function class:       | G Initiating a flow, M Providing mechanical energy, T Converting but maintaining kind                                                                                                                          |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams                                                                                                             |

## S00820



**Name:** Linear motor, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-04-02

**Keywords:** machines - types of, motors

**Applied in:** S00840

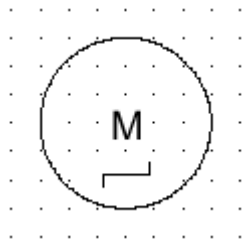
**Applies:** S00819

**Shape class:** Characters, Circles, Lines

**Function class:** M Providing mechanical energy

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

## S00821



**Name:** Stepping motor, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-04-03

**Keywords:** machines - types of, motors

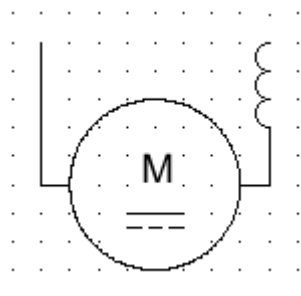
**Applies:** S00087; S00819

**Shape class:** Circles, Lines

**Function class:** M Providing mechanical energy

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

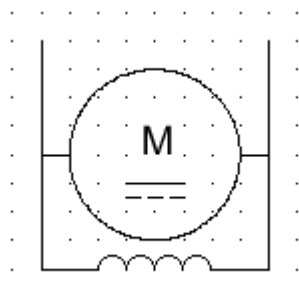
## S00823



|                       |                                   |
|-----------------------|-----------------------------------|
| Name:                 | Series motor, DC                  |
| Status level:         | Standard                          |
| Released on:          | 2001-07-01                        |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-05-01     |
| Keywords:             | machines - direct current, motors |
| Applies:              | S00583; S00819; S01401            |
| Application notes:    | A00126                            |
| Shape class:          | Circles, Half-circles             |
| Function class:       | M Providing mechanical energy     |
| Application class:    | Circuit diagrams                  |

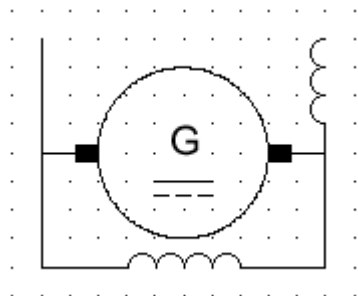


## S00824



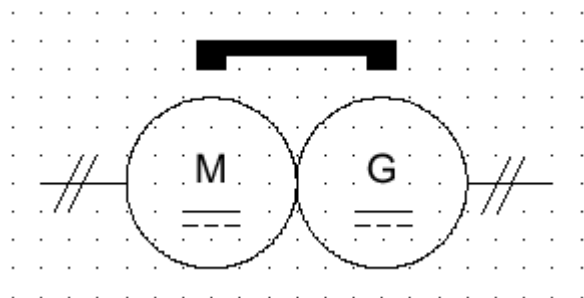
|                       |                                   |
|-----------------------|-----------------------------------|
| Name:                 | Shunt motor, DC                   |
| Status level:         | <b>Standard</b>                   |
| Released on:          | 2001-07-01                        |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-05-02     |
| Keywords:             | machines - direct current, motors |
| Applies:              | S00583; S00819; S01401            |
| Application notes:    | A00126                            |
| Shape class:          | Circles, Half-circles             |
| Function class:       | M Providing mechanical energy     |
| Application class:    | Circuit diagrams                  |

## S00825



|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| Name:                 | Generator, DC, compound excited (short shunt)           |
| Status level:         | Standard                                                |
| Released on:          | 2001-07-01                                              |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-05-03                           |
| Keywords:             | generators, machines - direct current, power generators |
| Applies:              | S00583; S00818; S00819; S01401                          |
| Application notes:    | A00126                                                  |
| Shape class:          | Circles, Half-circles                                   |
| Function class:       | G Initiating a flow                                     |
| Application class:    | Circuit diagrams                                        |
| Remarks:              | Shown with terminals and brushes.                       |

## S00826



**Name:** Rotary converter, DC/DC with common permanent magnet field

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-05-04

**Keywords:** converters, machines - direct current

**Applies:** S00001; S00210; S00819; S01401

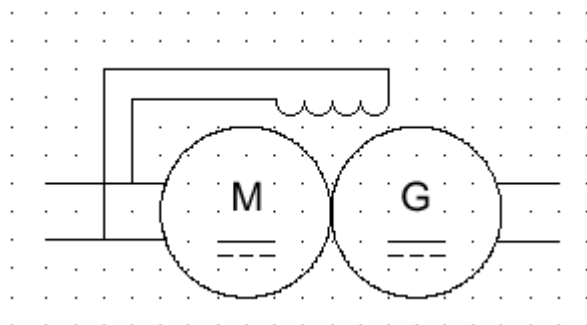
**Application notes:** A00126

**Shape class:** Circles

**Function class:** T Converting but maintaining kind

**Application class:** Function diagrams, Overview diagrams

## S00827



**Name:** Rotary converter, DC/DC with common excitation winding

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-05-05

**Keywords:** converters, machines - direct current

**Applies:** S00583; S00819; S01401

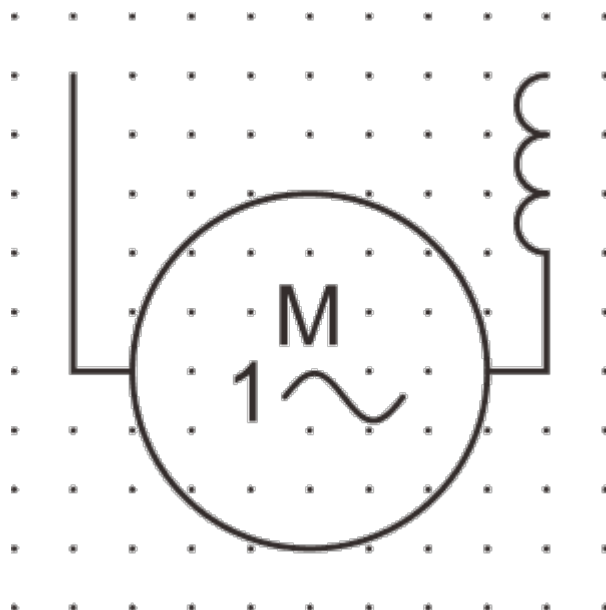
**Application notes:** A00126

**Shape class:** Circles, Half-circles

**Function class:** T Converting but maintaining kind

**Application class:** Circuit diagrams

**S00828**



Name: Series motor, single-phase

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-06-01

Keywords: commutator machines, machines - alternating current commutator, motors

Applies: S00583; S00819; S01403

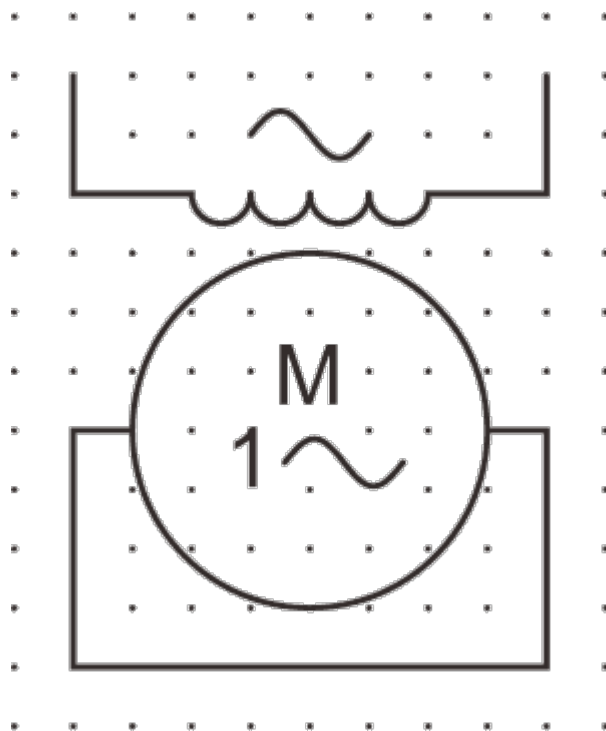
Application notes: A00126

Shape class: Circles, Half-circles

Function class: M Providing mechanical energy

Application class: Circuit diagrams

**S00829**



**Name:** Repulsion motor, single-phase

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-06-02

**Keywords:** commutator machines, machines - alternating current commutator, motors

**Applies:** S00583; S00819; S01403

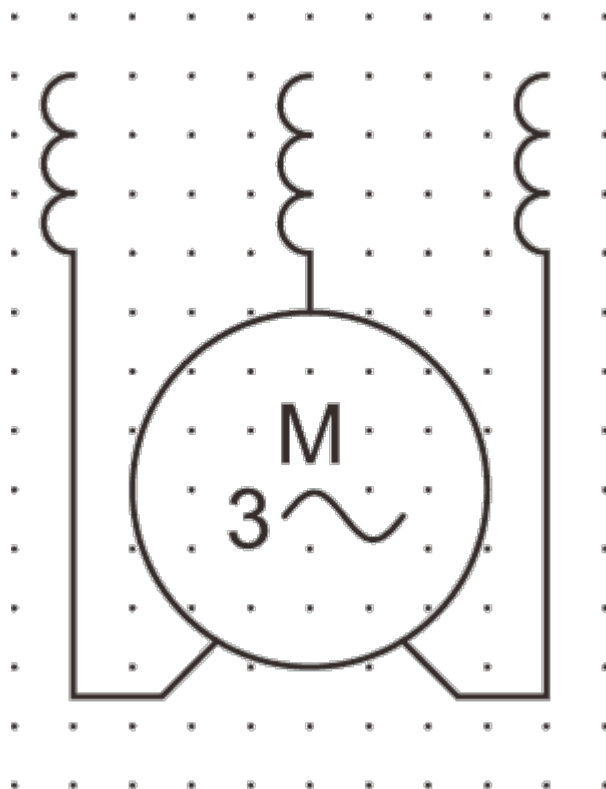
**Application notes:** A00126

**Shape class:** Circles, Half-circles

**Function class:** M Providing mechanical energy

**Application class:** Circuit diagrams

**S00830**



Name: Series motor, three-phase

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-06-03

Keywords: commutator machines, machines - alternating current commutator, motors

Applies: S00583; S00819; S01403

Application notes: A00126

Shape class: Circles, Half-circles

Function class: M Providing mechanical energy

Application class: Circuit diagrams

**S00831**



**Name:** Synchronous generator, three-phase with permanent magnet

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-07-01

**Keywords:** generators, machines - synchronous, power generators

**Applies:** S00210; S00819; S01403

**Application notes:** A00126

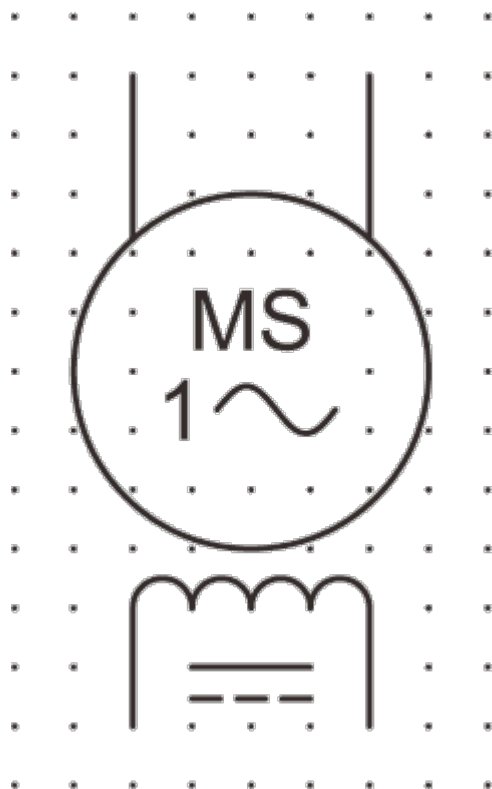
**Shape class:** Circles, Depicting shapes

**Function class:** G Initiating a flow

**Application class:** Circuit diagrams



**S00832**



**Name:** Synchronous motor, single-phase

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-07-02

**Keywords:** machines - synchronous, motors

**Applies:** S00583; S00819; S01401; S01403

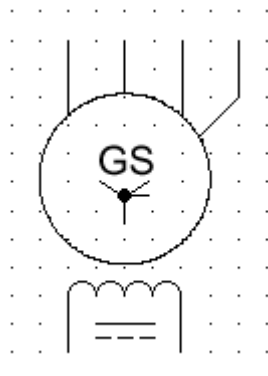
**Application notes:** A00126

**Shape class:** Circles, Half-circles

**Function class:** M Providing mechanical energy

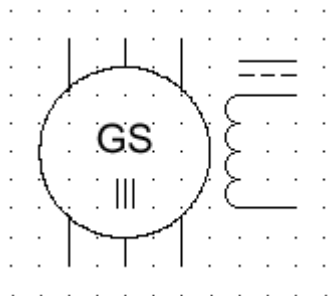
**Application class:** Circuit diagrams

## S00833



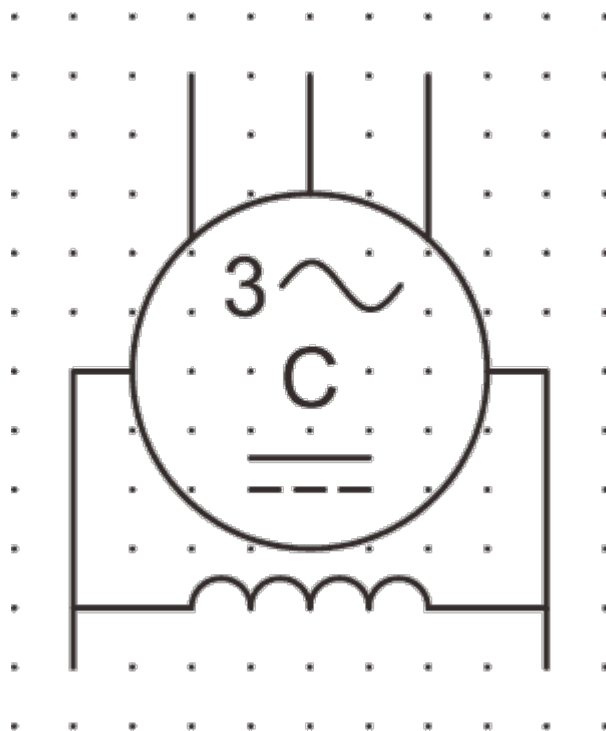
|                       |                                                                         |
|-----------------------|-------------------------------------------------------------------------|
| Name:                 | Synchronous generator, three-phase, star connected, neutral brought out |
| Status level:         | Standard                                                                |
| Released on:          | 2001-07-01                                                              |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-07-03                                           |
| Keywords:             | generators, machines - synchronous, power generators                    |
| Applies:              | S00583; S00809; S00819; S01401                                          |
| Application notes:    | A00126                                                                  |
| Shape class:          | Circles, Half-circles                                                   |
| Function class:       | G Initiating a flow                                                     |
| Application class:    | Circuit diagrams                                                        |

## S00834



|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| Name:                 | Synchronous generator, three-phase, both ends of each phase winding brought out |
| Status level:         | Standard                                                                        |
| Released on:          | 2001-07-01                                                                      |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-07-04                                                   |
| Keywords:             | generators, machines - synchronous, power generators                            |
| Applies:              | S00583; S00797; S00819; S01401                                                  |
| Application notes:    | A00126                                                                          |
| Shape class:          | Circles, Half-circles                                                           |
| Function class:       | G Initiating a flow                                                             |
| Application class:    | Circuit diagrams                                                                |

**S00835**



**Name:** Synchronous rotary converter, three-phase, shunt-excited

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-07-05

**Keywords:** converters, machines - synchronous

**Applies:** S00583; S00819; S01401; S01403

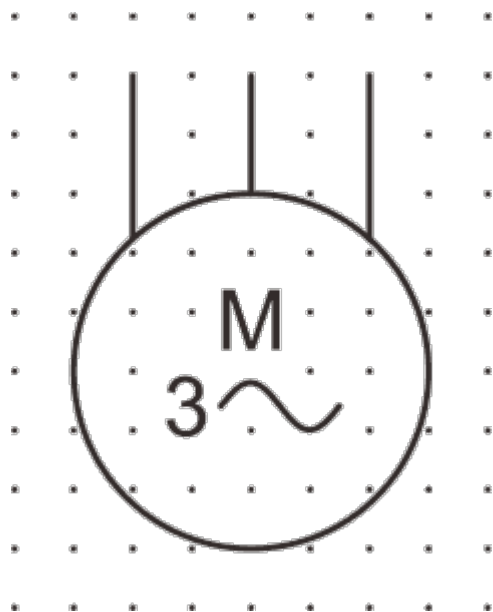
**Application notes:** A00126

**Shape class:** Circles, Half-circles

**Function class:** T Converting but maintaining kind

**Application class:** Circuit diagrams

**S00836**



**Name:** Induction motor, three-phase, squirrel cage

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-08-01

**Keywords:** asynchronous machines, machines - asynchronous, motors

**Applies:** S00819; S01403

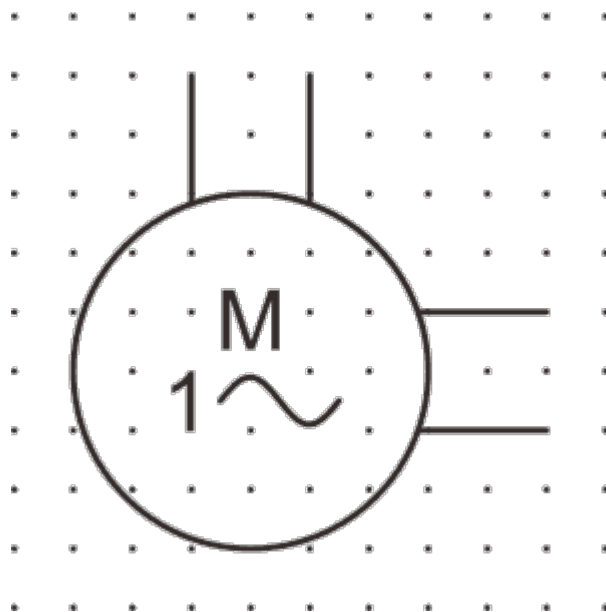
**Application notes:** A00126, A00133

**Shape class:** Circles

**Function class:** M Providing mechanical energy

**Application class:** Circuit diagrams

## S00837



**Name:** Induction motor, single-phase, squirrel-cage

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-08-02

**Keywords:** asynchronous machines, machines - asynchronous, motors

**Applies:** S00819; S01403

**Application notes:** A00126, A00133

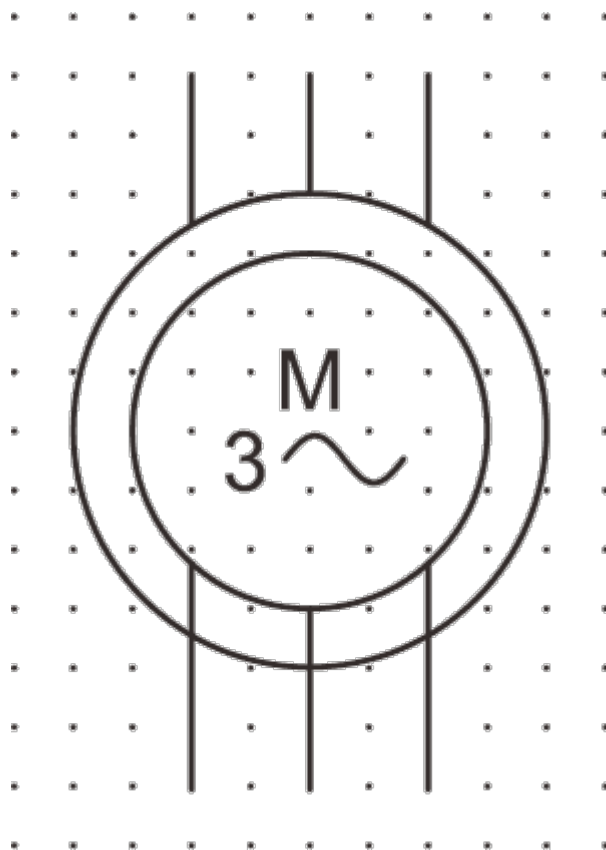
**Shape class:** Circles

**Function class:** M Providing mechanical energy

**Application class:** Circuit diagrams

**Remarks:** Ends of split-phase winding brought out.

**S00838**



**Name:** Induction motor, three-phase, with wound rotor

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-08-03

**Keywords:** asynchronous machines, machines - asynchronous, motors

**Applies:** S00819; S01403

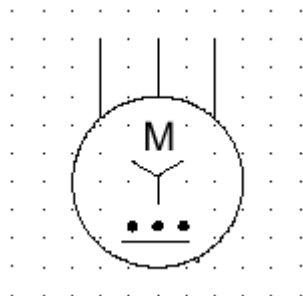
**Application notes:** A00126, A00133

**Shape class:** Circles

**Function class:** M Providing mechanical energy

**Application class:** Circuit diagrams

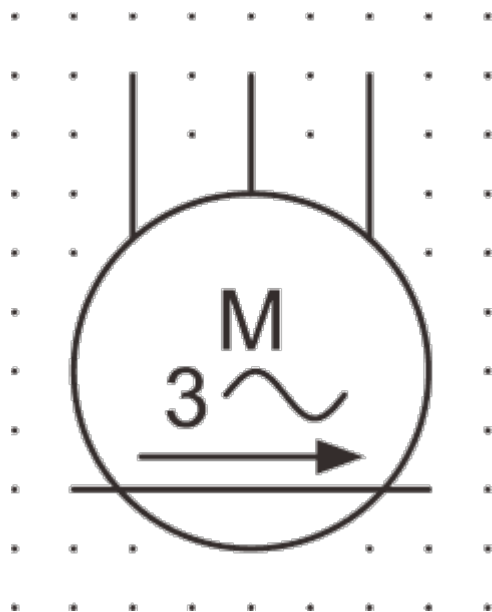
## S00839



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Induction motor, three-phase, star-connected           |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-08-04                          |
| Keywords:             | asynchronous machines, machines - asynchronous, motors |
| Applies:              | S00808; S00819                                         |
| Application notes:    | A00126, A00133                                         |
| Shape class:          | Circles                                                |
| Function class:       | M Providing mechanical energy                          |
| Application class:    | Circuit diagrams                                       |
| Remarks:              | With built-in automatic starter                        |



**S00840**



Name: Linear induction motor, three-phase

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-08-05

Keywords: asynchronous machines, machines - asynchronous, motors

Applies: S00093; S00820; S01403

Application notes: A00126, A00133

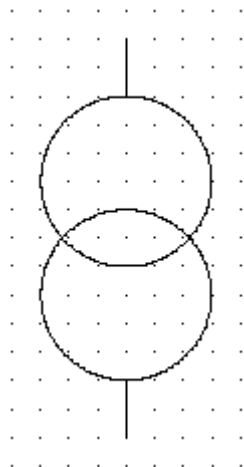
Shape class: Arrows, Circles, Lines

Function class: M Providing mechanical energy

Application class: Circuit diagrams

Remarks: Movement only in one direction

## S00841



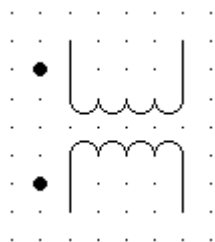
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Transformer with two windings, general symbol                                                                    |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-09-01                                                                                    |
| Keywords:             | transformers                                                                                                     |
| Form:                 | Form 1                                                                                                           |
| Alternative forms:    | S00842                                                                                                           |
| Applied in:           | S01837, S00878, S00852, S00854, S00856, S00975, S00864, S00866, S00862, S00860, S00858                           |
| Application notes:    | A00128, A00129                                                                                                   |
| Shape class:          | Circles                                                                                                          |
| Function class:       | T Converting but maintaining kind                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00842



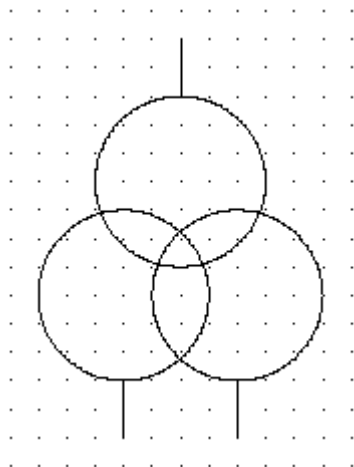
|                       |                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Transformer with two windings, general symbol                                                                          |
| Status level:         | Standard                                                                                                               |
| Released on:          | 2001-07-01                                                                                                             |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-09-02                                                                                          |
| Keywords:             | transformers                                                                                                           |
| Form:                 | Form 2                                                                                                                 |
| Alternative forms:    | S00841                                                                                                                 |
| Applied in:           | S01344, S00851, S00859, S00863, S00843, S00861, S00879, S00877, S00853, S01838, S00867, S00857, S00865, S00855, S00869 |
| Applies:              | S00583                                                                                                                 |
| Application notes:    | A00127, A00128, A00129, A00130                                                                                         |
| Shape class:          | Half-circles                                                                                                           |
| Function class:       | T Converting but maintaining kind                                                                                      |
| Application class:    | Circuit diagrams                                                                                                       |

## S00843



|                              |                                                                                        |
|------------------------------|----------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Transformer with two windings (and instantaneous voltage polarity indicators)          |
| <b>Status level:</b>         | <b>Standard</b>                                                                        |
| <b>Released on:</b>          | 2001-07-01                                                                             |
| <b>Earlier published in:</b> | IEC 60617-6 (ed.2.0) 06-09-03                                                          |
| <b>Keywords:</b>             | polarity indicators, transformers                                                      |
| <b>Form:</b>                 | Form 2                                                                                 |
| <b>Applies:</b>              | S00842                                                                                 |
| <b>Application notes:</b>    | A00129, A00130                                                                         |
| <b>Shape class:</b>          | Dots (points), Half-circles                                                            |
| <b>Function class:</b>       | T Converting but maintaining kind                                                      |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                                    |
| <b>Remarks:</b>              | Instantaneous currents entering the marked ends of the windings produce aiding fluxes. |

## S00844



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Transformer with three windings, general symbol                                                                  |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-09-04                                                                                    |
| Keywords:             | transformers                                                                                                     |
| Form:                 | Form 1                                                                                                           |
| Alternative forms:    | S00845                                                                                                           |
| Applied in:           | S00868                                                                                                           |
| Application notes:    | A00128, A00129                                                                                                   |
| Shape class:          | Circles                                                                                                          |
| Function class:       | T Converting but maintaining kind                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00845



**Name:** Transformer with three windings, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-09-05

**Keywords:** transformers

**Form:** Form 2

**Alternative forms:** S00844

**Applies:** S00583

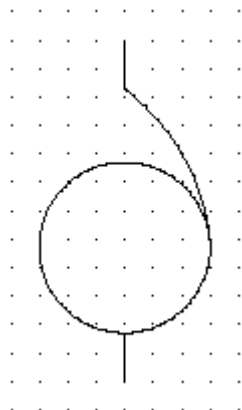
**Application notes:** A00127, A00128, A00129, A00130

**Shape class:** Half-circles

**Function class:** T Converting but maintaining kind

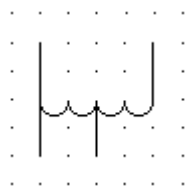
**Application class:** Circuit diagrams

## S00846



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Auto-transformer, general symbol                                                                                 |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-09-06                                                                                    |
| Keywords:             | auto-transformers, transformers                                                                                  |
| Form:                 | Form 1                                                                                                           |
| Alternative forms:    | S00847                                                                                                           |
| Applied in:           | S00303, S00872, S00870, S01913, S00874                                                                           |
| Application notes:    | A00128                                                                                                           |
| Shape class:          | Circles                                                                                                          |
| Function class:       | T Converting but maintaining kind                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00847



Name: Auto-transformer, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-09-07

Keywords: auto-transformers, transformers

Form: Form 2

Alternative forms: S00846

Applied in: S01914, S00875, S00873, S00871

Applies: S00583

Application notes: A00128, A00130

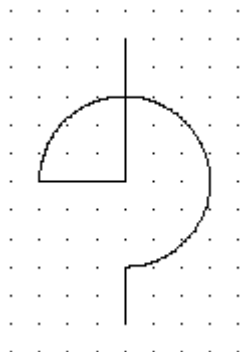
Shape class: Half-circles

Function class: T Converting but maintaining kind

Application class: Circuit diagrams

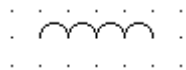


## S00848



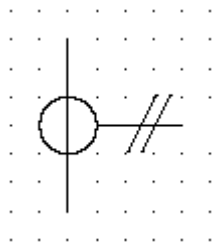
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Reactor, general symbol                                                     |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-09-08                                               |
| Alternative names:    | Choke                                                                       |
| Keywords:             | chokes, reactors                                                            |
| Form:                 | Form 1                                                                      |
| Alternative forms:    | S00849                                                                      |
| Applied in:           | S01913                                                                      |
| Application notes:    | A00128                                                                      |
| Shape class:          | Circle segments, Circles, Lines                                             |
| Function class:       | R Restricting or stabilising                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00849



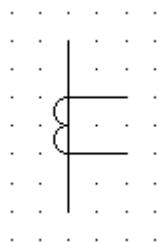
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|-----------------------|-------------------------------|
| Name:                 | Reactor, general symbol       |
| Status level:         | Standard                      |
| Released on:          | 2001-07-01                    |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-09-09 |
| Alternative names:    | Choke                         |
| Keywords:             | chokes, reactors              |
| Form:                 | Form 2                        |
| Alternative forms:    | S00848                        |
| Applies:              | S00583                        |
| Application notes:    | A00127, A00128, A00130        |
| Shape class:          | Half-circles                  |
| Function class:       | R Restricting or stabilising  |
| Application class:    | Circuit diagrams              |

## S00850



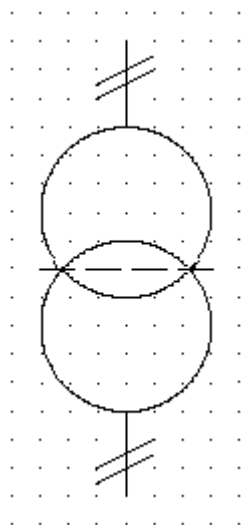
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Current transformer, general symbol                                                                              |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-09-10                                                                                    |
| Keywords:             | current transformers, transformers                                                                               |
| Form:                 | Form 1                                                                                                           |
| Alternative forms:    | S00851                                                                                                           |
| Applied in:           | S01841, S00888, S00886, S00882, S00884, S00880, S00890                                                           |
| Application notes:    | A00128, A00129                                                                                                   |
| Shape class:          | Circles                                                                                                          |
| Function class:       | B Converting variable to signal                                                                                  |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00851



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Current transformer, general symbol                    |
| Status level:         | <b>Standard</b>                                        |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-09-11                          |
| Keywords:             | current transformers, transformers                     |
| Form:                 | Form 2                                                 |
| Alternative forms:    | S00850                                                 |
| Applied in:           | S01842, S00881, S00885, S00883, S00891, S00889, S00887 |
| Applies:              | S00842                                                 |
| Application notes:    | A00127, A00128, A00129, A00130                         |
| Shape class:          | Half-circles, Lines                                    |
| Function class:       | B Converting variable to signal                        |
| Application class:    | Circuit diagrams                                       |

## S00852



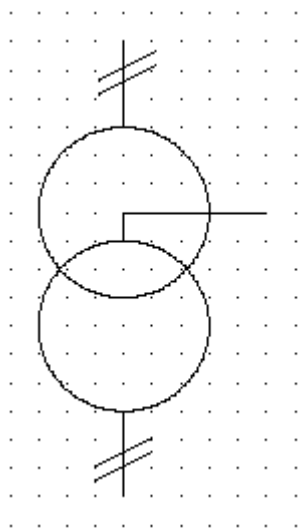
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Transformer with two windings and screen                                                                         |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-01                                                                                    |
| Keywords:             | transformers, transformers with separate windings                                                                |
| Form:                 | Form 1                                                                                                           |
| Alternative forms:    | S00853                                                                                                           |
| Applies:              | S00002; S00065; S00841                                                                                           |
| Application notes:    | A00128                                                                                                           |
| Shape class:          | Circles, Lines                                                                                                   |
| Function class:       | T Converting but maintaining kind                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00853



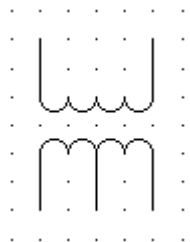
|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Transformer with two windings and screen          |
| Status level:         | <b>Standard</b>                                   |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-02                     |
| Keywords:             | transformers, transformers with separate windings |
| Form:                 | Form 2                                            |
| Alternative forms:    | S00852                                            |
| Applies:              | S00065; S00842                                    |
| Application notes:    | A00127, A00128, A00130                            |
| Shape class:          | Half-circles, Lines                               |
| Function class:       | T Converting but maintaining kind                 |
| Application class:    | Circuit diagrams                                  |

## S00854



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Transformer with centre tap on one winding                                                                       |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-03                                                                                    |
| Keywords:             | transformers, transformers with separate windings                                                                |
| Form:                 | Form 1                                                                                                           |
| Alternative forms:    | S00855                                                                                                           |
| Applies:              | S00002; S00841                                                                                                   |
| Application notes:    | A00128                                                                                                           |
| Shape class:          | Circles, Lines                                                                                                   |
| Function class:       | T Converting but maintaining kind                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

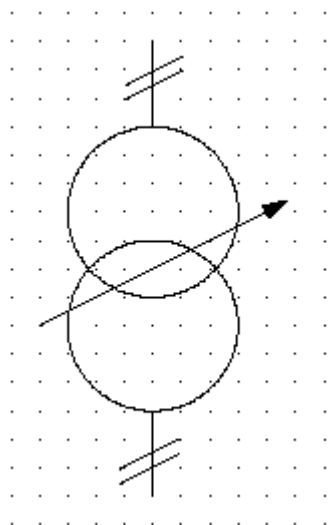
## S00855



|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Transformer with centre tap on one winding        |
| Status level:         | Standard                                          |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-04                     |
| Keywords:             | transformers, transformers with separate windings |
| Form:                 | Form 2                                            |
| Alternative forms:    | S00854                                            |
| Applies:              | S00842                                            |
| Application notes:    | A00127, A00128, A00130                            |
| Shape class:          | Half-circles                                      |
| Function class:       | T Converting but maintaining kind                 |
| Application class:    | Circuit diagrams                                  |



## S00856



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Transformer with variable coupling                                                                               |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-05                                                                                    |
| Keywords:             | transformers, transformers with separate windings, variability                                                   |
| Form:                 | Form 1                                                                                                           |
| Alternative forms:    | S00857                                                                                                           |
| Applies:              | S00002; S00081; S00841                                                                                           |
| Application notes:    | A00128                                                                                                           |
| Shape class:          | Arrows, Circles, Lines                                                                                           |
| Function class:       | T Converting but maintaining kind                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00857



**Name:** Transformer with variable coupling

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-10-06

**Keywords:** transformers, transformers with separate windings, variability

**Form:** Form 2

**Alternative forms:** S00856

**Applies:** S00081; S00842

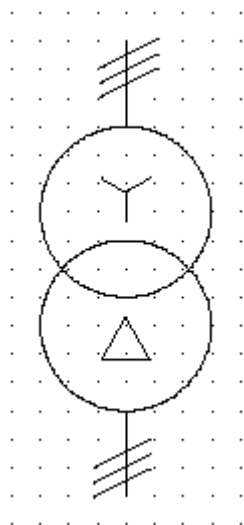
**Application notes:** A00127, A00128, A00130

**Shape class:** Arrows, Half-circles

**Function class:** T Converting but maintaining kind

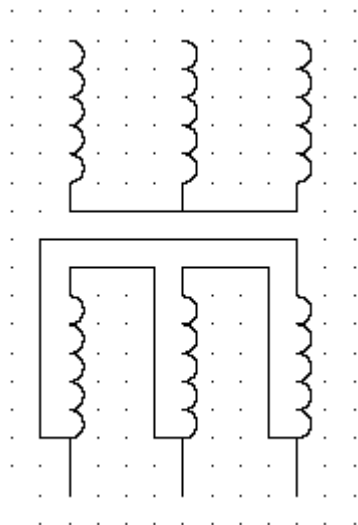
**Application class:** Circuit diagrams

## S00858



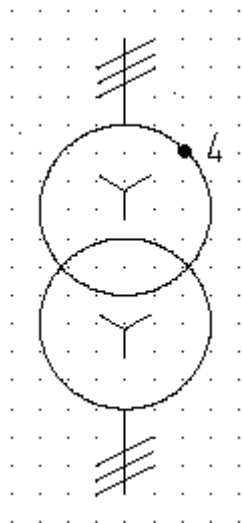
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Three-phase transformer, connection star-delta                                                                   |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-07                                                                                    |
| Keywords:             | transformers, transformers with separate windings                                                                |
| Form:                 | Form 1                                                                                                           |
| Alternative forms:    | S00859                                                                                                           |
| Applies:              | S00002; S00806; S00808; S00841                                                                                   |
| Application notes:    | A00128                                                                                                           |
| Shape class:          | Circles, Equilateral triangles, Lines                                                                            |
| Function class:       | T Converting but maintaining kind                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S00859



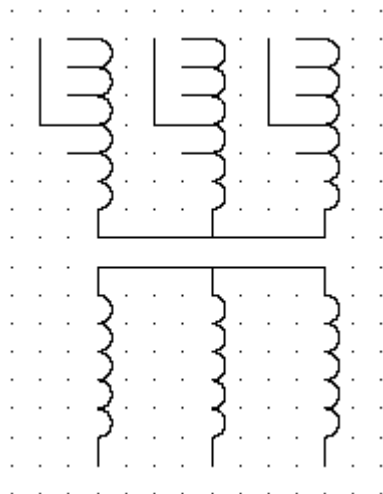
|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Three-phase transformer, connection star-delta    |
| Status level:         | Standard                                          |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-08                     |
| Keywords:             | transformers, transformers with separate windings |
| Form:                 | Form 2                                            |
| Alternative forms:    | S00858                                            |
| Applies:              | S00842                                            |
| Application notes:    | A00127, A00128, A00130                            |
| Shape class:          | Half-circles                                      |
| Function class:       | T Converting but maintaining kind                 |
| Application class:    | Circuit diagrams                                  |

## S00860



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Three-phase transformer with four taps, connection: star-star                                                    |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-09                                                                                    |
| Keywords:             | transformers, transformers with separate windings                                                                |
| Form:                 | Form 1                                                                                                           |
| Alternative forms:    | S00861                                                                                                           |
| Applies:              | S00002; S00808; S00841                                                                                           |
| Application notes:    | A00128                                                                                                           |
| Shape class:          | Characters, Circles, Dots (points), Lines                                                                        |
| Function class:       | T Converting but maintaining kind                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |
| Remarks:              | Each primary winding is shown with four available connection points in addition to those at the winding-ends.    |

## S00861



**Name:** Three-phase transformer with four taps, connection: star-star

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-10-10

**Keywords:** transformers, transformers with separate windings

**Form:** Form 2

**Alternative forms:** S00860

**Applies:** S00842

**Application notes:** A00127, A00128, A00130

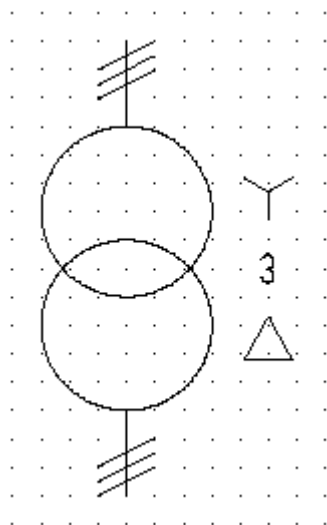
**Shape class:** Half-circles, Lines

**Function class:** T Converting but maintaining kind

**Application class:** Circuit diagrams

**Remarks:** Each primary winding is shown with four available connection points in addition to those at the winding-ends.

## S00862



**Name:** Three-phase bank of single-phase transformers, connection star-delta

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-10-11

**Keywords:** transformers, transformers with separate windings

**Form:** Form 1

**Alternative forms:** S00863

**Applies:** S00002; S00806; S00808; S00841

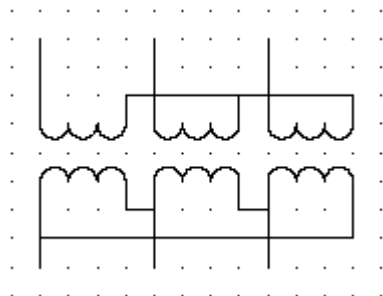
**Application notes:** A00128

**Shape class:** Characters, Circles, Lines

**Function class:** T Converting but maintaining kind

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

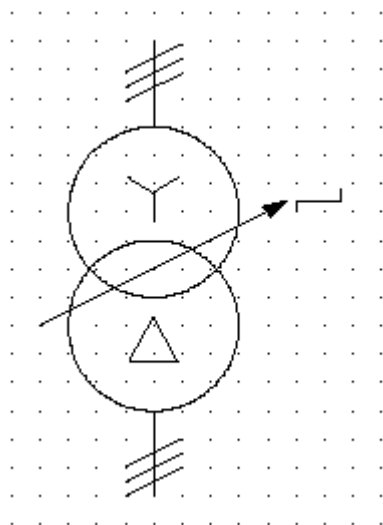
## S00863



|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| Name:                 | Three-phase bank of single-phase transformers, connection star-delta |
| Status level:         | Standard                                                             |
| Released on:          | 2001-07-01                                                           |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-12                                        |
| Keywords:             | transformers                                                         |
| Form:                 | Form 2                                                               |
| Alternative forms:    | S00862                                                               |
| Applies:              | S00842                                                               |
| Application notes:    | A00127, A00128, A00130                                               |
| Shape class:          | Half-circles                                                         |
| Function class:       | T Converting but maintaining kind                                    |
| Application class:    | Circuit diagrams                                                     |

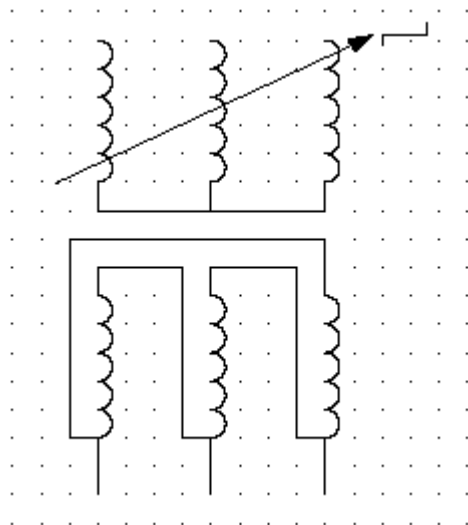


## S00864



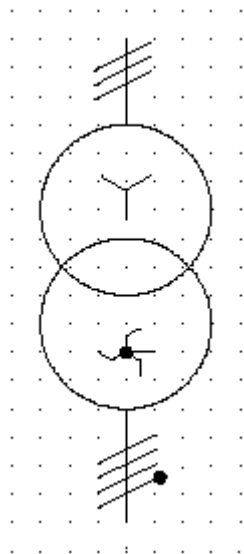
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Three-phase transformer with tap changer                                                           |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-13                                                                      |
| Keywords:             | tap changers, transformers, transformers with separate windings                                    |
| Form:                 | Form 1                                                                                             |
| Alternative forms:    | S00865                                                                                             |
| Applies:              | S00002; S00081; S00087; S00806; S00808; S00841                                                     |
| Application notes:    | A00128                                                                                             |
| Shape class:          | Arrows, Circles, Lines                                                                             |
| Function class:       | T Converting but maintaining kind                                                                  |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |
| Remarks:              | On-load tap changer, connection star-delta                                                         |

## S00865



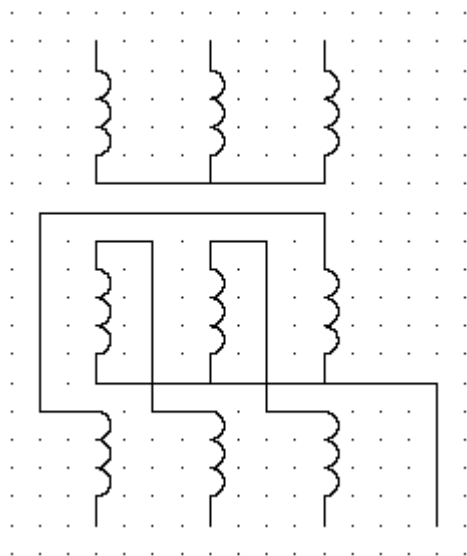
|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Name:                 | Three-phase transformer with tap changer                        |
| Status level:         | Standard                                                        |
| Released on:          | 2001-07-01                                                      |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-14                                   |
| Keywords:             | tap changers, transformers, transformers with separate windings |
| Form:                 | Form 2                                                          |
| Alternative forms:    | S00864                                                          |
| Applies:              | S00081; S00087; S00842                                          |
| Application notes:    | A00127, A00128, A00130                                          |
| Shape class:          | Arrows, Half-circles                                            |
| Function class:       | T Converting but maintaining kind                               |
| Application class:    | Circuit diagrams                                                |
| Remarks:              | On-load tap changer, connection star-delta                      |

## S00866



|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| Name:                 | Three-phase transformer, connection star-zigzag with the neutral brought out |
| Status level:         | Standard                                                                     |
| Released on:          | 2001-07-01                                                                   |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-15                                                |
| Keywords:             | transformers, transformers with separate windings                            |
| Form:                 | Form 1                                                                       |
| Alternative forms:    | S00867                                                                       |
| Applies:              | S00002; S00446; S00808; S00810; S00841                                       |
| Application notes:    | A00128                                                                       |
| Shape class:          | Circles, Lines                                                               |
| Function class:       | T Converting but maintaining kind                                            |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams  |

## S00867



**Name:** Three-phase transformer, connection star-zigzag with the neutral brought out

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-10-16

**Keywords:** transformers, transformers with separate windings

**Form:** Form 2

**Alternative forms:** S00866

**Applies:** S00842

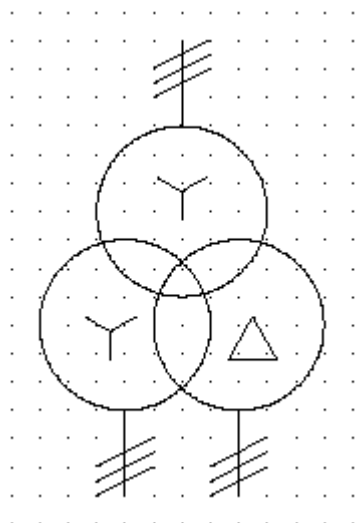
**Application notes:** A00127, A00128, A00130

**Shape class:** Half-circles

**Function class:** T Converting but maintaining kind

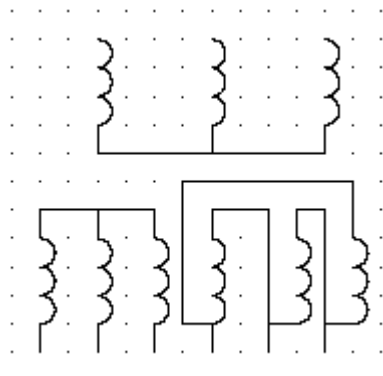
**Application class:** Circuit diagrams

## S00868



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Three-phase transformer, connection star-star-delta                         |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-10-17                                               |
| Keywords:             | transformers, transformers with separate windings                           |
| Form:                 | Form 1                                                                      |
| Alternative forms:    | S00869                                                                      |
| Applies:              | S00002; S00806; S00808; S00844                                              |
| Application notes:    | A00128                                                                      |
| Shape class:          | Circles, Equilateral triangles, Lines                                       |
| Function class:       | T Converting but maintaining kind                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00869



**Name:** Three-phase transformer, connection star-star-delta

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-10-18

**Keywords:** transformers, transformers with separate windings

**Form:** Form 2

**Alternative forms:** S00868

**Applies:** S00842

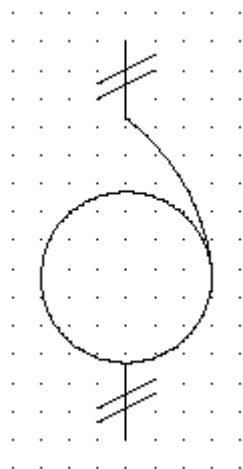
**Application notes:** A00127, A00128, A00130

**Shape class:** Half-circles

**Function class:** T Converting but maintaining kind

**Application class:** Circuit diagrams

## S00870



Name: Auto-transformer, single-phase

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-11-01

Keywords: auto-transformers, transformers

Form: Form 1

Alternative forms: S00871

Applied in: S00874

Applies: S00002; S00846

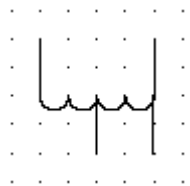
Application notes: A00128

Shape class: Circles

Function class: T Converting but maintaining kind

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

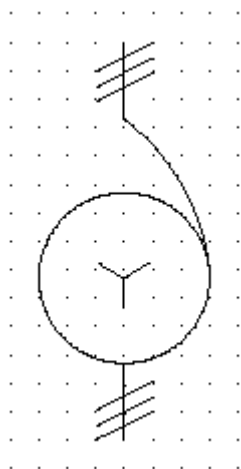
## S00871



|                       |                                   |
|-----------------------|-----------------------------------|
| Name:                 | Auto-transformer, single-phase    |
| Status level:         | <b>Standard</b>                   |
| Released on:          | 2001-07-01                        |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-11-02     |
| Keywords:             | auto-transformers, transformers   |
| Form:                 | Form 2                            |
| Alternative forms:    | S00870                            |
| Applies:              | S00847                            |
| Application notes:    | A00127, A00128                    |
| Shape class:          | Half-circles                      |
| Function class:       | T Converting but maintaining kind |
| Application class:    | Circuit diagrams                  |

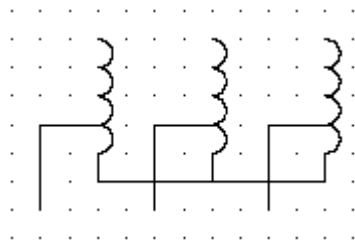


## S00872



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Auto-transformer, three-phase, connection star                              |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-11-03                                               |
| Keywords:             | auto-transformers, transformers                                             |
| Form:                 | Form 1                                                                      |
| Alternative forms:    | S00873                                                                      |
| Applies:              | S00002; S00808; S00846                                                      |
| Application notes:    | A00128                                                                      |
| Shape class:          | Circles, Lines                                                              |
| Function class:       | T Converting but maintaining kind                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00873



**Name:** Auto-transformer, three-phase, connection star

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-11-04

**Keywords:** auto-transformers, transformers

**Form:** Form 2

**Alternative forms:** S00872

**Applies:** S00847

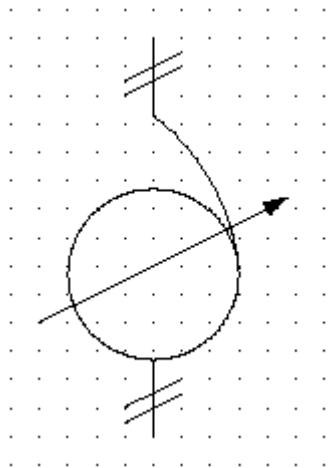
**Application notes:** A00127, A00128, A00130

**Shape class:** Half-circles

**Function class:** T Converting but maintaining kind

**Application class:** Circuit diagrams

## S00874



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Auto-transformer, single-phase with voltage regulation                      |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-11-05                                               |
| Keywords:             | auto-transformers, transformers                                             |
| Form:                 | Form 1                                                                      |
| Alternative forms:    | S00875                                                                      |
| Applies:              | S00002; S00081; S00846; S00870                                              |
| Application notes:    | A00128                                                                      |
| Shape class:          | Arrows, Circles                                                             |
| Function class:       | T Converting but maintaining kind                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00875



**Name:** Auto-transformer, single-phase with voltage regulation

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-11-06

**Keywords:** auto-transformers, transformers

**Form:** Form 2

**Alternative forms:** S00874

**Applies:** S00081; S00847

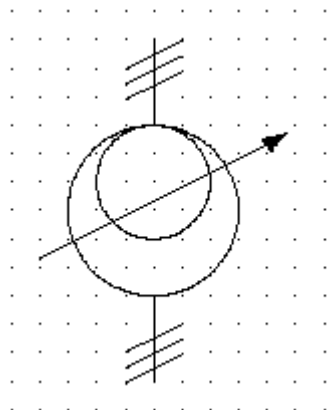
**Application notes:** A00127, A00128

**Shape class:** Arrows, Half-circles

**Function class:** T Converting but maintaining kind

**Application class:** Circuit diagrams

## S00876



**Name:** Three-phase induction regulator

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-12-01

**Keywords:** induction regulators, inductors, reactors

**Form:** Form 1

**Alternative forms:** S00877

**Applies:** S00002; S00081

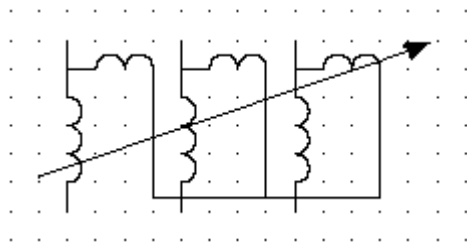
**Application notes:** A00128

**Shape class:** Arrows, Circles, Lines

**Function class:** R Restricting or stabilising, T Converting but maintaining kind

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00877



Name: Three-phase induction regulator

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-12-02

Keywords: induction regulators, inductors, reactors

Form: Form 2

Alternative forms: S00876

Applies: S00081; S00842

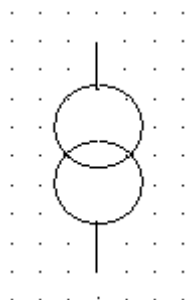
Application notes: A00127, A00128, A00130

Shape class: Arrows, Half-circles

Function class: T Converting but maintaining kind

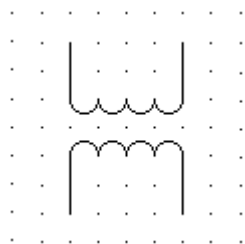
Application class: Circuit diagrams

## S00878



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Voltage transformer                                                         |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-13-01A                                              |
| Alternative names:    | Measuring transformer                                                       |
| Keywords:             | measuring transformers, transformers, voltage transformers                  |
| Form:                 | Form 1                                                                      |
| Alternative forms:    | S00879                                                                      |
| Applied in:           | S01840, S01839                                                              |
| Applies:              | S00841                                                                      |
| Application notes:    | A00128, A00134                                                              |
| Shape class:          | Circles                                                                     |
| Function class:       | B Converting variable to signal                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

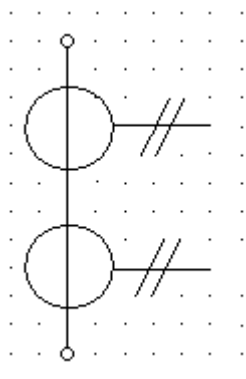
## S00879



|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| Name:                 | Voltage transformer                                        |
| Status level:         | Standard                                                   |
| Released on:          | 2001-07-01                                                 |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-13-01B                             |
| Alternative names:    | Measuring transformer                                      |
| Keywords:             | measuring transformers, transformers, voltage transformers |
| Form:                 | Form 2                                                     |
| Alternative forms:    | S00878                                                     |
| Applies:              | S00842                                                     |
| Application notes:    | A00127, A00128, A00130, A00134                             |
| Shape class:          | Half-circles                                               |
| Function class:       | B Converting variable to signal                            |
| Application class:    | Circuit diagrams                                           |

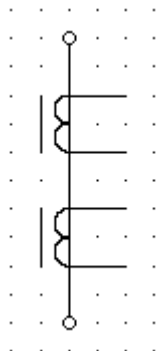


## S00880



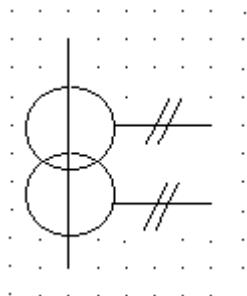
|                              |                                                                                                                                                                                         |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Current transformer with two cores with one secondary winding on each core                                                                                                              |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                         |
| <b>Released on:</b>          | 2001-07-01                                                                                                                                                                              |
| <b>Earlier published in:</b> | IEC 60617-6 (ed.2.0) 06-13-02                                                                                                                                                           |
| <b>Keywords:</b>             | current transformers, measuring transformers, transformers                                                                                                                              |
| <b>Form:</b>                 | Form 1                                                                                                                                                                                  |
| <b>Alternative forms:</b>    | S00881                                                                                                                                                                                  |
| <b>Applies:</b>              | S00002; S00017; S00850                                                                                                                                                                  |
| <b>Application notes:</b>    | A00128, A00129, A00134                                                                                                                                                                  |
| <b>Shape class:</b>          | Circles, Lines                                                                                                                                                                          |
| <b>Function class:</b>       | B Converting variable to signal                                                                                                                                                         |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                                                                                                             |
| <b>Remarks:</b>              | The terminal symbols shown at each end of the primary circuit indicate that only a single device is represented. The terminal symbols may be omitted if terminal designations are used. |

## S00881



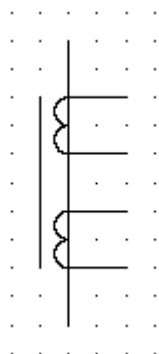
|                       |                                                                                                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Current transformer with two cores with one secondary winding on each core                                                                                                                                                        |
| Status level:         | Standard                                                                                                                                                                                                                          |
| Released on:          | 2001-07-01                                                                                                                                                                                                                        |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-13-03                                                                                                                                                                                                     |
| Keywords:             | current transformers, measuring transformers, transformers                                                                                                                                                                        |
| Form:                 | Form 2                                                                                                                                                                                                                            |
| Alternative forms:    | S00880                                                                                                                                                                                                                            |
| Applies:              | S00017; S00851                                                                                                                                                                                                                    |
| Application notes:    | A00127, A00128, A00129, A00130, A00134                                                                                                                                                                                            |
| Shape class:          | Half-circles, Lines                                                                                                                                                                                                               |
| Function class:       | B Converting variable to signal                                                                                                                                                                                                   |
| Application class:    | Circuit diagrams                                                                                                                                                                                                                  |
| Remarks:              | The terminal symbols shown at each end of the primary circuit indicate that only a single device is represented. The terminal symbols may be omitted if terminal designations are used<br>In form 2, core symbols may be omitted. |

## S00882



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Current transformer with two secondary windings on one core                 |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-13-04                                               |
| Keywords:             | current transformers, measuring transformers, transformers                  |
| Form:                 | Form 1                                                                      |
| Alternative forms:    | S00883                                                                      |
| Applies:              | S00002; S00850                                                              |
| Application notes:    | A00128, A00129, A00134                                                      |
| Shape class:          | Circles, Lines                                                              |
| Function class:       | B Converting variable to signal                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00883



**Name:** Current transformer with two secondary windings on one core

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-13-05

**Keywords:** current transformers, measuring transformers, transformers

**Form:** Form 2

**Alternative forms:** S00882

**Applies:** S00851

**Application notes:** A00127, A00128, A00129, A00130, A00134

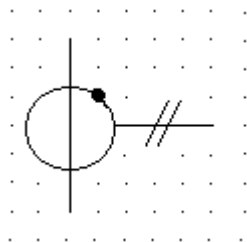
**Shape class:** Half-circles, Lines

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams

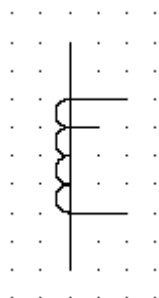
**Remarks:** In form 2, the core symbol shall be drawn

## S00884



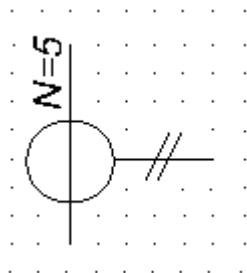
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Current transformer with one secondary winding with one tap                 |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-13-06                                               |
| Keywords:             | current transformers, measuring transformers, transformers                  |
| Form:                 | Form 1                                                                      |
| Alternative forms:    | S00855                                                                      |
| Applies:              | S00002; S00850                                                              |
| Application notes:    | A00128, A00129, A00134                                                      |
| Shape class:          | Circles, Dots (points), Lines                                               |
| Function class:       | B Converting variable to signal                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00885



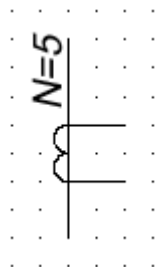
|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| Name:                 | Current transformer with one secondary winding with one tap |
| Status level:         | Standard                                                    |
| Released on:          | 2001-07-01                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-13-07                               |
| Keywords:             | current transformers, measuring transformers, transformers  |
| Form:                 | Form 2                                                      |
| Alternative forms:    | S00884                                                      |
| Applies:              | S00851                                                      |
| Application notes:    | A00127, A00128, A00129, A00130, A00134                      |
| Shape class:          | Half-circles, Lines                                         |
| Function class:       | B Converting variable to signal                             |
| Application class:    | Circuit diagrams                                            |

## S00886



|                       |                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------|
| Name:                 | Current transformer with five passages of a conductor acting as a primary winding |
| Status level:         | Standard                                                                          |
| Released on:          | 2001-07-01                                                                        |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-13-08                                                     |
| Keywords:             | current transformers, measuring transformers, transformers                        |
| Form:                 | Form 1                                                                            |
| Alternative forms:    | S00887                                                                            |
| Applies:              | S00002; S00850                                                                    |
| Application notes:    | A00128, A00129, A00134                                                            |
| Shape class:          | Circles, Lines                                                                    |
| Function class:       | B Converting variable to signal                                                   |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams       |
| Remarks:              | This kind of current transformer has no built-in primary winding                  |

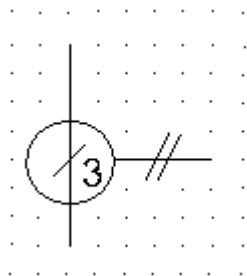
## S00887



|                              |                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------|
| <b>Name:</b>                 | Current transformer with five passages of a conductor acting as a primary winding |
| <b>Status level:</b>         | Standard                                                                          |
| <b>Released on:</b>          | 2001-07-01                                                                        |
| <b>Earlier published in:</b> | IEC 60617-6 (ed.2.0) 06-13-09                                                     |
| <b>Keywords:</b>             | current transformers, measuring transformers, transformers                        |
| <b>Form:</b>                 | Form 2                                                                            |
| <b>Alternative forms:</b>    | S00886                                                                            |
| <b>Applies:</b>              | S00851                                                                            |
| <b>Application notes:</b>    | A00127, A00128, A00129, A00130, A00134                                            |
| <b>Shape class:</b>          | Half-circles, Lines                                                               |
| <b>Function class:</b>       | B Converting variable to signal                                                   |
| <b>Application class:</b>    | Circuit diagrams                                                                  |
| <b>Remarks:</b>              | This kind of current transformer has no built-in primary winding                  |

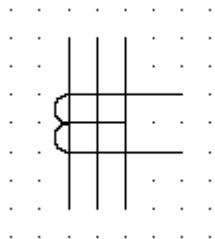


## S00888



|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Name:                 | Pulse or current transformer with three threaded primary conductors            |
| Status level:         | Standard                                                                       |
| Released on:          | 2001-07-01                                                                     |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-13-10                                                  |
| Keywords:             | current transformers, measuring transformers, pulse transformers, transformers |
| Form:                 | Form 1                                                                         |
| Alternative forms:    | S00889                                                                         |
| Applies:              | S00002; S00003; S00850                                                         |
| Application notes:    | A00128, A00129, A00134                                                         |
| Shape class:          | Circles, Lines                                                                 |
| Function class:       | B Converting variable to signal                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams    |

## S00889



**Name:** Pulse or current transformer with three threaded primary conductors

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-13-11

**Keywords:** current transformers, measuring transformers, pulse transformers, transformers

**Form:** Form 2

**Alternative forms:** S00888

**Applies:** S00851

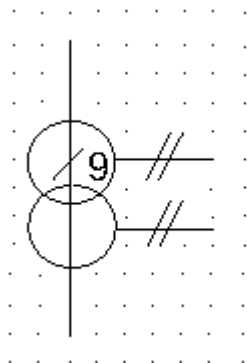
**Application notes:** A00127, A00128, A00129, A00130, A00134

**Shape class:** Half-circles, Lines

**Function class:** B Converting variable to signal

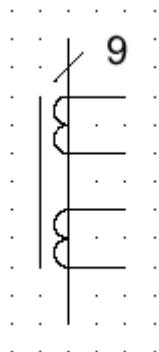
**Application class:** Circuit diagrams

## S00890



|                              |                                                                                |
|------------------------------|--------------------------------------------------------------------------------|
| <b>Name:</b>                 | Pulse or current transformer with two secondary windings on the same core      |
| <b>Status level:</b>         | Standard                                                                       |
| <b>Released on:</b>          | 2001-07-01                                                                     |
| <b>Earlier published in:</b> | IEC 60617-6 (ed.2.0) 06-13-12                                                  |
| <b>Keywords:</b>             | current transformers, measuring transformers, pulse transformers, transformers |
| <b>Form:</b>                 | Form 1                                                                         |
| <b>Alternative forms:</b>    | S00891                                                                         |
| <b>Applies:</b>              | S00002; S00003; S00850                                                         |
| <b>Application notes:</b>    | A00128, A00129, A00134                                                         |
| <b>Shape class:</b>          | Circles, Lines                                                                 |
| <b>Function class:</b>       | B Converting variable to signal                                                |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams    |
| <b>Remarks:</b>              | Shown with nine threaded primary conductors                                    |

## S00891



|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Name:                 | Pulse or current transformer with two secondary windings on the same core      |
| Status level:         | Standard                                                                       |
| Released on:          | 2001-07-01                                                                     |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-13-13                                                  |
| Keywords:             | current transformers, measuring transformers, pulse transformers, transformers |
| Form:                 | Form 2                                                                         |
| Alternative forms:    | S00890                                                                         |
| Applies:              | S00851                                                                         |
| Application notes:    | A00127, A00128, A00129, A00130, A00134                                         |
| Shape class:          | Half-circles, Lines                                                            |
| Function class:       | B Converting variable to signal                                                |
| Application class:    | Circuit diagrams                                                               |
| Remarks:              | Shown with nine threaded primary conductors                                    |

## S00893



Name: DC/DC converter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-14-02

Alternative names: Chopper

Keywords: choppers, converters, power converters

Applies: S00059; S00214; S01401

Shape class: Squares

Function class: T Converting but maintaining kind

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**S00894**



**Name:** Rectifier

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-14-03

**Keywords:** power converters, rectifiers

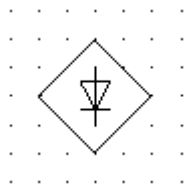
**Applies:** S00059; S00213; S00214; S01401; S01403

**Shape class:** Squares

**Function class:** T Converting but maintaining kind

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00895



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Rectifier in full wave (bridge) connection                                  |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-14-04                                               |
| Keywords:             | power converters, rectifiers                                                |
| Applies:              | S00641                                                                      |
| Shape class:          | Squares                                                                     |
| Function class:       | T Converting but maintaining kind                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00896



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Inverter                                                                    |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-14-05                                               |
| Keywords:             | inverters, power converters                                                 |
| Applies:              | S00059; S00214; S01401; S01403                                              |
| Shape class:          | Squares                                                                     |
| Function class:       | T Converting but maintaining kind                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |



## S00897



Name: Rectifier/inverter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-14-06

Keywords: inverters, power converters, rectifiers

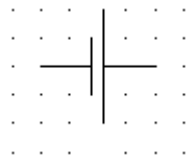
Applies: S00059; S00101; S00214; S01401; S01403

Shape class: Arrows, Squares

Function class: T Converting but maintaining kind

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00898



Name: Primary cell

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-15-01

Alternative names: Battery

Keywords: primary cells

Applied in: S01365, S00686, S01366

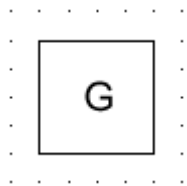
Shape class: Lines

Function class: G Initiating a flow

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

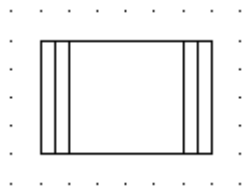
Remarks: The longer line represents the positive pole, the shorter one the negative pole

## S00899



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Static generator, general symbol                                                                   |
| Status level:         | <b>Standard</b>                                                                                    |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-16-01                                                                      |
| Keywords:             | generators, power generators, static generators                                                    |
| Applied in:           | S00903, S00907, S00904, S01226, S00906, S01215, S00905, S01217, S01216, S00908                     |
| Applies:              | S00059                                                                                             |
| Application notes:    | A00131                                                                                             |
| Shape class:          | Squares                                                                                            |
| Function class:       | G Initiating a flow                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S00900



Name: Heat source, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-17-01

Keywords: heat sources

Applied in: S00901, S00902, S00903, S00907, S00904, S00906, S00905

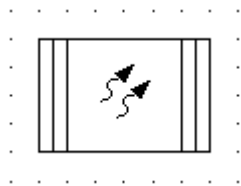
Applies: S00059

Shape class: Lines , Rectangles

Function class: E Providing radiant or thermal energy

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00901



Name: Radio-isotope heat source

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-17-02

Keywords: heat sources

Applied in: S00907, S00905

Applies: S00129; S00900

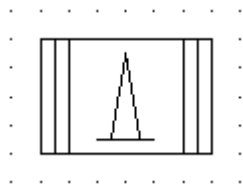
Application notes: A00041, A00042

Shape class: Arrows, Rectangles

Function class: E Providing radiant or thermal energy

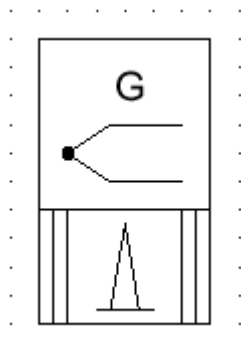
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00902



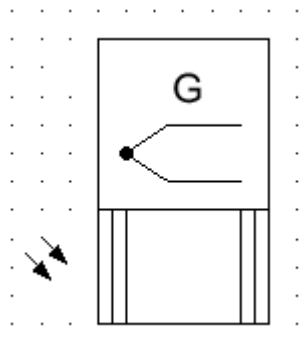
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Combustion heat source                                                      |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-17-03                                               |
| Keywords:             | heat sources                                                                |
| Applied in:           | S00903                                                                      |
| Applies:              | S00900                                                                      |
| Shape class:          | Equilateral triangles, Rectangles                                           |
| Function class:       | E Providing radiant or thermal energy                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00903



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Thermoelectric generator, with combustion heat source                       |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-18-01                                               |
| Keywords:             | generators, non-rotary power generators, power generators                   |
| Applies:              | S00899; S00900; S00902; S00952                                              |
| Shape class:          | Equilateral triangles, Rectangles, Squares                                  |
| Function class:       | G Initiating a flow                                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00904



**Name:** Thermoelectric generator with non-ionizing radiation heat source

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-18-02

**Keywords:** generators, non-rotary power generators, power generators

**Applies:** S00127; S00899; S00900; S00952

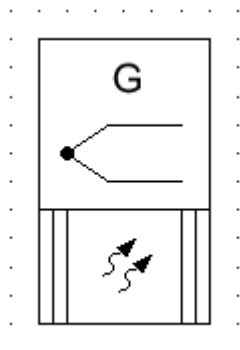
**Shape class:** Arrows, Rectangles, Squares

**Function class:** G Initiating a flow

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

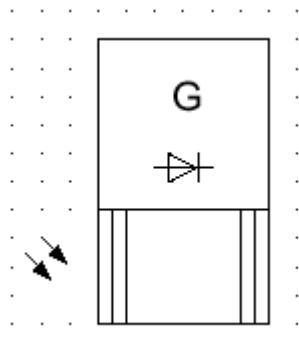


## S00905



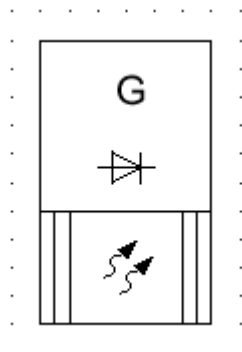
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Thermoelectric generator with radio-isotope heat source                     |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-18-03                                               |
| Keywords:             | generators, non-rotary power generators, power generators                   |
| Applies:              | S00129; S00899; S00900; S00901; S00952                                      |
| Shape class:          | Arrows, Rectangles, Squares                                                 |
| Function class:       | G Initiating a flow                                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00906



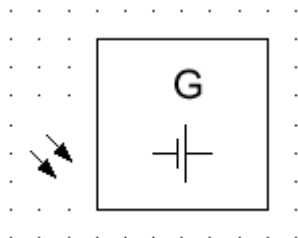
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Thermionic diode generator with non-ionizing radiation heat source          |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-18-04                                               |
| Keywords:             | generators, non-rotary power generators, power generators                   |
| Applies:              | S00127; S00641; S00899; S00900                                              |
| Shape class:          | Arrows, Rectangles, Squares                                                 |
| Function class:       | G Initiating a flow                                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00907



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Thermionic diode generator with radio-isotope heat source                   |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-18-05                                               |
| Keywords:             | generators, non-rotary power generators, power generators                   |
| Applies:              | S00129; S00641; S00899; S00900; S00901                                      |
| Shape class:          | Arrows, Rectangles, Squares                                                 |
| Function class:       | G Initiating a flow                                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00908



**Name:** Photovoltaic generator

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-6 (ed.2.0) 06-18-06

**Keywords:** generators, non-rotary power generators, power generators

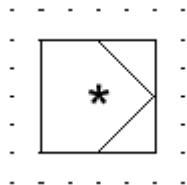
**Applies:** S00127; S00899; S01342

**Shape class:** Arrows, Lines , Squares

**Function class:** G Initiating a flow

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00909



Name: Closed-loop controller

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-19-01

Keywords: closed-loop controllers, controllers

Application notes: A00132, A00256

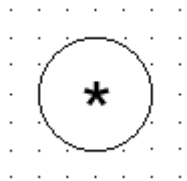
Shape class: Equilateral triangles, Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

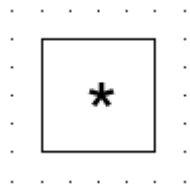
Remarks: See A00256 for an example of use.

## S00910



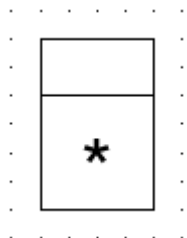
|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Indicating instrument, general symbol                                                                                                                  |
| Status level:         | Standard                                                                                                                                               |
| Released on:          | 2001-07-01                                                                                                                                             |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-01-01                                                                                                                          |
| Alternative names:    | Instrument                                                                                                                                             |
| Keywords:             | indicating instruments, instruments, measuring instruments                                                                                             |
| Applied in:           | S01426, S01428, S01427, S00916, S00927, S00921, S00917, S00913, S00922, S00923, S00915, S00918, S00926, S00914, S00924, S00919, S00925, S00920, S01843 |
| Application notes:    | A00144, A00145, A00146, A00147, A00369                                                                                                                 |
| Shape class:          | Circles                                                                                                                                                |
| Function class:       | P Presenting information                                                                                                                               |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams                                                     |
| Remarks:              | The asterisk shall be replaced in accordance with the application note A00144.                                                                         |

## S00911



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Recording instrument, general symbol                                                               |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-01-02                                                                      |
| Alternative names:    | Instrument                                                                                         |
| Keywords:             | instruments, measuring instruments, recording instruments                                          |
| Applied in:           | S00928, S00929, S00930                                                                             |
| Application notes:    | A00144, A00145, A00146, A00147, A00369                                                             |
| Shape class:          | Squares                                                                                            |
| Function class:       | P Presenting information                                                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |
| Remarks:              | The asterisk shall be replaced in accordance with the rules in application note A00144.            |

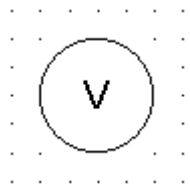
## S00912



|                              |                                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Integrating instrument, general symbol                                                                                 |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                        |
| <b>Released on:</b>          | 2001-07-01                                                                                                             |
| <b>Earlier published in:</b> | IEC 60617-8 (ed.2.0) 08-01-03                                                                                          |
| <b>Alternative names:</b>    | Energy meter                                                                                                           |
| <b>Keywords:</b>             | instruments, integrating instruments, measuring instruments                                                            |
| <b>Applied in:</b>           | S00935, S00942, S00939, S00936, S00938, S00945, S00931, S00940, S00943, S00944, S00937, S00934, S00941, S00932, S00933 |
| <b>Application notes:</b>    | A00144, A00145, A00146, A00147, A00148, A00369                                                                         |
| <b>Shape class:</b>          | Rectangles                                                                                                             |
| <b>Function class:</b>       | P Presenting information                                                                                               |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams                     |
| <b>Remarks:</b>              | The asterisk shall be replaced in accordance with the rules given in application note A00144.                          |



## S00913



Name: Voltmeter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-02-01

Keywords: indicating instruments, instruments, measuring instruments, voltmeters

Applied in: S01429, S01843

Applies: S00910

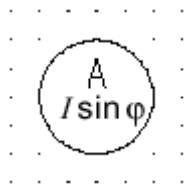
Application notes: A00145

Shape class: Characters, Circles

Function class: P Presenting information

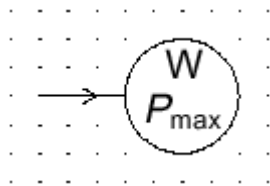
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00914



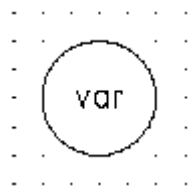
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Reactive current ammeter                                                                           |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-02-02                                                                      |
| Keywords:             | ammeters, indicating instruments, instruments, measuring instruments                               |
| Applies:              | S00910                                                                                             |
| Application notes:    | A00145                                                                                             |
| Shape class:          | Characters, Circles                                                                                |
| Function class:       | P Presenting information                                                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S00915



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Maximum demand indicator                                                                           |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-02-03                                                                      |
| Keywords:             | indicating instruments, indicators, instruments, maximum demand, measuring instruments             |
| Applies:              | S00910                                                                                             |
| Application notes:    | A00145                                                                                             |
| Shape class:          | Characters, Circles                                                                                |
| Function class:       | P Presenting information                                                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |
| Remarks:              | Actuated by an integrating meter.                                                                  |

## S00916



Name: Varmeter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-02-04

Keywords: indicating instruments, instruments, measuring instruments, varmeters

Applies: S00910

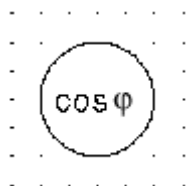
Application notes: A00145

Shape class: Characters, Circles

Function class: P Presenting information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00917



**Name:** Power-factor meter

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-02-05

**Keywords:** indicating instruments, instruments, measuring instruments, power-factor meters

**Applies:** S00910

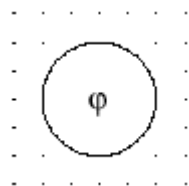
**Application notes:** A00145

**Shape class:** Characters, Circles

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

## S00918



**Name:** Phase meter

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-02-06

**Keywords:** indicating instruments, instruments, measuring instruments, phase meters

**Applies:** S00910

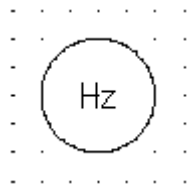
**Application notes:** A00145

**Shape class:** Characters, Circles

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00919



Name: Frequency meter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-02-07

Keywords: frequency meters, indicating instruments, instruments, measuring instruments

Applies: S00910

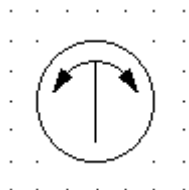
Application notes: A00145

Shape class: Characters, Circles

Function class: P Presenting information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

## S00920



Name: Synchronoscope

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-02-08

Keywords: indicating instruments, instruments, measuring instruments, synchronoscopes

Applies: S00910

Application notes: A00144

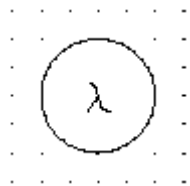
Shape class: Arrows, Circles

Function class: P Presenting information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams



## S00921



Name: Wavemeter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-02-09

Keywords: indicating instruments, instruments, measuring instruments, wavemeters

Applies: S00910

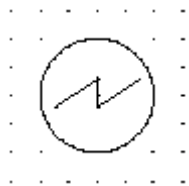
Application notes: A00144

Shape class: Characters, Circles

Function class: P Presenting information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00922



Name: Oscilloscope

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-02-10

Keywords: indicating instruments, instruments, measuring instruments, oscilloscopes

Applies: S00910

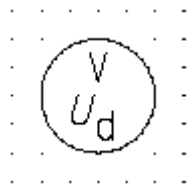
Application notes: A00144

Shape class: Circles, Lines

Function class: P Presenting information

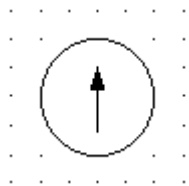
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00923



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Differential voltmeter                                                      |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-02-11                                               |
| Keywords:             | indicating instruments, instruments, measuring instruments, voltmeters      |
| Applies:              | S00910                                                                      |
| Application notes:    | A00144, A00145, A00146                                                      |
| Shape class:          | Characters, Circles                                                         |
| Function class:       | P Presenting information                                                    |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00924



Name: Galvanometer

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-02-12

Keywords: galvanometers, indicating instruments, instruments, measuring instruments

Applies: S00910

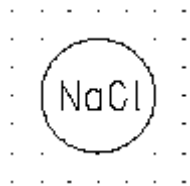
Application notes: A00144, A00145

Shape class: Arrows, Circles

Function class: P Presenting information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00925



Name: Salinity meter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-02-13

Keywords: indicating instruments, instruments, measuring instruments

Applies: S00910

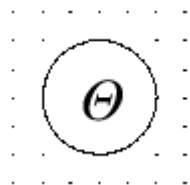
Application notes: A00144

Shape class: Characters, Circles

Function class: P Presenting information

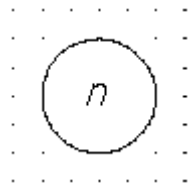
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00926



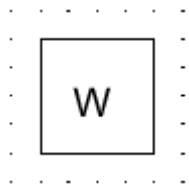
|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| Name:                 | Thermometer, Pyrometer                                                               |
| Status level:         | Standard                                                                             |
| Released on:          | 2001-07-01                                                                           |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-02-14                                                        |
| Keywords:             | indicating instruments, instruments, measuring instruments, pyrometers, thermometers |
| Applies:              | S00910                                                                               |
| Application notes:    | A00144, A00145                                                                       |
| Shape class:          | Characters, Circles                                                                  |
| Function class:       | P Presenting information                                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams          |

## S00927



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Tachometer                                                                  |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-02-15                                               |
| Keywords:             | indicating instruments, instruments, measuring instruments, tachometers     |
| Applies:              | S00910                                                                      |
| Application notes:    | A00144                                                                      |
| Shape class:          | Characters, Circles                                                         |
| Function class:       | P Presenting information                                                    |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

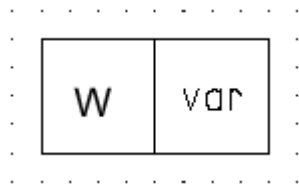
## S00928



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Recording wattmeter                                                         |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-03-01                                               |
| Keywords:             | instruments, measuring instruments, recording instruments, wattmeters       |
| Applies:              | S00911                                                                      |
| Application notes:    | A00144, A00145                                                              |
| Shape class:          | Characters, Squares                                                         |
| Function class:       | P Presenting information                                                    |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

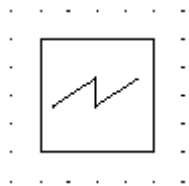


## S00929



|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Combined recording wattmeter and varmeter                                        |
| Status level:         | Standard                                                                         |
| Released on:          | 2001-07-01                                                                       |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-03-02                                                    |
| Keywords:             | instruments, measuring instruments, recording instruments, varmeters, wattmeters |
| Applies:              | S00911                                                                           |
| Application notes:    | A00144, A00145, A00147                                                           |
| Shape class:          | Characters, Squares                                                              |
| Function class:       | P Presenting information                                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams      |

## S00930



Name: Oscillograph

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-03-03

Keywords: instruments, measuring instruments, oscillographs, recording instruments

Applies: S00911

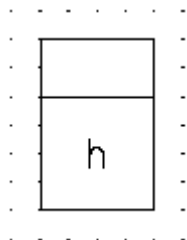
Application notes: A00144

Shape class: Lines , Squares

Function class: P Presenting information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00931



**Name:** Hour meter; Hour counter

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-04-01

**Keywords:** hour meters, instruments, integrating instruments, measuring instruments

**Applies:** S00912

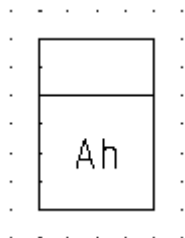
**Application notes:** A00144

**Shape class:** Characters, Rectangles, Squares

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00932



**Name:** Ampere-hour meter

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-04-02

**Keywords:** ampere-hour meters, instruments, integrating instruments, measuring instruments

**Applies:** S00912

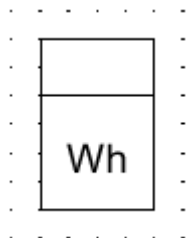
**Application notes:** A00144, A00145

**Shape class:** Characters, Rectangles, Squares

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00933



**Name:** Watt-hour meter

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-04-03

**Keywords:** instruments, integrating instruments, measuring instruments, watt-hour meters

**Applies:** S00912

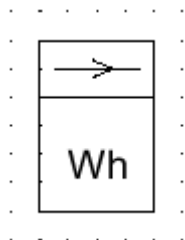
**Application notes:** A00144, A00145, A00148

**Shape class:** Characters, Rectangles, Squares

**Function class:** P Presenting information

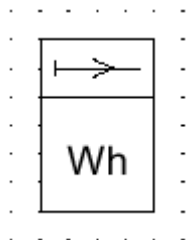
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00934



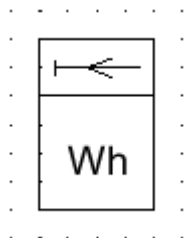
|                              |                                                                               |
|------------------------------|-------------------------------------------------------------------------------|
| <b>Name:</b>                 | Watt-hour meter, measuring energy transmitted in one direction only           |
| <b>Status level:</b>         | <b>Standard</b>                                                               |
| <b>Released on:</b>          | 2001-07-01                                                                    |
| <b>Earlier published in:</b> | IEC 60617-8 (ed.2.0) 08-04-04                                                 |
| <b>Keywords:</b>             | instruments, integrating instruments, measuring instruments, watt-hour meters |
| <b>Applies:</b>              | S00099; S00912                                                                |
| <b>Application notes:</b>    | A00144, A00145, A00148                                                        |
| <b>Shape class:</b>          | Arrows, Characters, Rectangles, Squares                                       |
| <b>Function class:</b>       | P Presenting information                                                      |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams   |
| <b>Remarks:</b>              | measuring energy transmitted in one direction only                            |

## S00935



|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| Name:                 | Watt-hour meter, counting the energy flow from the busbars                    |
| Status level:         | Standard                                                                      |
| Released on:          | 2001-07-01                                                                    |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-04-05                                                 |
| Keywords:             | instruments, integrating instruments, measuring instruments, watt-hour meters |
| Applies:              | S00104; S00912                                                                |
| Application notes:    | A00144, A00145, A00148                                                        |
| Shape class:          | Arrows, Characters, Rectangles, Squares                                       |
| Function class:       | P Presenting information                                                      |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams   |
| Remarks:              | Counting the energy flow from the busbars                                     |

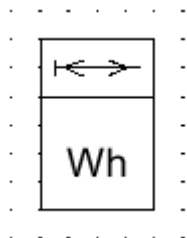
## S00936



|                              |                                                                               |
|------------------------------|-------------------------------------------------------------------------------|
| <b>Name:</b>                 | Watt-hour meter, counting the energy flow towards the busbars                 |
| <b>Status level:</b>         | <b>Standard</b>                                                               |
| <b>Released on:</b>          | 2001-07-01                                                                    |
| <b>Earlier published in:</b> | IEC 60617-8 (ed.2.0) 08-04-06                                                 |
| <b>Keywords:</b>             | instruments, integrating instruments, measuring instruments, watt-hour meters |
| <b>Applies:</b>              | S00105; S00912                                                                |
| <b>Application notes:</b>    | A00144, A00145, A00148                                                        |
| <b>Shape class:</b>          | Arrows, Characters, Rectangles, Squares                                       |
| <b>Function class:</b>       | P Presenting information                                                      |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams   |
| <b>Remarks:</b>              | Counting the energy flow towards the busbars.                                 |

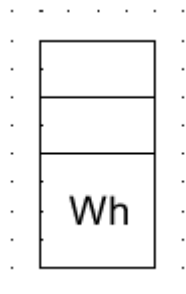


## S00937



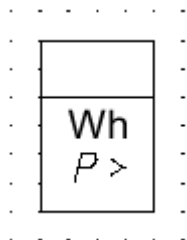
|                              |                                                                               |
|------------------------------|-------------------------------------------------------------------------------|
| <b>Name:</b>                 | Watt-hour meter, counting in both energy flow directions                      |
| <b>Status level:</b>         | <b>Standard</b>                                                               |
| <b>Released on:</b>          | 2001-07-01                                                                    |
| <b>Earlier published in:</b> | IEC 60617-8 (ed.2.0) 08-04-07                                                 |
| <b>Keywords:</b>             | instruments, integrating instruments, measuring instruments, watt-hour meters |
| <b>Applies:</b>              | S00106; S00912                                                                |
| <b>Application notes:</b>    | A00144, A00145, A00148                                                        |
| <b>Shape class:</b>          | Arrows, Characters, Rectangles, Squares                                       |
| <b>Function class:</b>       | P Presenting information                                                      |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams   |
| <b>Remarks:</b>              | Towards or from bus bars.                                                     |

## S00938



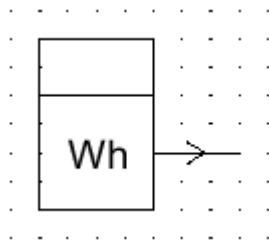
|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| Name:                 | Multi-rate watt-hour meter                                                    |
| Status level:         | Standard                                                                      |
| Released on:          | 2001-07-01                                                                    |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-04-08                                                 |
| Keywords:             | instruments, integrating instruments, measuring instruments, watt-hour meters |
| Applies:              | S00912                                                                        |
| Application notes:    | A00144, A00145, A00148                                                        |
| Shape class:          | Characters, Rectangles, Squares                                               |
| Function class:       | P Presenting information                                                      |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams   |
| Remarks:              | Two-rate shown                                                                |

## S00939



|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| Name:                 | Excess watt-hour meter                                                        |
| Status level:         | Standard                                                                      |
| Released on:          | 2001-07-01                                                                    |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-04-09                                                 |
| Keywords:             | instruments, integrating instruments, measuring instruments, watt-hour meters |
| Applies:              | S00912                                                                        |
| Application notes:    | A00144, A00145, A00148                                                        |
| Shape class:          | Characters, Rectangles, Squares                                               |
| Function class:       | P Presenting information                                                      |
| Application class:    | Circuit diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S00940



**Name:** Watt-hour meter with transmitter

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-04-10

**Keywords:** instruments, integrating instruments, measuring instruments, watt-hour meters

**Applies:** S00099; S00912

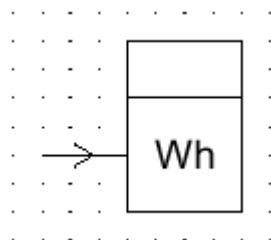
**Application notes:** A00144, A00145, A00148

**Shape class:** Characters, Rectangles, Squares

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00941



**Name:** Slave watt-hour meter (repeater)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-04-11

**Keywords:** instruments, integrating instruments, measuring instruments, watt-hour meters

**Applies:** S00099; S00912

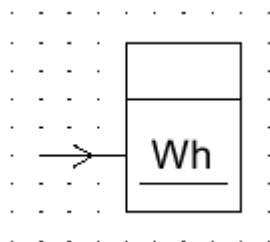
**Application notes:** A00144, A00145, A00148

**Shape class:** Characters, Rectangles, Squares

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00942



**Name:** Slave watt-hour meter (repeater) with printing device

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-04-12

**Keywords:** instruments, integrating instruments, measuring instruments, printing, watt-hour meters

**Applies:** S00099; S00138; S00912

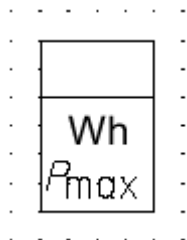
**Application notes:** A00144, A00146

**Shape class:** Characters, Lines , Rectangles, Squares

**Function class:** P Presenting information

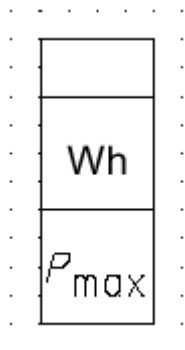
**Application class:** Circuit diagrams, Connection diagrams

## S00943



|                       |                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------|
| Name:                 | Watt-hour meter with maximum demand indicator                                             |
| Status level:         | Standard                                                                                  |
| Released on:          | 2001-07-01                                                                                |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-04-13                                                             |
| Keywords:             | indicators, instruments, integrating instruments, measuring instruments, watt-hour meters |
| Applies:              | S00912                                                                                    |
| Application notes:    | A00144, A00145, A00146                                                                    |
| Shape class:          | Characters, Rectangles, Squares                                                           |
| Function class:       | P Presenting information                                                                  |
| Application class:    | Circuit diagrams, Connection diagrams                                                     |

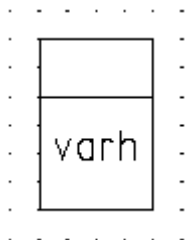
## S00944



|                       |                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------|
| Name:                 | Watt-hour meter with maximum demand recorder                                                         |
| Status level:         | Standard                                                                                             |
| Released on:          | 2001-07-01                                                                                           |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-04-14                                                                        |
| Keywords:             | instruments, integrating instruments, measuring instruments, recording instruments, watt-hour meters |
| Applies:              | S00912                                                                                               |
| Application notes:    | A00145, A00146, A00147, A00148                                                                       |
| Shape class:          | Characters, Rectangles, Squares                                                                      |
| Function class:       | P Presenting information                                                                             |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                          |



## S00945



**Name:** Var-hour meter

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-04-15

**Keywords:** instruments, integrating instruments, measuring instruments, var-hour meters

**Applies:** S00912

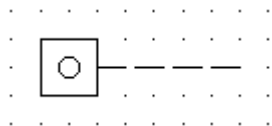
**Application notes:** A00144, A00145, A00148

**Shape class:** Characters, Rectangles, Squares

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00946



**Name:** Counting function of a number of events

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-05-01

**Keywords:** counters, measuring instruments

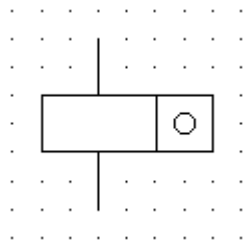
**Applied in:** S00196, S00947, S00951, S00949, S00950, S00948

**Shape class:** Squares

**Function class:** - Functional elements or attributes

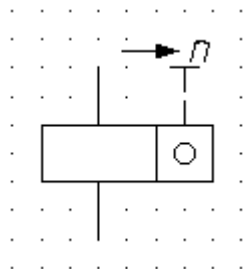
**Application class:** Conceptual elements or qualifiers

## S00947



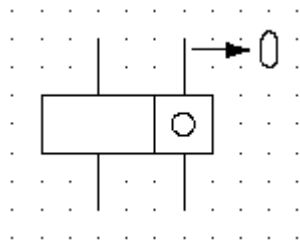
|                       |                                                 |
|-----------------------|-------------------------------------------------|
| Name:                 | Pulse counting device                           |
| Status level:         | Standard                                        |
| Released on:          | 2001-07-01                                      |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-05-02                   |
| Alternative names:    | Electrically operated counting device           |
| Keywords:             | counters, measuring instruments, pulse counters |
| Applied in:           | S00949, S00950, S00948                          |
| Applies:              | S00946                                          |
| Shape class:          | Rectangles, Squares                             |
| Function class:       | P Presenting information                        |
| Application class:    | Circuit diagrams, Connection diagrams           |

## S00948



|                       |                                                 |
|-----------------------|-------------------------------------------------|
| Name:                 | Pulse counting device, manually pre-set to n    |
| Status level:         | Standard                                        |
| Released on:          | 2001-07-01                                      |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-05-03                   |
| Alternative names:    | Manually pre-settable pulse counter             |
| Keywords:             | counters, measuring instruments, pulse counters |
| Applies:              | S00093; S00167; S00946; S00947                  |
| Shape class:          | Lines , Rectangles, Squares                     |
| Function class:       | P Presenting information                        |
| Application class:    | Circuit diagrams, Connection diagrams           |
| Remarks:              | Shown with pre-set to n (reset if n = 0)        |

## S00949



**Name:** Pulse counting device, electrically reset to 0

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-05-04

**Keywords:** counters, measuring instruments, pulse counters

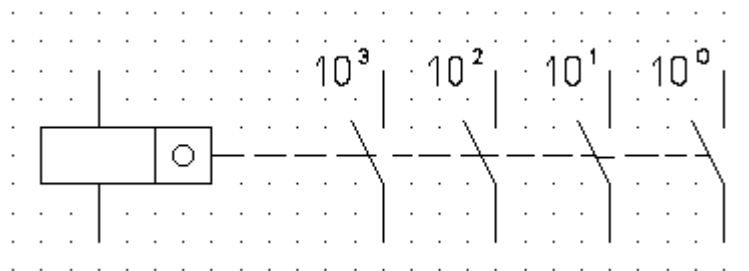
**Applies:** S00093; S00946; S00947

**Shape class:** Rectangles, Squares

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams

## S00950



**Name:** Pulse counting device with multiple contacts

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-05-05

**Keywords:** counters, measuring instruments, pulse counters

**Applies:** S00227; S00946; S00947

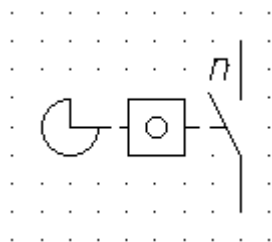
**Shape class:** Lines , Rectangles, Squares

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams

**Remarks:** Respective contacts close once at every unit ( $10^0$ ), ten ( $10^1$ ), hundred ( $10^2$ ), thousand ( $10^3$ ) events registered by the counter.

## S00951



**Name:** Counting device, cam driven

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-05-06

**Keywords:** counters, measuring instruments

**Applies:** S00182; S00227; S00946

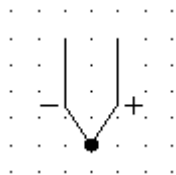
**Shape class:** Circle segments, Lines , Rectangles, Squares

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams

**Remarks:** Closing a contact for each n events.

## S00952



Name: Thermocouple

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-06-01

Keywords: temperature sensor, thermocouples

Alternative forms: S00953

Applied in: S00903, S00955, S00904, S00905, S00957, S00956, S00954

Applies: S00016; S00077; S00078

Replacing: S00953

Shape class: Lines

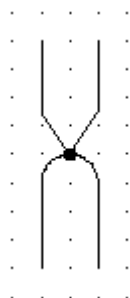
Function class: B Converting variable to signal

Application class: Circuit diagrams, Connection diagrams

Remarks: Shown with polarity symbols.

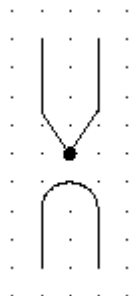


## S00954



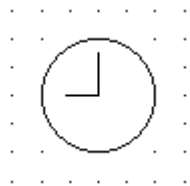
|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| Name:                 | Thermocouple with non-insulated heating element                                      |
| Status level:         | Standard                                                                             |
| Released on:          | 2001-07-01                                                                           |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-06-03                                                        |
| Keywords:             | thermocouples                                                                        |
| Alternative forms:    | S00955                                                                               |
| Applies:              | S00698; S00952                                                                       |
| Replacing:            | S00955                                                                               |
| Shape class:          | Half-circles, Lines                                                                  |
| Function class:       | B Converting variable to signal                                                      |
| Application class:    | Circuit diagrams, Function diagrams                                                  |
| Remarks:              | Symbol S00699 may be used to represent the heating element instead of symbol S00698. |

## S00956



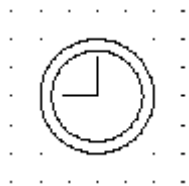
|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| Name:                 | Thermocouple with insulated heating element                                          |
| Status level:         | Standard                                                                             |
| Released on:          | 2001-07-01                                                                           |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-06-05                                                        |
| Keywords:             | thermocouples                                                                        |
| Alternative forms:    | S00957                                                                               |
| Applies:              | S00698; S00952                                                                       |
| Replacing:            | S00957                                                                               |
| Shape class:          | Half-circles, Lines                                                                  |
| Function class:       | B Converting variable to signal                                                      |
| Application class:    | Circuit diagrams, Function diagrams                                                  |
| Remarks:              | Symbol S00699 may be used to represent the heating element instead of symbol S00698. |

## S00959



|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Clock, general symbol                          |
| Status level:         | Standard                                       |
| Released on:          | 2001-07-01                                     |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-08-01                  |
| Alternative names:    | secondary clock                                |
| Keywords:             | clocks                                         |
| Applied in:           | S00193, S00479, S00961, S00960, S01237, S00495 |
| Shape class:          | Circles                                        |
| Function class:       | P Presenting information                       |
| Application class:    | Circuit diagrams, Function diagrams            |

## S00960



Name: Master clock

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-08-02

Keywords: clocks

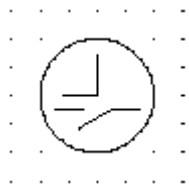
Applies: S00959

Shape class: Circles, Lines

Function class: P Presenting information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

## S00961



Name: Clock with contact

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-08-03

Keywords: clocks

Applies: S00227; S00959

Shape class: Circles, Lines

Function class: P Presenting information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

## S00965



**Name:** Lamp, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-10-01

**Alternative names:** lamp, general symbol; signal lamp, general symbol

**Keywords:** installations in buildings, lamps, lightning outlets and fittings, signal lamps, signalling devices

**Applied in:** S01861, S00966, S01907, S00487, S00975, S00467, S00476

**Application notes:** A00174

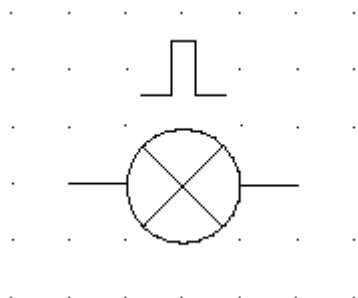
**Replacing:** S00483

**Shape class:** Circles

**Function class:** E Providing radiant or thermal energy, P Presenting information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams

## S00966



**Name:** Signal lamp, flashing type

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-8 (ed.2.0) 08-10-02

**Keywords:** signal lamps, signalling devices

**Applies:** S00132; S00965

**Application notes:** A00174

**Shape class:** Circles

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams

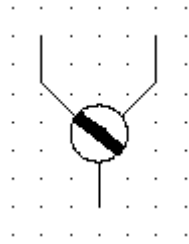
## S00967



|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Indicator, electromechanical; annunciator element        |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-10-03                            |
| Keywords:             | signalling devices                                       |
| Shape class:          | Circles, Lines                                           |
| Function class:       | P Presenting information                                 |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams |



## S00968



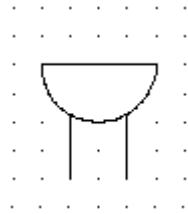
|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Electromechanical position indicator                     |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-10-04                            |
| Keywords:             | position indicators, signalling devices                  |
| Shape class:          | Circles                                                  |
| Function class:       | P Presenting information                                 |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams |
| Remarks:              | Shown with one deenergized and two operated positions.   |

## S00972



|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Siren                                                    |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-10-09                            |
| Keywords:             | indicators, signalling devices, sirens                   |
| Shape class:          | Right-angled triangle                                    |
| Function class:       | P Presenting information                                 |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams |

## S00973



Name: Buzzer

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-8 (ed.2.0) 08-10-10

Keywords: buzzers, indicators, signalling devices

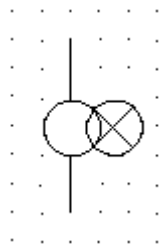
Replacing: S01385

Shape class: Half-circles

Function class: P Presenting information

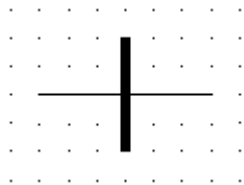
Application class: Circuit diagrams, Connection diagrams, Function diagrams

## S00975



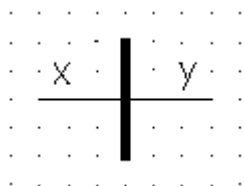
|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Signalling lamp energized by a built-in transformer      |
| Status level:         | <b>Standard</b>                                          |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-8 (ed.2.0) 08-10-13                            |
| Keywords:             | indicator lamps, signal lamps, signalling devices        |
| Applies:              | S00841; S00965                                           |
| Shape class:          | Circles                                                  |
| Function class:       | P Presenting information                                 |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams |

## S00981



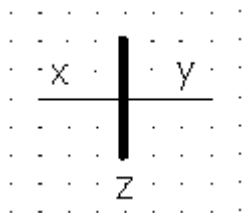
|                       |                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------|
| Name:                 | Connecting stage, general symbol                                                       |
| Status level:         | Standard                                                                               |
| Released on:          | 2001-07-01                                                                             |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-01-01                                                          |
| Keywords:             | connecting, switching                                                                  |
| Applied in:           | S00990, S00994, S00991, S00992, S00989, S00984, S00988, S00993, S00986, S00987, S00982 |
| Application notes:    | A00195, A00196, A00200                                                                 |
| Shape class:          | Lines                                                                                  |
| Function class:       | X Connecting                                                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams            |

## S00982



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Connecting stage with x inlets and y outlets                                |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-01-02                                               |
| Keywords:             | connecting, switching                                                       |
| Applied in:           | S00983                                                                      |
| Applies:              | S00981                                                                      |
| Application notes:    | A00195, A00196, A00200                                                      |
| Shape class:          | Lines                                                                       |
| Function class:       | X Connecting                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00983



**Name:** Connecting stage composed of z grading groups

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-01-03

**Keywords:** connecting, switching

**Applies:** S00982

**Application notes:** A00195, A00196, A00200

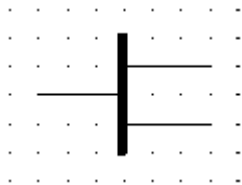
**Shape class:** Lines

**Function class:** X Connecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Symbol restrictions:** Each grading group consist of x inlets and y outlets

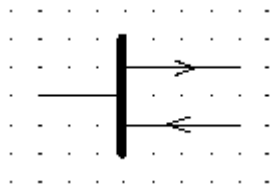
## S00984



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Connecting stage with one group of inlets and two groups of outlets         |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-01-04                                               |
| Keywords:             | connecting, switching                                                       |
| Applied in:           | S00985, S00991                                                              |
| Applies:              | S00981                                                                      |
| Application notes:    | A00195, A00196, A00200, A00201                                              |
| Shape class:          | Lines                                                                       |
| Function class:       | X Connecting                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |



## S00985



**Name:** Connecting stage interconnecting one group of bothway trunks with two groups of unidirectional trunks of opposite sense

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-01-05

**Keywords:** connecting, switching

**Applies:** S00099; S00984

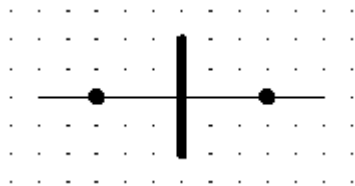
**Application notes:** A00195, A00196, A00200

**Shape class:** Arrows, Lines

**Function class:** X Connecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S00986



Name: Marking stage

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-9 (ed.2.0) 09-01-06

Keywords: marking stage, switching

Applied in: S00992

Applies: S00981

Application notes: A00195, A00197, A00202

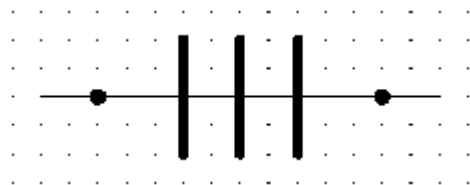
Shape class: Dots (points), Lines

Function class: X Connecting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

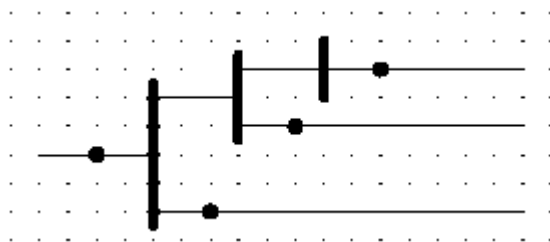
Remarks: The outgoing calls are via one connecting stage

## S00987



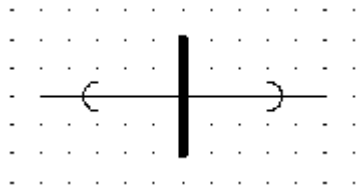
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Marking stage - outgoing calls via several connecting stages                |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-01-07                                               |
| Keywords:             | marking stage, switching                                                    |
| Applies:              | S00981                                                                      |
| Application notes:    | A00195, A00197, A00202                                                      |
| Shape class:          | Dots (points), Lines                                                        |
| Function class:       | X Connecting                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | The symbol is shown with three connecting stages                            |

## S00988



|                       |                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------|
| Name:                 | Mixed marking stage - outgoing calls via different connecting stages              |
| Status level:         | Standard                                                                          |
| Released on:          | 2001-07-01                                                                        |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-01-08                                                     |
| Keywords:             | marking stage, switching                                                          |
| Applies:              | S00981                                                                            |
| Application notes:    | A00195, A00197, A00202                                                            |
| Shape class:          | Dots (points), Lines                                                              |
| Function class:       | X Connecting                                                                      |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams       |
| Remarks:              | The symbol is shown with outgoing calls via one, two and three connecting stages. |

## S00989



Name: Switching stage

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-9 (ed.2.0) 09-01-09

Keywords: switching stage

Applied in: S00993

Applies: S00981

Application notes: A00195, A00198, A00203

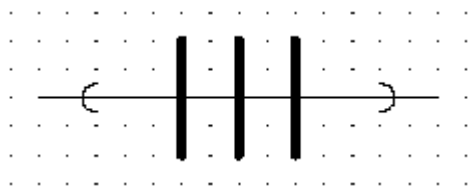
Shape class: Half-circles, Lines

Function class: X Connecting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

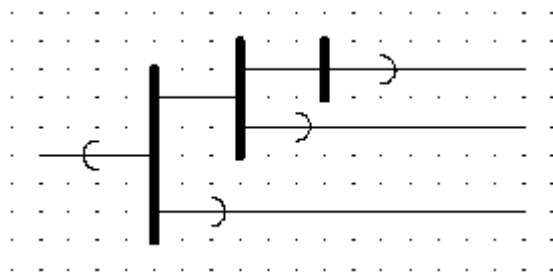
Remarks: The symbol is shown with outgoing calls via one connecting stage.

## S00990



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Switching stage - outgoing calls via several connecting stage               |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-01-10                                               |
| Keywords:             | switching stage                                                             |
| Applies:              | S00981                                                                      |
| Application notes:    | A00195, A00198, A00203                                                      |
| Shape class:          | Half-circles, Lines                                                         |
| Function class:       | X Connecting                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Symbol restrictions:  | The symbol is shown with three connecting stages.                           |

## S00991



**Name:** Mixed switching state - outgoing calls via different connecting stages

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-01-11

**Keywords:** switching stage

**Applies:** S00981; S00984

**Application notes:** A00195, A00198, A00203

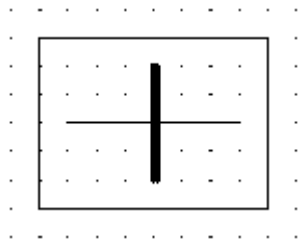
**Shape class:** Half-circles, Lines

**Function class:** X Connecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The symbol is shown with outgoing calls via one, two and three connecting stages.

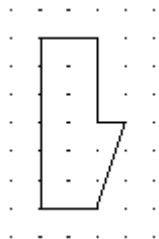
## S00994



|                       |                                      |
|-----------------------|--------------------------------------|
| Name:                 | Automatic switching equipment        |
| Status level:         | Standard                             |
| Released on:          | 2001-07-01                           |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-02-01        |
| Keywords:             | switching                            |
| Applies:              | S00060; S00981                       |
| Application notes:    | A00205                               |
| Shape class:          | Lines , Rectangles                   |
| Function class:       | K Processing signals or information  |
| Application class:    | Function diagrams, Overview diagrams |



## S00995



Name: Manual switchboard

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-9 (ed.2.0) 09-02-02

Keywords: switching

Applied in: S00993

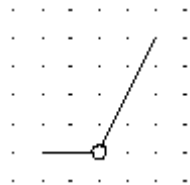
Application notes: A00205

Shape class: Depicting shapes

Function class: K Processing signals or information

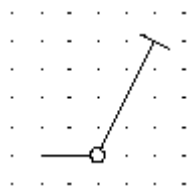
Application class: Overview diagrams

## S00996



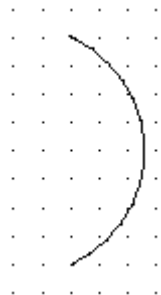
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Selector wiper, non-bridging                                                |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-03-01                                               |
| Keywords:             | selectors                                                                   |
| Alternative forms:    | S01005                                                                      |
| Applied in:           | S01007, S01012, S01006, S01005, S01013, S00997, S01008                      |
| Application notes:    | A00206                                                                      |
| Shape class:          | Lines                                                                       |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00997



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Selector wiper, bridging                                                    |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-03-02                                               |
| Keywords:             | selectors                                                                   |
| Applied in:           | S01004                                                                      |
| Applies:              | S00996                                                                      |
| Application notes:    | A00206                                                                      |
| Shape class:          | Lines                                                                       |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00998



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Arc or bank of single-motion selector                                       |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-03-03                                               |
| Keywords:             | selectors                                                                   |
| Applied in:           | S01007, S01010, S01012, S01006, S01009, S00999, S01000                      |
| Shape class:          | Circle segments                                                             |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S00999



**Name:** Arc or bank of two-motion selector

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-03-04

**Keywords:** selectors

**Applied in:** S01013, S01008

**Applies:** S00998

**Shape class:** Circle segments

**Function class:** K Processing signals or information

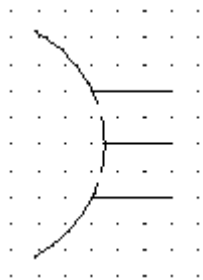
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01000



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Selector arc with one special position                                      |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-03-05                                               |
| Keywords:             | selectors                                                                   |
| Applies:              | S00998                                                                      |
| Shape class:          | Circle segments                                                             |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | An example of a special position is the home position.                      |

## S01001



**Name:** Selector bank or level

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-03-06

**Keywords:** selectors

**Application notes:** A00207

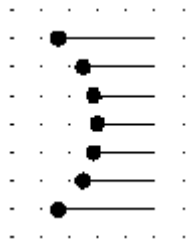
**Shape class:** Circle segments, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The symbol shows groups of outlets or contacts.

## S01002



**Name:** Selector level showing individual outlets or contacts

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-03-07

**Keywords:** selectors

**Applied in:** S01004, S01005

**Application notes:** A00208

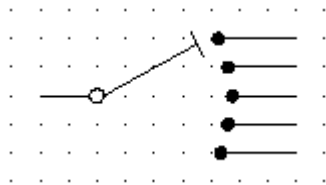
**Shape class:** Dots (points)

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams



## S01004



Name: Selector level with bridging wiper

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-9 (ed.2.0) 09-04-01

Keywords: selectors

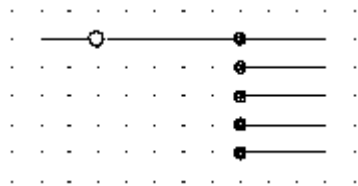
Applies: S00997; S01002

Shape class: Dots (points), Lines

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01005



**Name:** Selector level with non-bridging wiper

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-04-02

**Keywords:** selectors

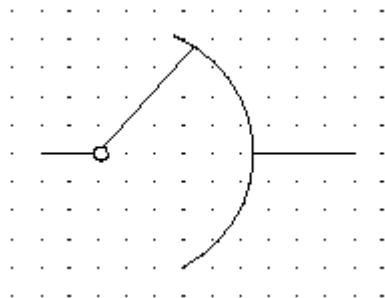
**Applies:** S00996; S01002

**Shape class:** Dots (points), Lines

**Function class:** K Processing signals or information

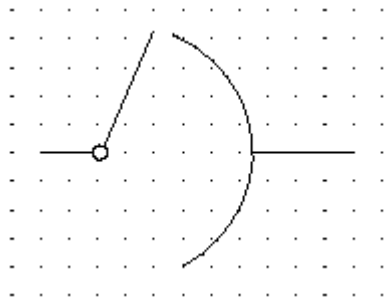
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01006



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Single-motion selector, non-homing                                          |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-04-03                                               |
| Keywords:             | selectors                                                                   |
| Applied in:           | S01011, S01351                                                              |
| Applies:              | S00996; S00998                                                              |
| Shape class:          | Circle segments, Lines                                                      |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01007



**Name:** Single-motion selector, homing

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-04-04

**Keywords:** selectors

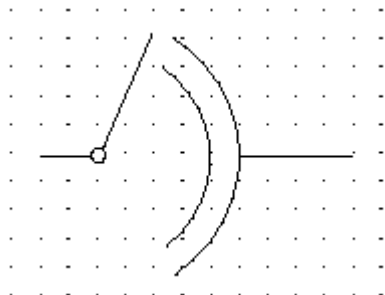
**Applies:** S00996; S00998

**Shape class:** Circle segments, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01008



**Name:** Two-motion selector, homing

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-04-05

**Keywords:** selectors

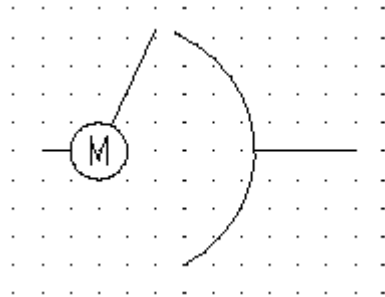
**Applies:** S00996; S00999

**Shape class:** Circle segments, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01009



**Name:** Selector, motor driven, homing

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-04-06

**Keywords:** selectors

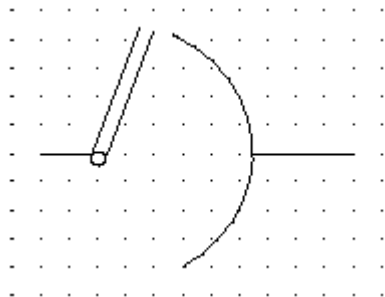
**Applies:** S00819; S00998

**Shape class:** Circle segments, Lines

**Function class:** K Processing signals or information

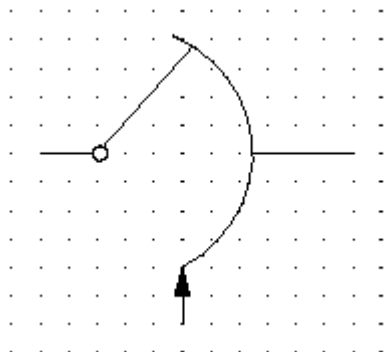
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01010



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Selector for four-wire switching, homing                                    |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-04-07                                               |
| Keywords:             | selectors                                                                   |
| Applies:              | S00998                                                                      |
| Shape class:          | Circle segments, Lines                                                      |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01011



**Name:** Single-motion selector, set

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-04-08

**Keywords:** selectors

**Applies:** S01006

**Shape class:** Arrows, Circle segments, Lines

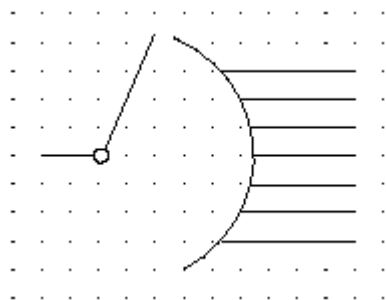
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The selector is set via marked bank contact(s), non homing



## S01012



**Name:** Single-motion homing selector with individual outlets

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-04-09

**Keywords:** selectors

**Applies:** S00996; S00998

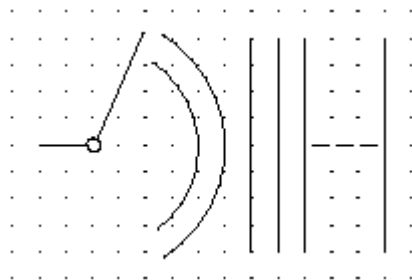
**Shape class:** Circle segments, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

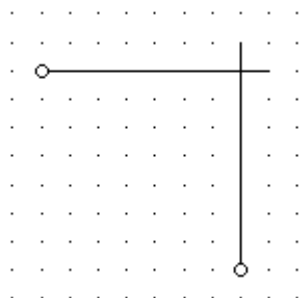
**Remarks:** The individual outlets could also be groups of outlets.

## S01013



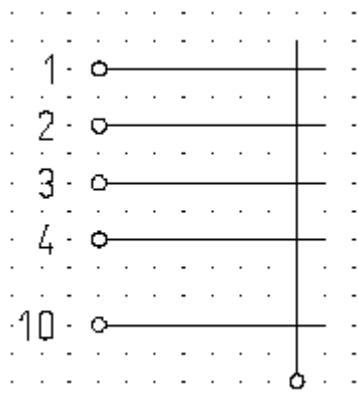
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Two-motion selector showing levels                                          |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-04-10                                               |
| Keywords:             | selectors                                                                   |
| Applies:              | S00996; S00999                                                              |
| Shape class:          | Circle segments, Lines                                                      |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01014



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Crossbar selector, general symbol                                           |
| Status level:         | <b>Standard</b>                                                             |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-04-11                                               |
| Keywords:             | selectors                                                                   |
| Applied in:           | S01015                                                                      |
| Shape class:          | Lines                                                                       |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01015



**Name:** Crossbar selector, single connecting unit

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-04-12

**Keywords:** selectors

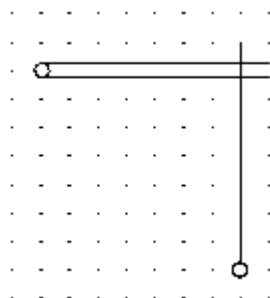
**Applies:** S01014

**Shape class:** Lines

**Function class:** K Processing signals or information

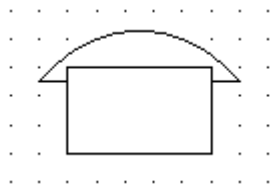
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01016



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Crossbar selector, four-wire switching                                      |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-04-13                                               |
| Keywords:             | selectors                                                                   |
| Shape class:          | Lines                                                                       |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01017



**Name:** Telephone set, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-05-01

**Keywords:** telephone sets

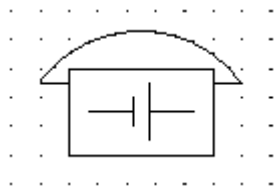
**Applied in:** S01028, S01024, S01019, S01025, S01027, S01026, S01018, S01022, S01021, S01020, S01023

**Shape class:** Depicting shapes

**Function class:** K Processing signals or information

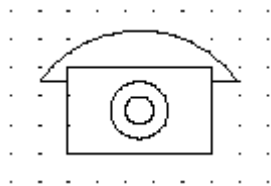
**Application class:** Installation diagrams, Overview diagrams

## S01018



|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Telephone set with local battery         |
| Status level:         | <b>Standard</b>                          |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-05-02            |
| Keywords:             | telephone sets                           |
| Applies:              | S01017; S01342                           |
| Shape class:          | Depicting shapes                         |
| Function class:       | K Processing signals or information      |
| Application class:    | Installation diagrams, Overview diagrams |

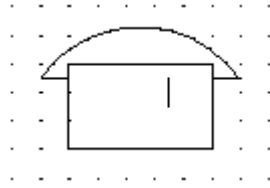
## S01019



|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Telephone set, common battery            |
| Status level:         | <b>Standard</b>                          |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-05-03            |
| Keywords:             | telephone sets                           |
| Applies:              | S01017                                   |
| Shape class:          | Depicting shapes                         |
| Function class:       | K Processing signals or information      |
| Application class:    | Installation diagrams, Overview diagrams |

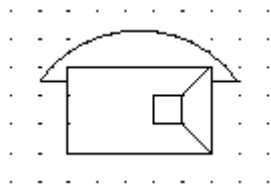


## S01023



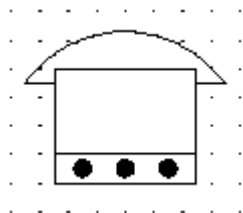
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Telephone set, paying                    |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-05-07            |
| Keywords:             | telephone sets                           |
| Applies:              | S01017                                   |
| Shape class:          | Depicting shapes                         |
| Function class:       | K Processing signals or information      |
| Application class:    | Installation diagrams, Overview diagrams |

## S01025



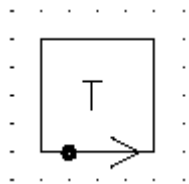
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Telephone set with loudspeaker           |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-05-09            |
| Keywords:             | telephone sets                           |
| Applies:              | S01017; S01059                           |
| Shape class:          | Depicting shapes                         |
| Function class:       | K Processing signals or information      |
| Application class:    | Installation diagrams, Overview diagrams |

## S01028



|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Telephone set for several lines          |
| Status level:         | Standard                                 |
| Released on:          | 2001-07-01                               |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-05-12            |
| Keywords:             | telephone sets                           |
| Applies:              | S01017                                   |
| Application notes:    | A00211                                   |
| Shape class:          | Depicting shapes                         |
| Function class:       | K Processing signals or information      |
| Application class:    | Installation diagrams, Overview diagrams |

## S01029



**Name:** Telecommunication transmitting apparatus

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-06-01

**Keywords:** telecommunication, telegraphy

**Applies:** S00059; S00102; S01081

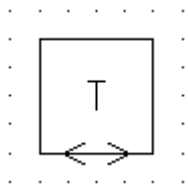
**Application notes:** A00212

**Shape class:** Arrows, Characters, Dots (points), Squares

**Function class:** K Processing signals or information

**Application class:** Installation diagrams, Overview diagrams

## S01030



**Name:** Telecommunication transmitting and receiving apparatus, two-way simplex

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-06-02

**Keywords:** telecommunication, telegraphy

**Applies:** S00059; S00101; S01081

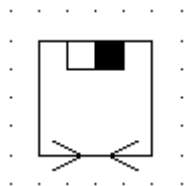
**Application notes:** A00212

**Shape class:** Arrows, Characters, Squares

**Function class:** K Processing signals or information

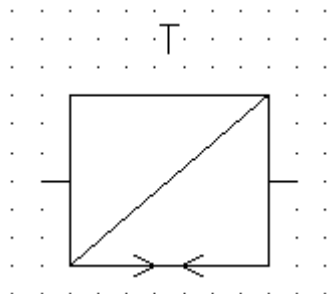
**Application class:** Installation diagrams, Overview diagrams

## S01033



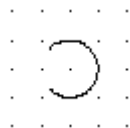
|                       |                                            |
|-----------------------|--------------------------------------------|
| Name:                 | Telefax                                    |
| Status level:         | Standard                                   |
| Released on:          | 2001-07-01                                 |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-06-05              |
| Keywords:             | facsimile, receivers, telefax              |
| Applies:              | S00059; S00103; S00143                     |
| Application notes:    | A00212                                     |
| Shape class:          | Arrows, Dots (points), Rectangles, Squares |
| Function class:       | P Presenting information                   |
| Application class:    | Installation diagrams, Overview diagrams   |

## S01039



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Telegraph repeater, duplex                             |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-07-02                          |
| Keywords:             | repeaters, telegraphy                                  |
| Applies:              | S00100; S00213; S01081                                 |
| Application notes:    | A00214                                                 |
| Shape class:          | Lines , Squares                                        |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |

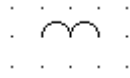
## S01042



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Magnetic type indication                               |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-08-01                          |
| Keywords:             | magnetic                                               |
| Applied in:           | S01069, S01076, S01072, S01068, S01070, S01067, S01071 |
| Application notes:    | A00215                                                 |
| Shape class:          | Circle segments                                        |
| Function class:       | - Functional elements or attributes                    |
| Application class:    | Conceptual elements or qualifiers                      |



## S01043



**Name:** Moving coil indication; Ribbon type indication

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-08-02

**Keywords:** coils

**Application notes:** A00215

**Shape class:** Half-circles

**Function class:** - Functional elements or attributes

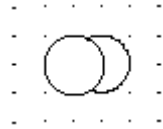
**Application class:** Conceptual elements or qualifiers

## S01044



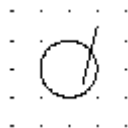
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Moving iron type indication         |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-08-03       |
| Keywords:             | coils                               |
| Application notes:    | A00215                              |
| Shape class:          | Half-circles, Lines                 |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01045



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Stereo type indication              |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-08-04       |
| Keywords:             | stereo                              |
| Applied in:           | S01062                              |
| Application notes:    | A00215                              |
| Replacing:            | S01387                              |
| Shape class:          | Circle segments, Circles            |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01046



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Disc type indication                |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-08-05       |
| Keywords:             | discs                               |
| Applied in:           | S01065, S01066, S01079              |
| Application notes:    | A00215                              |
| Shape class:          | Circles, Lines                      |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01047



**Name:** Tape type indication; Film type indication

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-08-06

**Keywords:** films, tapes

**Applied in:** S01078

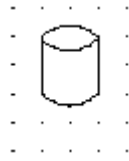
**Application notes:** A00215

**Shape class:** Circles, Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S01048



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Drum type indication                |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-08-07       |
| Keywords:             | drums                               |
| Applied in:           | S01076                              |
| Application notes:    | A00215                              |
| Shape class:          | Depicting shapes                    |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01049



**Name:** Recording indication; Reproducing indication

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-08-08

**Keywords:** recording, reproducing

**Applied in:** S01068, S01067, S01063, S01062

**Application notes:** A00215, A00217

**Shape class:** Arrows

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S01050



Name: Recording and reproducing indication

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-9 (ed.2.0) 09-08-09

Keywords: recording, reproducing

Applied in: S01076, S01072, S01060, S01071

Shape class: Arrows

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers



## S01051



Name: Erasing indication

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-9 (ed.2.0) 09-08-10

Keywords: erasing

Applied in: S01069, S01064, S01073, S01072, S01070, S01071

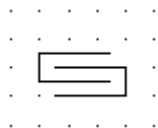
Application notes: A00215

Shape class: Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S01052



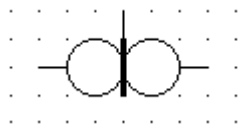
|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Surface-acoustic-wave (SAW) indication         |
| Status level:         | Standard                                       |
| Released on:          | 2001-07-01                                     |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-08-11                  |
| Keywords:             | SAW                                            |
| Applied in:           | S01184, S01074, S01266, S01265, S01181, S01264 |
| Application notes:    | A00215                                         |
| Shape class:          | Lines                                          |
| Function class:       | - Functional elements or attributes            |
| Application class:    | Conceptual elements or qualifiers              |

## S01053



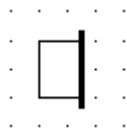
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Microphone, general symbol          |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-09-01       |
| Keywords:             | microphones                         |
| Applied in:           | S01058, S01055, S01054              |
| Application notes:    | A00216                              |
| Shape class:          | Circles, Lines                      |
| Function class:       | B Converting variable to signal     |
| Application class:    | Circuit diagrams, Function diagrams |

## S01055



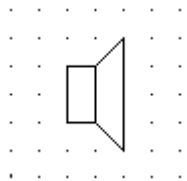
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Microphone, push-pull               |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-09-03       |
| Keywords:             | microphones                         |
| Applies:              | S01053                              |
| Application notes:    | A00216                              |
| Shape class:          | Circles, Lines                      |
| Function class:       | B Converting variable to signal     |
| Application class:    | Circuit diagrams, Function diagrams |

## S01056



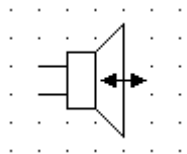
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Earphone, general symbol            |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-09-04       |
| Keywords:             | earphones                           |
| Applied in:           | S01057, S01058                      |
| Application notes:    | A00216                              |
| Shape class:          | Lines , Rectangles                  |
| Function class:       | P Presenting information            |
| Application class:    | Circuit diagrams, Function diagrams |

## S01059



|                       |                                      |
|-----------------------|--------------------------------------|
| Name:                 | Loudspeaker, general symbol          |
| Status level:         | Standard                             |
| Released on:          | 2001-07-01                           |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-09-07        |
| Keywords:             | loudspeakers                         |
| Applied in:           | S01025, S01060                       |
| Application notes:    | A00216                               |
| Shape class:          | Depicting shapes, Lines , Rectangles |
| Function class:       | P Presenting information             |
| Application class:    | Circuit diagrams, Function diagrams  |

## S01060



Name: Loudspeaker-microphone

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-9 (ed.2.0) 09-09-08

Keywords: loudspeakers, microphones

Applied in: S00497

Applies: S01050; S01059

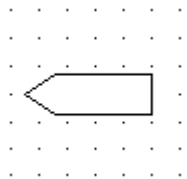
Application notes: A00216

Shape class: Arrows, Depicting shapes, Lines , Rectangles

Function class: B Converting variable to signal, P Presenting information

Application class: Circuit diagrams, Function diagrams

## S01061



Name: Transducer head, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-9 (ed.2.0) 09-09-09

Keywords: transducers

Applied in: S01069, S01075, S01064, S01078, S01065, S01067, S01063, S01079, S01062, S01071

Application notes: A00216

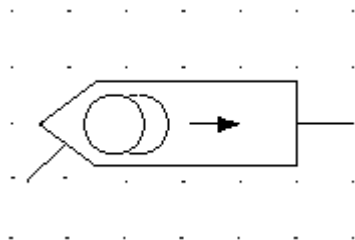
Shape class: Lines

Function class: B Converting variable to signal

Application class: Circuit diagrams, Function diagrams



## S01062



**Name:** Reproducing head, stereophonic, stylus operated

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-09-10

**Keywords:** transducers

**Applies:** S01045; S01049; S01061

**Application notes:** A00216

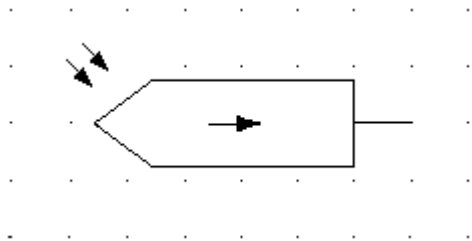
**Shape class:** Arrows, Circle segments, Circles, Lines

**Function class:** B Converting variable to signal

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** Reproducing includes reading and playback.

## S01063



**Name:** Light sensitive reproducing head, monophonic

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-09-11

**Keywords:** transducers

**Applies:** S00127; S01049; S01061

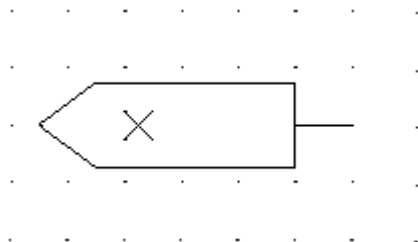
**Application notes:** A00216

**Shape class:** Arrows, Lines

**Function class:** B Converting variable to signal

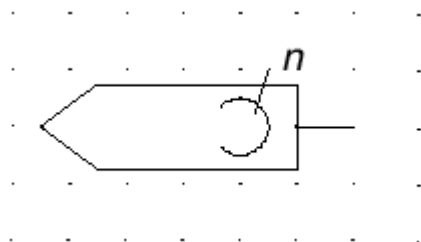
**Application class:** Circuit diagrams, Function diagrams

## S01064



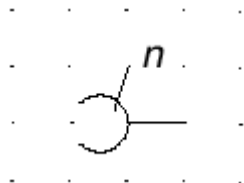
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Erasing head                        |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-09-12       |
| Keywords:             | transducers                         |
| Applies:              | S01051; S01061                      |
| Application notes:    | A00216                              |
| Shape class:          | Lines                               |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

## S01065



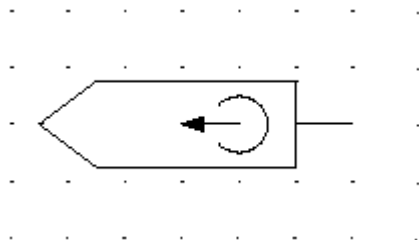
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Magnetic head                       |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-09-13       |
| Keywords:             | transducers                         |
| Form:                 | Complete form                       |
| Alternative forms:    | S01066                              |
| Applies:              | S01046; S01061                      |
| Application notes:    | A00216, A00218                      |
| Shape class:          | Circle segments, Lines              |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

## S01066



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Magnetic head                       |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-09-14       |
| Keywords:             | transducers                         |
| Form:                 | Simplified form                     |
| Alternative forms:    | S01065                              |
| Applies:              | S01046                              |
| Application notes:    | A00216, A00218                      |
| Shape class:          | Circle segments, Lines              |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

## S01067



**Name:** Magnetic head for writing, monophonic

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-09-15

**Keywords:** transducers

**Form:** Complete form

**Alternative forms:** S01068

**Applies:** S01042; S01049; S01061

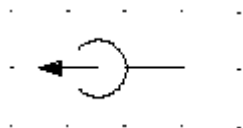
**Application notes:** A00216

**Shape class:** Arrows, Circle segments, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01068



**Name:** Magnetic head for writing, monophonic

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-09-16

**Keywords:** transducers

**Form:** Simplified form

**Alternative forms:** S01067

**Applies:** S01042; S01049

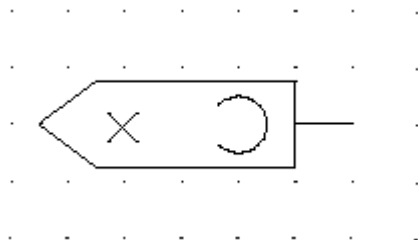
**Application notes:** A00216

**Shape class:** Arrows, Circle segments

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

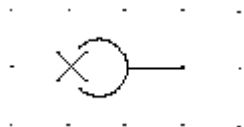
## S01069



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Magnetic head for erasing           |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-09-17       |
| Keywords:             | transducers                         |
| Form:                 | Complete form                       |
| Alternative forms:    | S01070                              |
| Applies:              | S01042; S01051; S01061              |
| Application notes:    | A00216                              |
| Shape class:          | Circle segments, Lines              |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

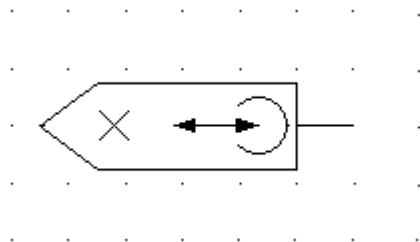


## S01070



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Magnetic head for erasing           |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-09-18       |
| Keywords:             | transducers                         |
| Form:                 | Simplified form                     |
| Alternative forms:    | S01069                              |
| Applies:              | S01042; S01051                      |
| Application notes:    | A00216                              |
| Shape class:          | Circle segments, Lines              |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

## S01071



**Name:** Magnetic head for writing, reading and erasing, monophonic

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-09-19

**Keywords:** transducers

**Form:** Complete form

**Alternative forms:** S01072

**Applies:** S01042; S01050; S01051; S01061

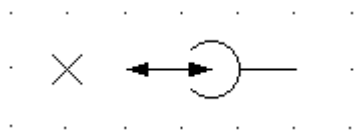
**Application notes:** A00216

**Shape class:** Arrows, Circle segments, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01072



**Name:** Magnetic head for writing, reading and erasing, monophonic

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-09-20

**Keywords:** transducers

**Form:** Simplified form

**Alternative forms:** S01071

**Applies:** S01042; S01050; S01051

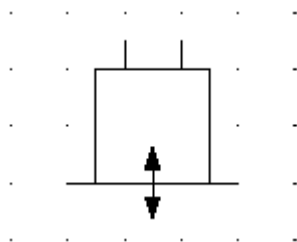
**Application notes:** A00216

**Shape class:** Arrows, Circle segments, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01073



**Name:** Ultrasound transmitter-receiver; Hydrophone

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-09-21

**Keywords:** hydrophones, receivers, transmitters

**Applies:** S01051

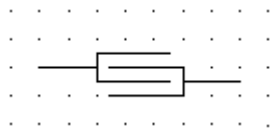
**Application notes:** A00216

**Shape class:** Arrows, Lines , Squares

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01074



**Name:** Surface-acoustic-wave (SAW) transducer

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-09-22

**Keywords:** SAW, transducers

**Applies:** S01052

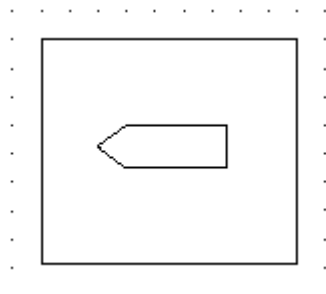
**Application notes:** A00216

**Shape class:** Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01075



**Name:** Recorder, general symbol; reproducer; general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-9 (ed.2.0) 09-10-01

**Keywords:** recorders, reproducers

**Applied in:** S01077

**Applies:** S00059; S01061

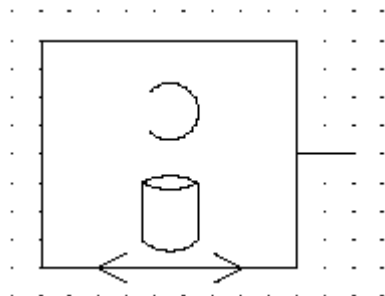
**Application notes:** A00216, A00219

**Shape class:** Lines , Squares

**Function class:** K Processing signals or information

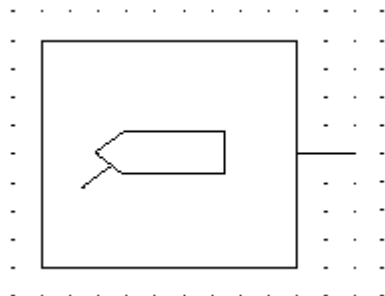
**Application class:** Circuit diagrams, Function diagrams

## S01076



|                       |                                                    |
|-----------------------|----------------------------------------------------|
| Name:                 | Recorder and reproducer, magnetic drum type        |
| Status level:         | Standard                                           |
| Released on:          | 2001-07-01                                         |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-10-02                      |
| Keywords:             | recorders, reproducers                             |
| Applies:              | S00059; S01042; S01048; S01050                     |
| Application notes:    | A00216                                             |
| Shape class:          | Arrows, Circle segments, Depicting shapes, Squares |
| Function class:       | K Processing signals or information                |
| Application class:    | Circuit diagrams, Function diagrams                |

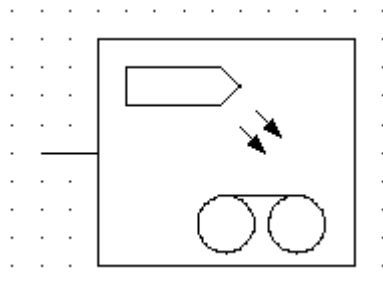
## S01077



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Stylus-type reproducer              |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-10-03       |
| Keywords:             | reproducers                         |
| Applies:              | S01075                              |
| Application notes:    | A00216                              |
| Shape class:          | Lines , Squares                     |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

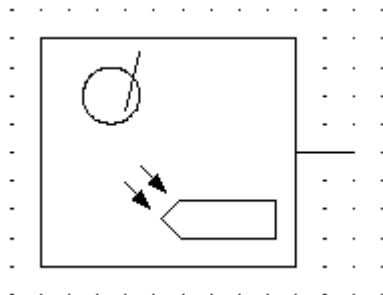


## S01078



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Optical file-type recorder          |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-10-04       |
| Keywords:             | recorders                           |
| Applies:              | S00059; S00127; S01047; S01061      |
| Application notes:    | A00216                              |
| Shape class:          | Arrows, Circles, Lines , Squares    |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

## S01079



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Optical disc-type reproducer        |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-9 (ed.2.0) 09-10-05       |
| Keywords:             | reproducers                         |
| Applies:              | S00059; S00127; S01046; S01061      |
| Application notes:    | A00216                              |
| Shape class:          | Arrows, Circles, Lines , Squares    |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

## S01094



Name: Plane polarization

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-03-01

Keywords: antennas, polarisation

Applied in: S01108, S01105

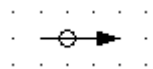
Application notes: A00235

Shape class: Arrows

Function class: - Functional elements or attributes

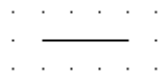
Application class: Conceptual elements or qualifiers

## S01095



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Circular polarization               |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-03-02      |
| Keywords:             | antennas, polarisation              |
| Applied in:           | S01103                              |
| Shape class:          | Arrows, Circles                     |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01096



|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Direction of radiation fixed in azimuth |
| Status level:         | Standard                                |
| Released on:          | 2001-07-01                              |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-03-03          |
| Keywords:             | antennas                                |
| Applied in:           | S01108, S01097, S01100, S01109, S01105  |
| Shape class:          | Lines                                   |
| Function class:       | - Functional elements or attributes     |
| Application class:    | Conceptual elements or qualifiers       |

## S01097



**Name:** Direction of radiation variable in azimuth

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-03-04

**Keywords:** antennas

**Applied in:** S01104

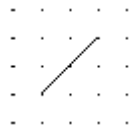
**Applies:** S00081; S01096

**Shape class:** Arrows, Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S01098



**Name:** Direction of radiation fixed in elevation

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-03-05

**Keywords:** antennas

**Applied in:** S01099, S01100, S01109

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S01099



**Name:** Direction of radiation variable in elevation

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-03-06

**Keywords:** antennas

**Applied in:** S01106

**Applies:** S00081; S01098

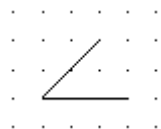
**Shape class:** Arrows, Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers



## S01100



**Name:** Direction of radiation fixed in azimuth and elevation

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-03-07

**Keywords:** antennas

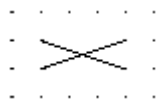
**Applies:** S01096; S01098

**Shape class:** Lines

**Function class:** - Functional elements or attributes

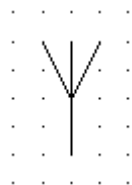
**Application class:** Conceptual elements or qualifiers

## S01101



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Direction finder; Radio beacon      |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-03-08      |
| Keywords:             | antennas, beacons                   |
| Applied in:           | S01128, S01127, S01136, S01107      |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01102



**Name:** Antenna, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-04-01

**Keywords:** antennas

**Applied in:** S01110, S01108, S01103, S01134, S01106, S01104, S01114, S01085, S00428, S01109, S01105, S01125, S01107

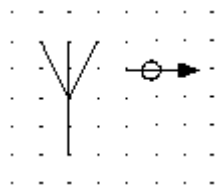
**Application notes:** A00236

**Shape class:** Lines

**Function class:** W Guiding or transporting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S01103



**Name:** Antenna with circular polarization

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-04-02

**Keywords:** antennas, polarisation

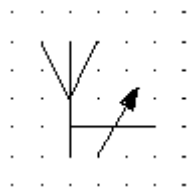
**Applies:** S01095; S01102

**Shape class:** Arrows, Lines

**Function class:** W Guiding or transporting

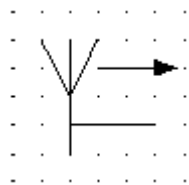
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S01104



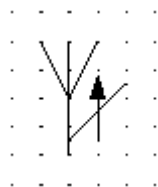
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Antenna with direction of radiation variable in azimuth                                                          |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-04-03                                                                                   |
| Keywords:             | antennas                                                                                                         |
| Applies:              | S01097; S01102                                                                                                   |
| Shape class:          | Arrows, Lines                                                                                                    |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S01105



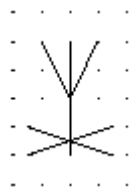
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Directional antenna fixed in azimuth, horizontal polarization                                                    |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-04-04                                                                                   |
| Keywords:             | antennas                                                                                                         |
| Applies:              | S01094; S01096; S01102                                                                                           |
| Shape class:          | Arrows, Lines                                                                                                    |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S01106



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Antenna with direction of radiation variable in elevation                                                        |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-04-05                                                                                   |
| Keywords:             | antennas                                                                                                         |
| Applies:              | S01099; S01102                                                                                                   |
| Shape class:          | Arrows, Lines                                                                                                    |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

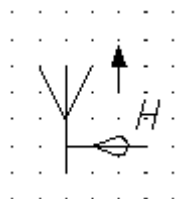
## S01107



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Direction finding antenna                                                                                        |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-04-06                                                                                   |
| Alternative names:    | Radiogoniometric antenna, Radio beacon                                                                           |
| Keywords:             | antennas                                                                                                         |
| Applies:              | S01101; S01102                                                                                                   |
| Shape class:          | Lines                                                                                                            |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |



## S01108



Name: Directional antenna

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-04-07

Keywords: antennas

Applies: S01094; S01096; S01102

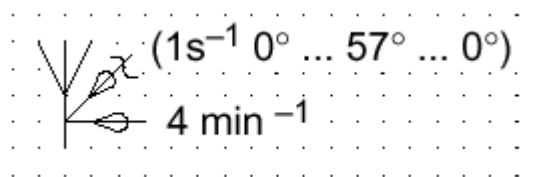
Shape class: Arrows, Lines

Function class: W Guiding or transporting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

Remarks: Directional antenna shown fixed in azimuth, vertically polarized, with horizontal polar diagram.

## S01109



Name: Radar antenna

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-04-08

Keywords: antennas

Applies: S00098; S01096; S01098; S01102

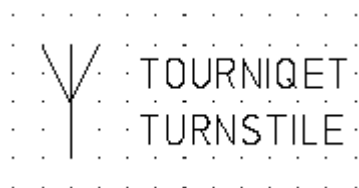
Shape class: Arrows, Lines

Function class: W Guiding or transporting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

Remarks: Radar antenna shown rotating four times per minute in azimuth and reciprocating in elevation between  $0^\circ \dots 57^\circ \dots 0^\circ$  in 1 s.

## S01110



**Name:** Antenna, turnstile

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-04-09

**Keywords:** antennas

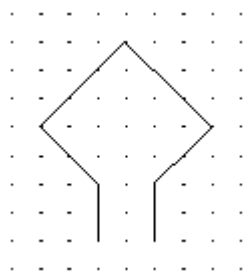
**Applies:** S01102

**Shape class:** Lines

**Function class:** W Guiding or transporting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S01111



**Name:** Antenna, loop; Antenna, frame

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-05-01

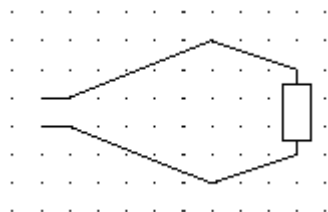
**Keywords:** antennas

**Shape class:** Lines

**Function class:** W Guiding or transporting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S01112



Name: Antenna, rhombic

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-05-02

Keywords: antennas

Applies: S00555

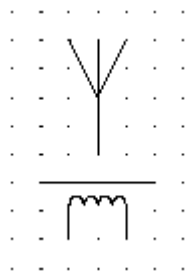
Shape class: Lines , Rectangles

Function class: W Guiding or transporting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

Remarks: Shown terminated by a resistor.

## S01114



**Name:** Antenna, magnetic rod

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-05-04

**Alternative names:** Ferrite antenna

**Keywords:** antennas

**Applies:** S00585; S01102

**Application notes:** A00237

**Shape class:** Half-circles, Lines

**Function class:** W Guiding or transporting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S01115



Name: Dipole

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-05-05

Keywords: antennas

Applied in: S01116

Shape class: Lines

Function class: W Guiding or transporting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S01116



Name: Dipole, folded

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-05-06

Keywords: antennas

Applied in: S01117, S01119

Applies: S01115

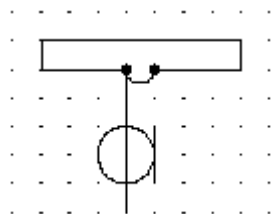
Shape class: Lines

Function class: W Guiding or transporting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

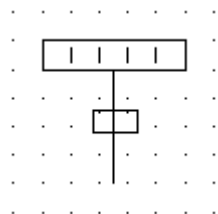


## S01119



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Dipole, folded, with balun and feeder                                                                            |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-05-09                                                                                   |
| Keywords:             | antennas                                                                                                         |
| Applies:              | S00011; S01116; S01418                                                                                           |
| Shape class:          | Circles, Half-circles, Lines                                                                                     |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S01120



**Name:** Antenna, slot type, with feeder

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-05-10

**Keywords:** antennas

**Applies:** S01138

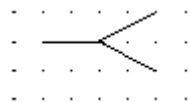
**Shape class:** Lines , Rectangles

**Function class:** W Guiding or transporting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

**Remarks:** Shown with rectangular waveguide feeder.

## S01121



Name: Antenna, horn type

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-05-11

Keywords: antennas

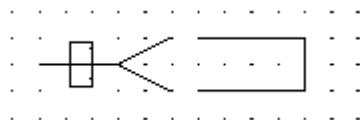
Applied in: S01122

Shape class: Lines

Function class: W Guiding or transporting

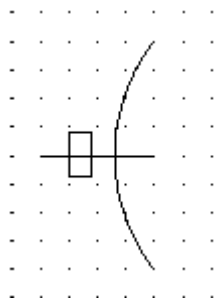
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S01122



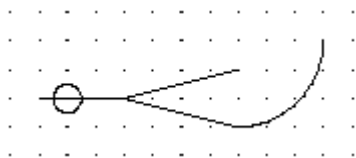
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Reflector, cheese type, with horn feeder                                                                         |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-05-12                                                                                   |
| Keywords:             | antennas                                                                                                         |
| Applies:              | S01121; S01138                                                                                                   |
| Shape class:          | Lines , Rectangles                                                                                               |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |
| Remarks:              | Shown with rectangular waveguide feeder.                                                                         |

## S01123



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Antenna, parabolic, with feeder                                                                                  |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-05-13                                                                                   |
| Keywords:             | antennas                                                                                                         |
| Applies:              | S01138                                                                                                           |
| Shape class:          | Circle segments, Lines                                                                                           |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |
| Remarks:              | Shown with rectangular waveguide feeder.                                                                         |

## S01124



**Name:** Antenna with reflector, horn type

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-05-14

**Keywords:** antennas

**Applies:** S01140

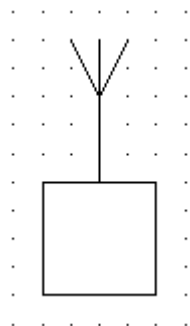
**Shape class:** Circle segments, Circles, Lines

**Function class:** W Guiding or transporting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

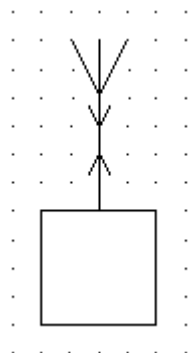
**Remarks:** Shown with circular waveguide feeder.

## S01125



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Radio station, general symbol                          |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-06-01                         |
| Keywords:             | radios, stations                                       |
| Applied in:           | S01128, S01130, S01126, S01129, S01127, S01131, S01137 |
| Applies:              | S00059; S01102                                         |
| Application notes:    | A00220                                                 |
| Shape class:          | Lines , Squares                                        |
| Function class:       | G Initiating a flow                                    |
| Application class:    | Network maps, Overview diagrams                        |

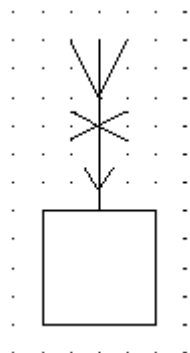
## S01126



|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| Name:                 | Radio station, transmitting and receiving                   |
| Status level:         | Standard                                                    |
| Released on:          | 2001-07-01                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-06-02                              |
| Keywords:             | radios, stations                                            |
| Applies:              | S00100; S01125                                              |
| Shape class:          | Arrows, Lines , Squares                                     |
| Function class:       | G Initiating a flow                                         |
| Application class:    | Network maps, Overview diagrams                             |
| Remarks:              | Simultaneous transmission and reception on the same antenna |



## S01127



**Name:** Radio station, direction finding receiving

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-06-03

**Keywords:** radios, stations

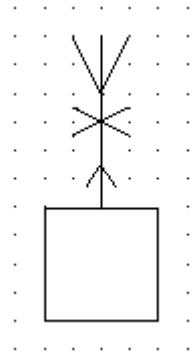
**Applies:** S00103; S01101; S01125

**Shape class:** Arrows, Lines , Squares

**Function class:** G Initiating a flow

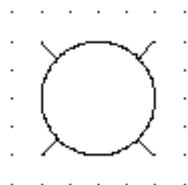
**Application class:** Network maps, Overview diagrams

## S01128



|                       |                                    |
|-----------------------|------------------------------------|
| Name:                 | Radio station, beacon transmitting |
| Status level:         | Standard                           |
| Released on:          | 2001-07-01                         |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-06-04     |
| Keywords:             | radios, stations                   |
| Applies:              | S00102; S01101; S01125             |
| Shape class:          | Arrows, Lines , Squares            |
| Function class:       | G Initiating a flow                |
| Application class:    | Network maps, Overview diagrams    |

## S01133



Name: Space station

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-06-09

Keywords: radios, stations

Applied in: S01134, S01136, S01137, S01135

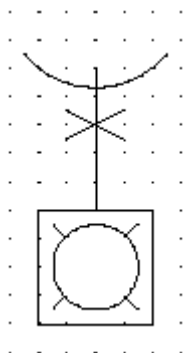
Applies: S00061

Shape class: Circles, Lines

Function class: K Processing signals or information

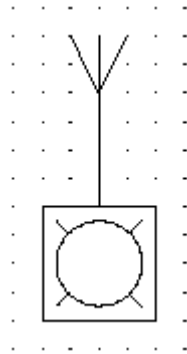
Application class: Network maps, Overview diagrams

## S01136



|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Earth station only for space station tracking  |
| Status level:         | Standard                                       |
| Released on:          | 2001-07-01                                     |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-06-12                 |
| Keywords:             | radios, stations                               |
| Applies:              | S00059; S01101; S01133                         |
| Shape class:          | Circle segments, Circles, Lines                |
| Function class:       | K Processing signals or information            |
| Application class:    | Network maps, Overview diagrams                |
| Remarks:              | The symbols is shown with a parabolic antenna. |

## S01137



**Name:** Earth station for communication with a space station

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-06-13

**Keywords:** radios, stations

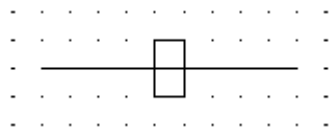
**Applies:** S01125; S01133

**Shape class:** Circles, Lines

**Function class:** K Processing signals or information

**Application class:** Network maps, Overview diagrams

## S01138



**Name:** Waveguide, rectangular

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-07-01

**Keywords:** waveguides

**Applied in:** S01205, S00766, S01146, S00765, S00763, S00757, S00756, S00759, S01120, S01123, S00753, S01170, S01122, S00755, S00761, S00767, S01139, S00754, S00758, S00760, S01171, S00762, S00768, S00764

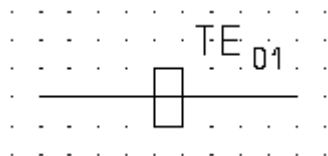
**Applies:** S00001

**Shape class:** Lines , Rectangles

**Function class:** W Guiding or transporting

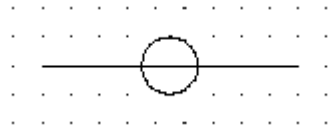
**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

## S01139



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Waveguide, rectangular                                 |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-07-02                         |
| Keywords:             | waveguides                                             |
| Applies:              | S01138                                                 |
| Shape class:          | Characters, Lines , Rectangles                         |
| Function class:       | W Guiding or transporting                              |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |
| Remarks:              | The symbol is shown with propagation in the TE01 mode  |

## S01140



Name: Waveguide, circular

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-07-03

Keywords: waveguides

Applied in: S01170, S01124, S01171

Applies: S00001

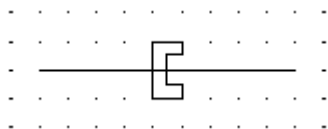
Shape class: Circles, Lines

Function class: W Guiding or transporting

Application class: Circuit diagrams, Function diagrams, Overview diagrams



## S01141



Name: Waveguide, ridged

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-07-04

Keywords: waveguides

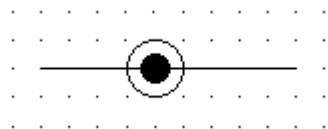
Applies: S00001

Shape class: Depicting shapes, Lines

Function class: W Guiding or transporting

Application class: Circuit diagrams, Function diagrams, Overview diagrams

## S01142



Name: Waveguide, coaxial

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-07-05

Keywords: waveguides

Applied in: S00752, S00753, S00754

Applies: S00001

Shape class: Circles, Dots (points), Lines

Function class: W Guiding or transporting

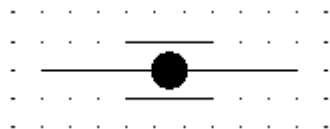
Application class: Circuit diagrams, Function diagrams, Overview diagrams

## S01143



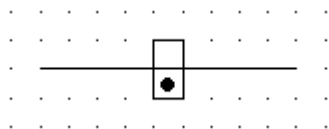
|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Stripline                                              |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-07-06                         |
| Keywords:             | waveguides                                             |
| Applied in:           | S01144                                                 |
| Applies:              | S00001                                                 |
| Shape class:          | Dots (points), Lines                                   |
| Function class:       | W Guiding or transporting                              |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Two conductors shown.                                  |

## S01144



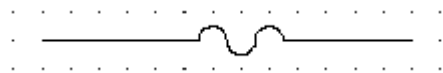
|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Stripline                                              |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-07-07                         |
| Keywords:             | waveguides                                             |
| Applies:              | S01143                                                 |
| Shape class:          | Dots (points), Lines                                   |
| Function class:       | W Guiding or transporting                              |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Three conductors shown.                                |

## S01146



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Waveguide, rectangular, gas-filled                     |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-07-09                         |
| Keywords:             | waveguides                                             |
| Applies:              | S01138                                                 |
| Shape class:          | Dots (points), Lines , Rectangles                      |
| Function class:       | W Guiding or transporting                              |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |

## S01147



Name: Waveguide, flexible

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-07-10

Keywords: waveguides

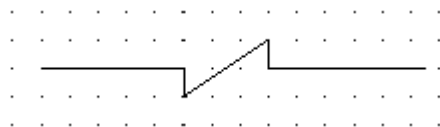
Applies: S00006

Shape class: Depicting shapes

Function class: W Guiding or transporting

Application class: Circuit diagrams, Function diagrams, Overview diagrams

## S01148



Name: Waveguide, twisted

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-07-11

Keywords: waveguides

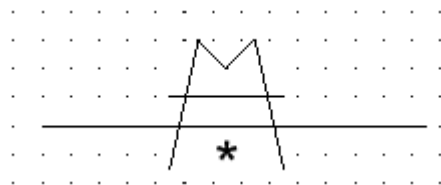
Applies: S00001

Shape class: Lines

Function class: W Guiding or transporting

Application class: Circuit diagrams, Function diagrams, Overview diagrams

## S01149



Name: Mode suppression

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-07-12

Keywords: waveguides

Applied in: S01174

Applies: S00001

Application notes: A00221

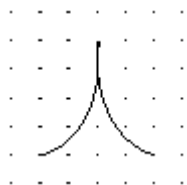
Shape class: Lines

Function class: W Guiding or transporting

Application class: Circuit diagrams, Function diagrams, Overview diagrams



## S01153



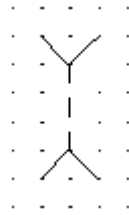
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Resonator                           |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-07-16      |
| Keywords:             | resonators                          |
| Applied in:           | S01265                              |
| Shape class:          | Circle segments                     |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01154



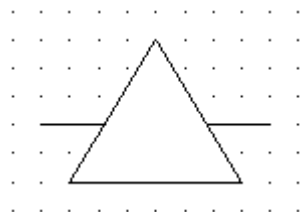
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Reflector, reflecting totally       |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-07-17      |
| Keywords:             | reflectors                          |
| Applied in:           | S01181, S01183, S01182              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01155



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Reflector, reflecting partially     |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-07-18      |
| Keywords:             | reflectors                          |
| Applied in:           | S01183                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01156



**Name:** Discontinuity, two-port, general symbol

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-01

**Keywords:** port devices

**Applied in:** S01157, S01161, S01162

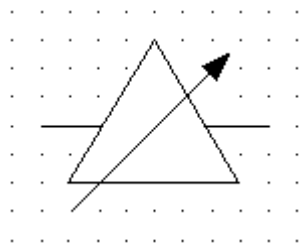
**Shape class:** Equilateral triangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** Introducing intentional wave reflection.

## S01157



**Name:** Matching device, adjustable; Discontinuity, adjustable;

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-02

**Keywords:** port devices

**Applied in:** S01159, S01160, S01158

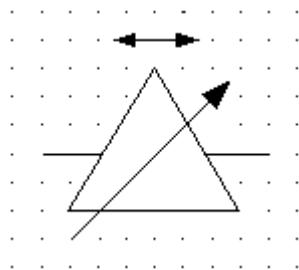
**Applies:** S00081; S01156

**Shape class:** Arrows, Equilateral triangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01158



**Name:** Matching device, adjustable, slide screw

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-03

**Alternative names:** Tuner

**Keywords:** port devices

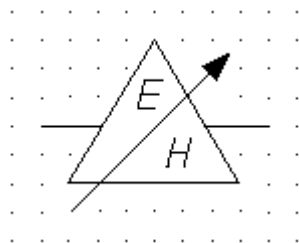
**Applies:** S00094; S01157

**Shape class:** Arrows, Equilateral triangles

**Function class:** K Processing signals or information

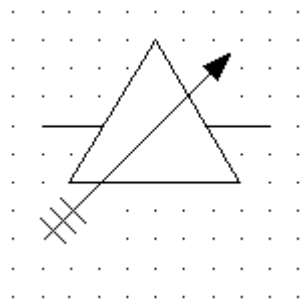
**Application class:** Circuit diagrams, Function diagrams

## S01159



|                       |                                           |
|-----------------------|-------------------------------------------|
| Name:                 | Matching device, adjustable, E-H          |
| Status level:         | Standard                                  |
| Released on:          | 2001-07-01                                |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-04            |
| Alternative names:    | Tuner                                     |
| Keywords:             | port devices                              |
| Applies:              | S01157                                    |
| Shape class:          | Arrows, Characters, Equilateral triangles |
| Function class:       | K Processing signals or information       |
| Application class:    | Circuit diagrams, Function diagrams       |

## S01160



**Name:** Matching device, adjustable, multi-stub

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-05

**Alternative names:** Tuner

**Keywords:** port devices

**Applies:** S01157

**Shape class:** Arrows, Equilateral triangles, Lines

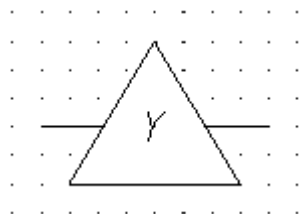
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** The symbol is shown with three stubs.



## S01161



**Name:** Discontinuity, in shunt with transmission path

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-06

**Keywords:** port devices

**Applied in:** S01163, S01164

**Applies:** S01156

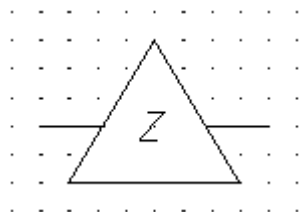
**Application notes:** A00223

**Shape class:** Equilateral triangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01162



Name: Discontinuity, in series with transmission path

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-08-07

Keywords: port devices

Applied in: S01165

Applies: S01156

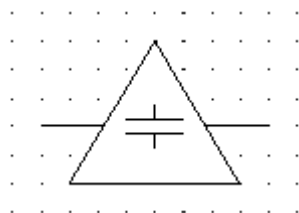
Application notes: A00224

Shape class: Equilateral triangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

## S01163



**Name:** Discontinuity, capacitive, in shunt with the transmission path

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-08

**Keywords:** port devices

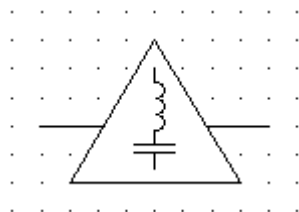
**Applies:** S00567; S01161

**Shape class:** Equilateral triangles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01164



**Name:** Discontinuity, series resonant, in shunt with the transmission path

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-09

**Keywords:** port devices

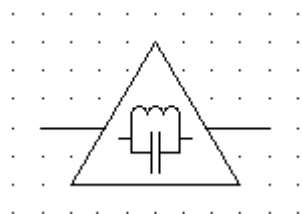
**Applies:** S00567; S00583; S01161

**Shape class:** Equilateral triangles, Half-circles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01165



**Name:** Discontinuity, parallel resonant, in series with the transmission path

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-10

**Keywords:** port devices

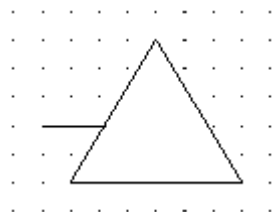
**Applies:** S00567; S00583; S01162

**Shape class:** Equilateral triangles, Half-circles, Lines

**Function class:** K Processing signals or information

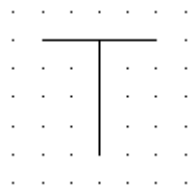
**Application class:** Circuit diagrams, Function diagrams

## S01166



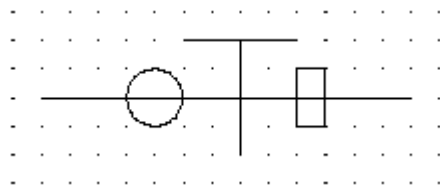
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Discontinuity, terminal             |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-11      |
| Keywords:             | port devices                        |
| Shape class:          | Equilateral triangles               |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

## S01169



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Transition, general symbol          |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-14      |
| Keywords:             | transitions                         |
| Applied in:           | S01170, S01171                      |
| Application notes:    | A00225                              |
| Shape class:          | Lines                               |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

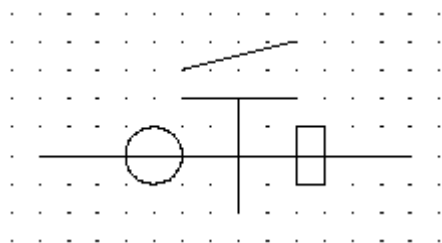
## S01170



|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Transition, from circular to rectangular waveguide       |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-15                           |
| Keywords:             | transitions, waveguides                                  |
| Applies:              | S01138; S01140; S01169                                   |
| Shape class:          | Circles, Lines , Rectangles                              |
| Function class:       | W Guiding or transporting, X Connecting                  |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams |

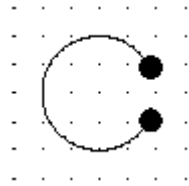


## S01171



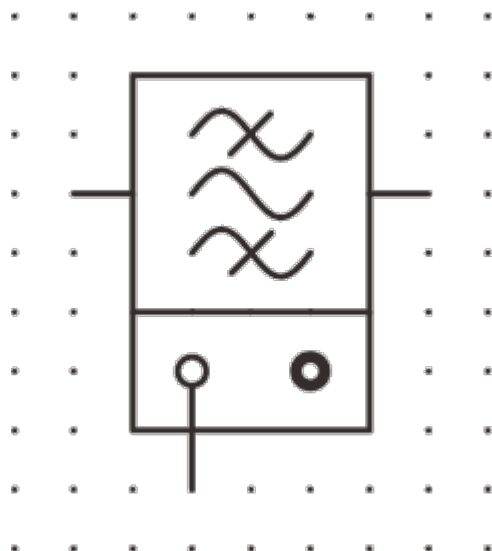
|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| Name:                 | Transition, taper, from circular to rectangular waveguide |
| Status level:         | Standard                                                  |
| Released on:          | 2001-07-01                                                |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-16                            |
| Keywords:             | transitions, waveguides                                   |
| Applies:              | S01138; S01140; S01169                                    |
| Shape class:          | Circles, Lines , Rectangles                               |
| Function class:       | W Guiding or transporting, X Connecting                   |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams  |

## S01172



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Cavity resonator                    |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-17      |
| Keywords:             | resonators                          |
| Applied in:           | S00733, S00753, S00754, S00732      |
| Shape class:          | Circle segments, Dots (points)      |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

## S01173



**Name:** Band-pass filter switched by gas discharge

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-18

**Keywords:** filters

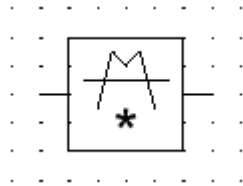
**Applies:** S00075

**Shape class:** Depicting shapes, Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01174



Name: Mode filter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-08-19

Keywords: filters

Applies: S00059; S01149

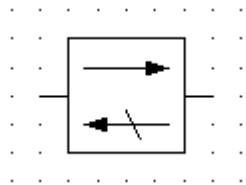
Application notes: A00221

Shape class: Lines , Squares

Function class: K Processing signals or information

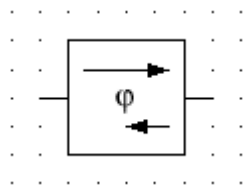
Application class: Circuit diagrams, Connection diagrams, Function diagrams

## S01175



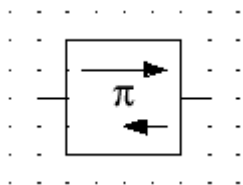
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Isolator for microwaves             |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-20      |
| Keywords:             | isolators, microwave devices        |
| Applies:              | S00059; S00093                      |
| Shape class:          | Arrows, Lines , Squares             |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |

## S01176



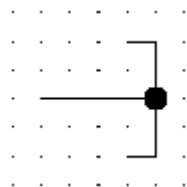
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Directional phase changer                                                                          |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-21                                                                     |
| Keywords:             | changers, phases                                                                                   |
| Applied in:           | S01177                                                                                             |
| Applies:              | S00059; S00093                                                                                     |
| Application notes:    | A00227                                                                                             |
| Shape class:          | Arrows, Characters, Squares                                                                        |
| Function class:       | K Processing signals or information                                                                |
| Application class:    | Circuit diagrams, Function diagrams                                                                |
| Remarks:              | The longer arrow indicates the direction of propagation in which the required phase change occurs. |

## S01177



|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Gyrator                                                  |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-22                           |
| Keywords:             | gyrators                                                 |
| Applies:              | S00059; S00093; S01176                                   |
| Shape class:          | Arrows, Characters, Rectangles                           |
| Function class:       | K Processing signals or information                      |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams |
| Remarks:              | The symbol is a special variant of the symbol S01176.    |

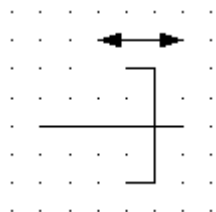
## S01178



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Termination, short-circuit          |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-23      |
| Keywords:             | short circuits, terminations        |
| Shape class:          | Dots (points), Lines                |
| Function class:       | R Restricting or stabilising        |
| Application class:    | Circuit diagrams, Overview diagrams |
| Remarks:              | The dot is optional.                |

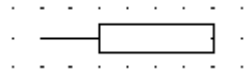


## S01179



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Terminations, slided short circuit  |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-24      |
| Keywords:             | short circuits, terminations        |
| Applied in:           | S00755                              |
| Applies:              | S00094                              |
| Shape class:          | Arrows, Lines                       |
| Function class:       | R Restricting or stabilising        |
| Application class:    | Circuit diagrams, Overview diagrams |

## S01180



Name: Termination, matched

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-08-25

Keywords: terminations

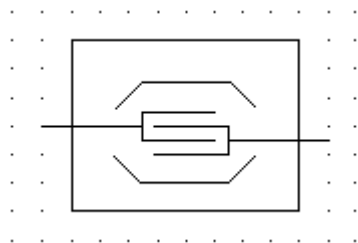
Replacing: S01389

Shape class: Lines , Rectangles

Function class: K Processing signals or information, R Restricting or stabilising

Application class: Circuit diagrams, Function diagrams

## S01181



**Name:** Surface-acoustic-wave (SAW) device, one-port

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-27

**Keywords:** port devices, SAW

**Applies:** S00059; S01052; S01154

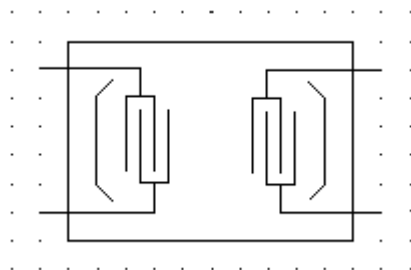
**Shape class:** Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** The symbol is shown with reflectors.

## S01182



**Name:** Surface-acoustic-wave (SAW) device, two-port, reflecting totally

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-28

**Keywords:** port devices, SAW

**Applies:** S01154; S01184

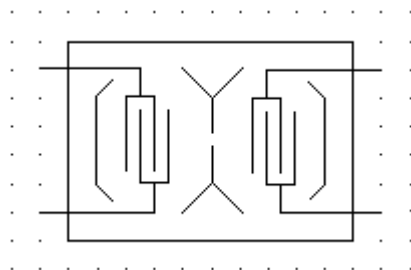
**Shape class:** Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

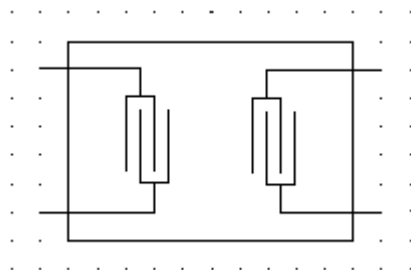
**Remarks:** The symbol is shown with two reflectors.

## S01183



|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| Name:                 | Surface-acoustic-wave (SAW) device, two-port, reflecting partially and totally                    |
| Status level:         | Standard                                                                                          |
| Released on:          | 2001-07-01                                                                                        |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-08-29                                                                    |
| Keywords:             | port devices, SAW                                                                                 |
| Applies:              | S01154; S01155; S01184                                                                            |
| Shape class:          | Lines , Rectangles                                                                                |
| Function class:       | K Processing signals or information                                                               |
| Application class:    | Circuit diagrams, Function diagrams                                                               |
| Remarks:              | The symbol is shown with one reflector reflecting totally and one reflector reflecting partially. |

## S01184



**Name:** Surface-acoustic-wave (SAW) device, two-port

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-08-30

**Keywords:** port devices, SAW

**Applied in:** S01183, S01182

**Applies:** S00059; S01052

**Shape class:** Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

## S01185



Name: Three-port junction

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-09-01

Keywords: microwave devices, multi-port devices (microwave)

Applied in: S01187, S01186, S01188

Applies: S00001

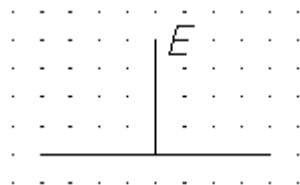
Application notes: A00136

Shape class: Lines

Function class: W Guiding or transporting, X Connecting

Application class: Circuit diagrams

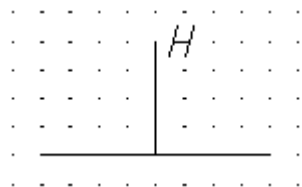
## S01186



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Three-port junction (Series T, E-plane T)                                   |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-02                                              |
| Keywords:             | microwave devices, multi-port devices (microwave)                           |
| Applies:              | S01185                                                                      |
| Application notes:    | A00136                                                                      |
| Shape class:          | Characters, Lines                                                           |
| Function class:       | W Guiding or transporting, X Connecting                                     |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |



## S01187



**Name:** Three-port junction (Shunt T, H-plane T)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-09-03

**Keywords:** microwave devices, multi-port devices (microwave)

**Applies:** S01185

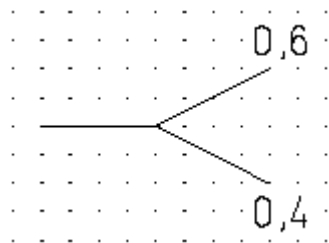
**Application notes:** A00136

**Shape class:** Characters, Lines

**Function class:** W Guiding or transporting, X Connecting

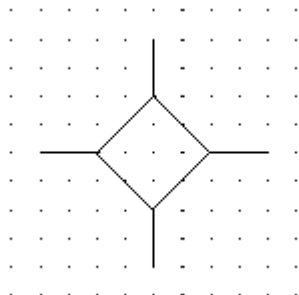
**Application class:** Circuit diagrams

## S01188



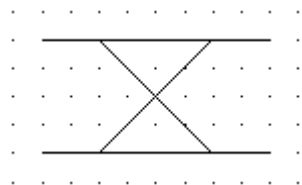
|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Three-port junction (power divider)               |
| Status level:         | Standard                                          |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-04                    |
| Keywords:             | microwave devices, multi-port devices (microwave) |
| Applies:              | S01185                                            |
| Application notes:    | A00136                                            |
| Shape class:          | Characters, Lines                                 |
| Function class:       | W Guiding or transporting, X Connecting           |
| Application class:    | Circuit diagrams                                  |
| Remarks:              | Power divided in ratio 6:4                        |

## S01189



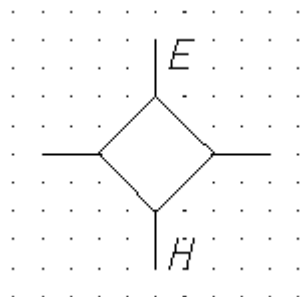
|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Four-port junction                                |
| Status level:         | Standard                                          |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-05                    |
| Keywords:             | microwave devices, multi-port devices (microwave) |
| Form:                 | Form 1                                            |
| Alternative forms:    | S01190                                            |
| Applied in:           | S01191, S01192                                    |
| Application notes:    | A00136, A00137                                    |
| Shape class:          | Lines , Squares                                   |
| Function class:       | W Guiding or transporting, X Connecting           |
| Application class:    | Circuit diagrams                                  |

## S01190



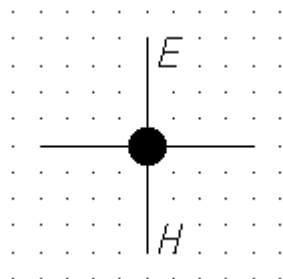
|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Four-port junction                                |
| Status level:         | Standard                                          |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-06                    |
| Keywords:             | microwave devices, multi-port devices (microwave) |
| Form:                 | Form 2                                            |
| Alternative forms:    | S01189                                            |
| Applied in:           | S01193, S01194                                    |
| Application notes:    | A00136, A00137                                    |
| Shape class:          | Equilateral triangles, Lines                      |
| Function class:       | W Guiding or transporting, X Connecting           |
| Application class:    | Circuit diagrams                                  |

## S01191



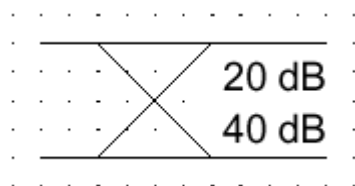
|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Four-port junction (magic T hybrid junction)      |
| Status level:         | Standard                                          |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-07                    |
| Keywords:             | microwave devices, multi-port devices (microwave) |
| Form:                 | (Form 1)                                          |
| Alternative forms:    | S01192                                            |
| Applies:              | S01189                                            |
| Application notes:    | A00136, A00137                                    |
| Shape class:          | Characters, Lines , Squares                       |
| Function class:       | W Guiding or transporting, X Connecting           |
| Application class:    | Circuit diagrams                                  |

## S01192



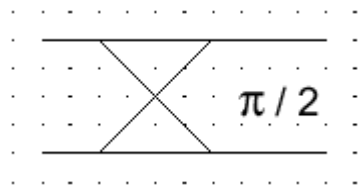
|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Four-port junction (magic T hybrid junction)      |
| Status level:         | <b>Standard</b>                                   |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-08                    |
| Keywords:             | microwave devices, multi-port devices (microwave) |
| Form:                 | (Form 1 simplified)                               |
| Alternative forms:    | S01191                                            |
| Applies:              | S01189                                            |
| Application notes:    | A00136, A00137                                    |
| Shape class:          | Characters, Dots (points), Lines                  |
| Function class:       | W Guiding or transporting, X Connecting           |
| Application class:    | Circuit diagrams                                  |

## S01193



|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| Name:                 | Four-port junction; Directional coupler                 |
| Status level:         | Standard                                                |
| Released on:          | 2001-07-01                                              |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-09                          |
| Keywords:             | microwave devices, multi-port devices (microwave)       |
| Form:                 | (Form 2)                                                |
| Applies:              | S01190                                                  |
| Application notes:    | A00136, A00137                                          |
| Shape class:          | Characters, Equilateral triangles, Lines                |
| Function class:       | W Guiding or transporting, X Connecting                 |
| Application class:    | Circuit diagrams                                        |
| Remarks:              | First value: coupling loss<br>Second value: directivity |

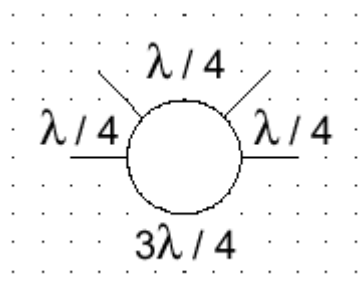
## S01194



|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Four-port junction; Quadrature hybrid junction    |
| Status level:         | Standard                                          |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-10                    |
| Keywords:             | microwave devices, multi-port devices (microwave) |
| Form:                 | (Form 2)                                          |
| Applies:              | S01190                                            |
| Application notes:    | A00136, A00137                                    |
| Shape class:          | Characters, Equilateral triangles, Lines          |
| Function class:       | W Guiding or transporting, X Connecting           |
| Application class:    | Circuit diagrams                                  |



## S01195



Name: Hybrid ring junction

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-09-11

Keywords: microwave devices, multi-port devices (microwave)

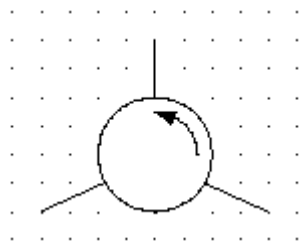
Application notes: A00136

Shape class: Characters, Circles

Function class: W Guiding or transporting, X Connecting

Application class: Circuit diagrams

## S01196



Name: Circulator, three-port

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-09-12

Keywords: microwave devices, multi-port devices (microwave)

Applies: S00095

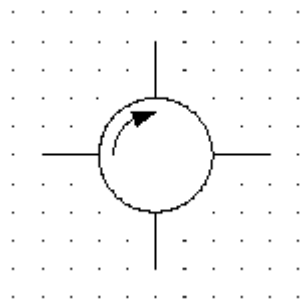
Application notes: A00136

Shape class: Arrows, Circles

Function class: W Guiding or transporting, X Connecting

Application class: Circuit diagrams

## S01197



**Name:** Circulator, four-port

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-09-13

**Keywords:** microwave devices, multi-port devices (microwave)

**Applied in:** S01198

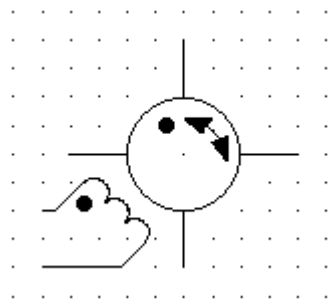
**Applies:** S00095

**Shape class:** Arrows, Circles

**Function class:** W Guiding or transporting, X Connecting

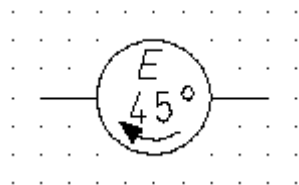
**Application class:** Circuit diagrams

## S01198



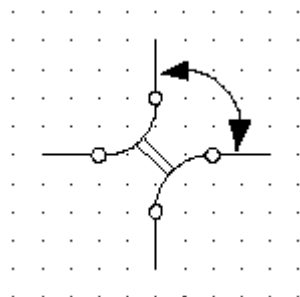
|                       |                                                                                                                                                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Circulator, four-port, with reversible direction of circulation                                                                                           |
| Status level:         | Standard                                                                                                                                                  |
| Released on:          | 2001-07-01                                                                                                                                                |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-14                                                                                                                            |
| Keywords:             | microwave devices, multi-port devices (microwave)                                                                                                         |
| Applies:              | S00096; S00583; S01197                                                                                                                                    |
| Shape class:          | Arrows, Circles, Half-circles                                                                                                                             |
| Function class:       | W Guiding or transporting, X Connecting                                                                                                                   |
| Application class:    | Circuit diagrams                                                                                                                                          |
| Remarks:              | Current entering the coil at the end marked with the dot causes the energy in the circulator to flow in the direction of the arrowhead marked with a dot. |

## S01199



|                       |                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Field-polarization rotator                                                                                                  |
| Status level:         | Standard                                                                                                                    |
| Released on:          | 2001-07-01                                                                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-15                                                                                              |
| Keywords:             | microwave devices, multi-port devices (microwave)                                                                           |
| Applies:              | S00095                                                                                                                      |
| Shape class:          | Arrows, Characters, Circles                                                                                                 |
| Function class:       | W Guiding or transporting, X Connecting                                                                                     |
| Application class:    | Circuit diagrams                                                                                                            |
| Remarks:              | Shown for 45°. The arrow indicates the direction of rotation of electric field when viewed in the direction of signal flow. |

## S01200



**Name:** Two-position microwave switch (90° step)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-09-16

**Keywords:** microwave devices, multi-port devices (microwave)

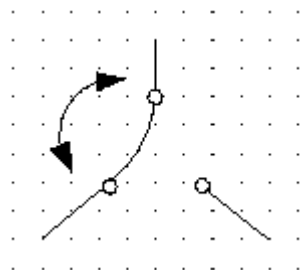
**Applies:** S00017; S00096; S00147

**Shape class:** Arrows, Circle segments

**Function class:** W Guiding or transporting, X Connecting

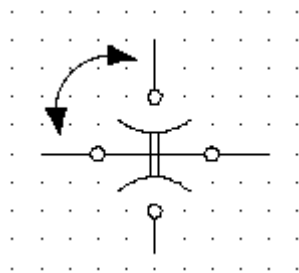
**Application class:** Circuit diagrams

## S01201



|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Name:                 | Three-position microwave switch (120° step)       |
| Status level:         | Standard                                          |
| Released on:          | 2001-07-01                                        |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-09-17                    |
| Keywords:             | microwave devices, multi-port devices (microwave) |
| Applies:              | S00017; S00096                                    |
| Shape class:          | Arrows, Lines                                     |
| Function class:       | W Guiding or transporting, X Connecting           |
| Application class:    | Circuit diagrams                                  |

## S01202



**Name:** Four-position microwave switch (45° step)

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-09-18

**Keywords:** microwave devices, multi-port devices (microwave)

**Applies:** S00017; S00096; S00147

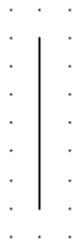
**Shape class:** Arrows, Circle segments

**Function class:** W Guiding or transporting, X Connecting

**Application class:** Circuit diagrams



## S01203



**Name:** Coupler (or feed) type unspecified, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-10-01

**Keywords:** couplers, microwave devices

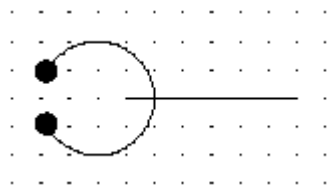
**Applied in:** S01205, S00752, S01210, S01207, S01209, S01204, S00754

**Shape class:** Lines

**Function class:** W Guiding or transporting, X Connecting

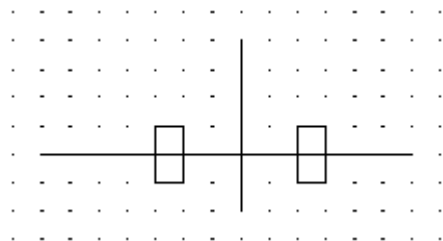
**Application class:** Circuit diagrams

## S01204



|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Coupler to a cavity resonator           |
| Status level:         | Standard                                |
| Released on:          | 2001-07-01                              |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-10-02          |
| Keywords:             | couplers, microwave devices             |
| Applied in:           | S00752, S00754                          |
| Applies:              | S01203                                  |
| Shape class:          | Circle segments, Dots (points), Lines   |
| Function class:       | W Guiding or transporting, X Connecting |
| Application class:    | Circuit diagrams                        |

## S01205



|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Coupler to a rectangular waveguide      |
| Status level:         | Standard                                |
| Released on:          | 2001-07-01                              |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-10-03          |
| Keywords:             | couplers, microwave devices             |
| Applies:              | S01138; S01203                          |
| Shape class:          | Lines , Rectangles                      |
| Function class:       | W Guiding or transporting, X Connecting |
| Application class:    | Circuit diagrams                        |

## S01206



**Name:** Window (aperture) coupler, general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-10-04

**Keywords:** couplers, microwave devices

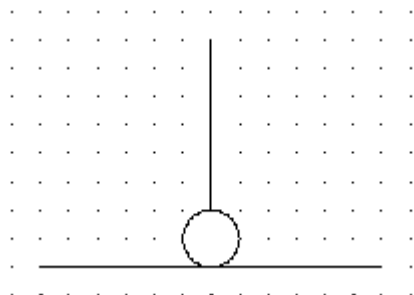
**Applied in:** S01207, S01208

**Shape class:** Circles

**Function class:** W Guiding or transporting, X Connecting

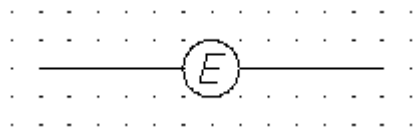
**Application class:** Circuit diagrams

## S01207



|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Window (aperture) coupler at a junction        |
| Status level:         | Standard                                       |
| Released on:          | 2001-07-01                                     |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-10-05                 |
| Keywords:             | couplers                                       |
| Applied in:           | S00765, S00763, S00759, S00753, S00761, S00767 |
| Applies:              | S01203; S01206                                 |
| Shape class:          | Circles, Lines                                 |
| Function class:       | W Guiding or transporting, X Connecting        |
| Application class:    | Circuit diagrams                               |

## S01208



|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | E-plane window (aperture) coupler       |
| Status level:         | Standard                                |
| Released on:          | 2001-07-01                              |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-10-06          |
| Keywords:             | couplers, microwave devices             |
| Applies:              | S01206                                  |
| Shape class:          | Circles                                 |
| Function class:       | W Guiding or transporting, X Connecting |
| Application class:    | Circuit diagrams                        |

## S01209



|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Loop coupler                            |
| Status level:         | Standard                                |
| Released on:          | 2001-07-01                              |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-10-07          |
| Keywords:             | couplers, microwave devices             |
| Applied in:           | S00751, S01211, S00737, S00753          |
| Applies:              | S01203                                  |
| Shape class:          | Dots (points), Half-circles             |
| Function class:       | W Guiding or transporting, X Connecting |
| Application class:    | Circuit diagrams                        |

## S01210



Name: Probe coupler

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-10-08

Keywords: couplers, microwave devices, probes

Applies: S01203

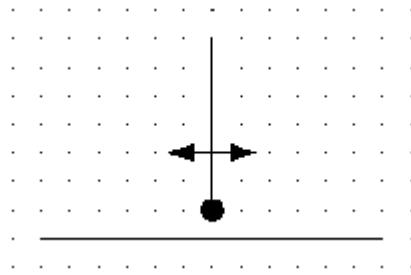
Shape class: Dots (points), Lines

Function class: W Guiding or transporting, X Connecting

Application class: Circuit diagrams



## S01211



**Name:** Sliding probe coupled to a transmission path

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-10-09

**Keywords:** couplers, microwave devices, probes

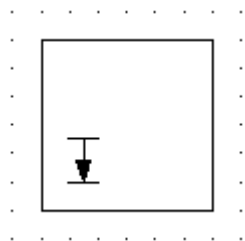
**Applies:** S00094; S01209

**Shape class:** Arrows, Dots (points), Lines

**Function class:** W Guiding or transporting, X Connecting

**Application class:** Circuit diagrams

## S01212



Name: Maser, general symbol

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-11-01

Keywords: masers

Applied in: S01213

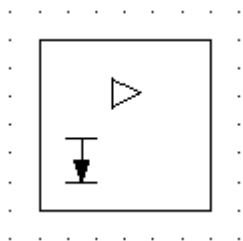
Application notes: A00138

Shape class: Arrows, Lines , Squares

Function class: E Providing radiant or thermal energy

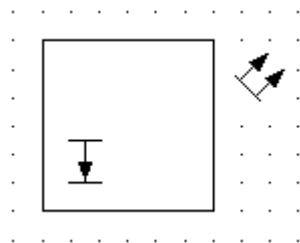
Application class: Circuit diagrams, Function diagrams, Overview diagrams

## S01213



|                       |                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------|
| Name:                 | Maser used as an amplifier                                                                                    |
| Status level:         | Standard                                                                                                      |
| Released on:          | 2001-07-01                                                                                                    |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-11-02                                                                                |
| Alternative names:    | Amplifier                                                                                                     |
| Keywords:             | amplifiers, masers                                                                                            |
| Applies:              | S01212; S01239                                                                                                |
| Application notes:    | A00138                                                                                                        |
| Shape class:          | Arrows, Equilateral triangles, Lines , Squares                                                                |
| Function class:       | E Providing radiant or thermal energy, K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                        |

## S01214



**Name:** Laser (optical maser), general symbol

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-11-03

**Keywords:** lasers

**Applied in:** S01215, S01217, S01216

**Applies:** S00128

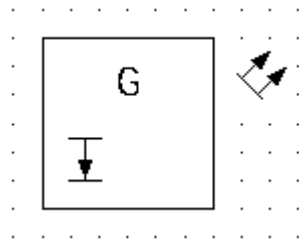
**Application notes:** A00138

**Shape class:** Arrows, Lines , Squares

**Function class:** E Providing radiant or thermal energy, G Initiating a flow, T Converting but maintaining kind

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

## S01215



Name: Laser used as a generator

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-11-04

Keywords: generators, lasers

Applied in: S01217, S01216

Applies: S00128; S00899; S01214; S01225

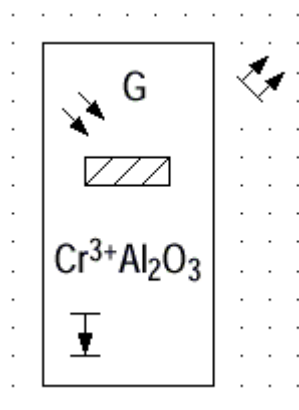
Application notes: A00138

Shape class: Arrows, Characters, Lines , Squares

Function class: E Providing radiant or thermal energy, G Initiating a flow

Application class: Circuit diagrams, Function diagrams, Overview diagrams

## S01216



**Name:** Ruby laser generator

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-11-05

**Keywords:** generators, lasers

**Applies:** S00114; S00127; S00899; S01214; S01215; S01225

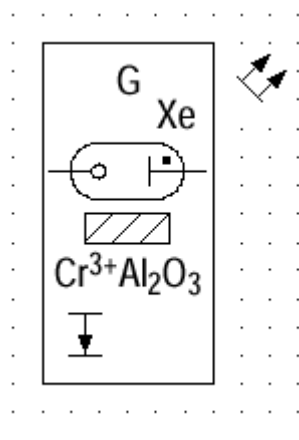
**Application notes:** A00040, A00138

**Shape class:** Arrows, Characters, Lines , Rectangles, Squares

**Function class:** E Providing radiant or thermal energy, G Initiating a flow

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

## S01217



**Name:** Ruby laser generator with xenon lamp as pumping source

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-11-06

**Keywords:** generators, lasers

**Applies:** S00114; S00769; S00899; S01214; S01215; S01225

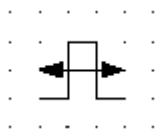
**Application notes:** A00040, A00138

**Shape class:** Arrows, Characters, Lines , Ovals, Rectangles, Squares

**Function class:** E Providing radiant or thermal energy, G Initiating a flow

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

## S01218



**Name:** Pulse-position or pulse-phase modulation

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-12-01

**Keywords:** pulse modulation - types of

**Applies:** S00094; S00132

**Shape class:** Arrows, Depicting shapes

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers



## S01219



Name: Pulse-frequency modulation

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-12-02

Keywords: pulse modulation - types of

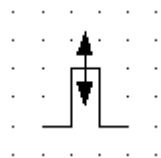
Applies: S00132; S01403

Shape class: Depicting shapes

Function class: - Functional elements or attributes

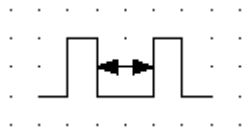
Application class: Conceptual elements or qualifiers

## S01220



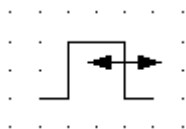
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Pulse-amplitude modulation          |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-12-03      |
| Keywords:             | pulse modulation - types of         |
| Applies:              | S00094; S00132                      |
| Shape class:          | Arrows, Depicting shapes            |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01221



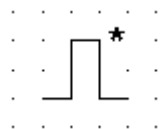
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Pulse-interval modulation           |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-12-04      |
| Keywords:             | pulse modulation - types of         |
| Applies:              | S00094; S00132                      |
| Shape class:          | Arrows, Depicting shapes            |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01222



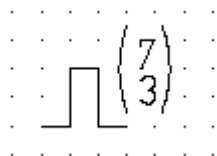
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Pulse-duration modulation           |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-12-05      |
| Keywords:             | pulse modulation - types of         |
| Alternative forms:    | S00094                              |
| Applied in:           | S01412                              |
| Applies:              | S00094; S00132                      |
| Shape class:          | Arrows, Depicting shapes            |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01223



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Pulse-code modulation               |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-12-06      |
| Keywords:             | PCM, pulse modulation - types of    |
| Applied in:           | S01280, S01224                      |
| Applies:              | S00132                              |
| Application notes:    | A00141                              |
| Shape class:          | Characters, Depicting shapes        |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01224



**Name:** Pulse-code modulation in 3-out-of-7 code

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-12-07

**Keywords:** pulse modulation - types of

**Applies:** S01223

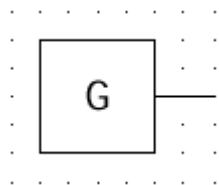
**Application notes:** A00141

**Shape class:** Characters, Depicting shapes

**Function class:** - Functional elements or attributes

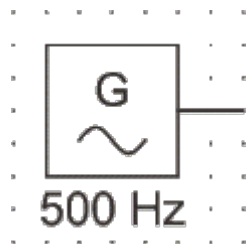
**Application class:** Conceptual elements or qualifiers

## S01225



|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Name:                 | Signal generator, general symbol                                               |
| Status level:         | Standard                                                                       |
| Released on:          | 2001-07-01                                                                     |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-13-01                                                 |
| Alternative names:    | Waveform generator                                                             |
| Keywords:             | signal generators, waveform generators                                         |
| Applied in:           | S01425, S01226, S01678, S01215, S01229, S01217, S01216, S01228, S01230, S01227 |
| Applies:              | S00059                                                                         |
| Application notes:    | A00013                                                                         |
| Shape class:          | Characters, Squares                                                            |
| Function class:       | G Initiating a flow                                                            |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                         |

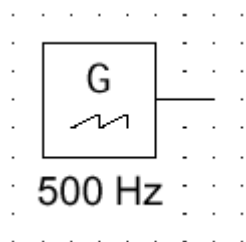
## S01226



|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Sine-wave generator, 500 Hz                              |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-13-02                           |
| Keywords:             | signal generators, waveform generators                   |
| Applies:              | S00899; S01225; S01403                                   |
| Shape class:          | Characters, Depicting shapes, Squares                    |
| Function class:       | G Initiating a flow, K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams   |



## S01227



**Name:** Saw-tooth generator, 500 Hz

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-13-03

**Keywords:** signal generators, waveform generators

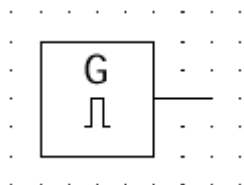
**Applies:** S00137; S01225

**Shape class:** Characters, Depicting shapes, Lines , Squares

**Function class:** G Initiating a flow, K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01228



**Name:** Pulse generator

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-13-04

**Keywords:** pulse generators, signal generators, waveform generators

**Applied in:** S01280

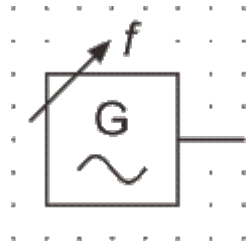
**Applies:** S00132; S01225

**Shape class:** Characters, Depicting shapes, Squares

**Function class:** G Initiating a flow, K Processing signals or information

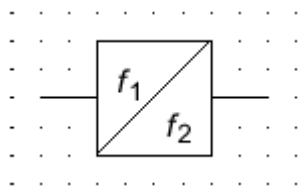
**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

## S01229



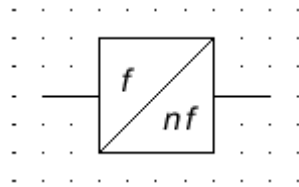
|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Sine-wave generator with adjustable frequency            |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-13-05                           |
| Keywords:             | signal generators, waveform generators                   |
| Applies:              | S00081; S01225; S01403                                   |
| Shape class:          | Arrows, Characters, Depicting shapes, Rectangles         |
| Function class:       | G Initiating a flow, K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams   |

## S01232



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Frequency converter, changing from $f_1$ to $f_2$      |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-14-02                         |
| Keywords:             | converters                                             |
| Applies:              | S00213                                                 |
| Application notes:    | A00143                                                 |
| Shape class:          | Characters, Lines , Squares                            |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |

## S01233



Name: Frequency multiplier

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-14-03

Keywords: converters

Applies: S00213

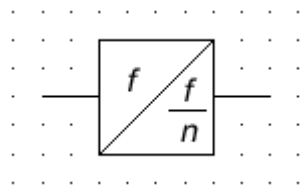
Application notes: A00142

Shape class: Characters, Lines , Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams, Overview diagrams

## S01234



Name: Frequency divider

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-14-04

Keywords: converters

Applies: S00213

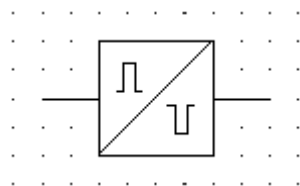
Application notes: A00140

Shape class: Characters, Lines , Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams, Overview diagrams

## S01235



Name: Pulse inverter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-14-05

Keywords: converters

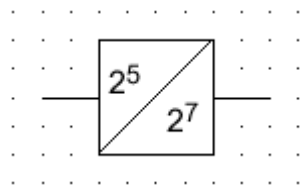
Applies: S00132; S00133; S00213

Shape class: Depicting shapes, Lines , Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams, Overview diagrams

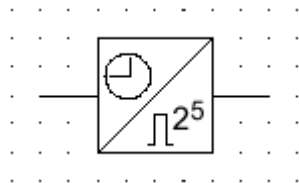
## S01236



|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| Name:                 | Code converter of binary code                                         |
| Status level:         | Standard                                                              |
| Released on:          | 2001-07-01                                                            |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-14-06                                        |
| Keywords:             | converters                                                            |
| Applies:              | S00213                                                                |
| Shape class:          | Characters, Lines , Squares                                           |
| Function class:       | K Processing signals or information                                   |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                |
| Remarks:              | Code converter, five-unit binary code to seven-unit binary code shown |



## S01237



**Name:** Converter giving clock-time indication in five-digit binary code

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-14-07

**Keywords:** converters

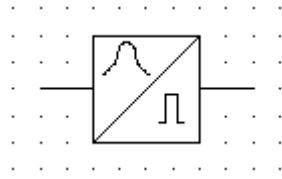
**Applies:** S00132; S00213; S00959

**Shape class:** Characters, Depicting shapes, Lines , Squares

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

## S01238



**Name:** Pulse regenerator

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-14-08

**Keywords:** converters

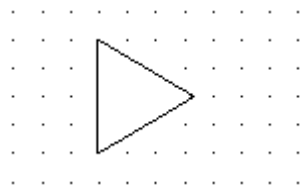
**Applies:** S00132; S00213

**Shape class:** Depicting shapes, Lines , Squares

**Function class:** K Processing signals or information

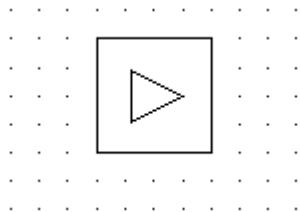
**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

## S01239



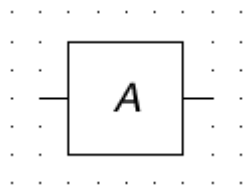
|                       |                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Amplifier, general symbol                                                                                                              |
| Status level:         | Standard                                                                                                                               |
| Released on:          | 2001-07-01                                                                                                                             |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-15-01                                                                                                         |
| Alternative names:    | Repeater, general symbol                                                                                                               |
| Keywords:             | amplifiers, repeaters                                                                                                                  |
| Form:                 | Form 1                                                                                                                                 |
| Alternative forms:    | S01240; S01781                                                                                                                         |
| Applied in:           | S00420, S00432, S00433, S01087, S01243, S01242, S01026, S01089, S01088, S01091, S00430, S01241, S00428, S01213, S00429, S01092, S00431 |
| Applies:              | S01457                                                                                                                                 |
| Application notes:    | A00238, A00351                                                                                                                         |
| Shape class:          | Equilateral triangles                                                                                                                  |
| Function class:       | K Processing signals or information                                                                                                    |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                                                            |

## S01240



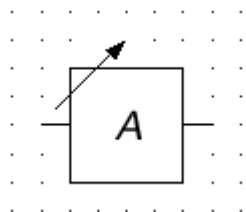
|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Amplifier, general symbol                                                                                        |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-15-02                                                                                   |
| Alternative names:    | Repeater, general symbol                                                                                         |
| Keywords:             | amplifiers, repeaters                                                                                            |
| Form:                 | Form 2                                                                                                           |
| Alternative forms:    | S01239; S01781                                                                                                   |
| Applied in:           | S01683, S00092                                                                                                   |
| Applies:              | S01457                                                                                                           |
| Application notes:    | A00238                                                                                                           |
| Shape class:          | Equilateral triangles, Squares                                                                                   |
| Function class:       | K Processing signals or information                                                                              |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

## S01244



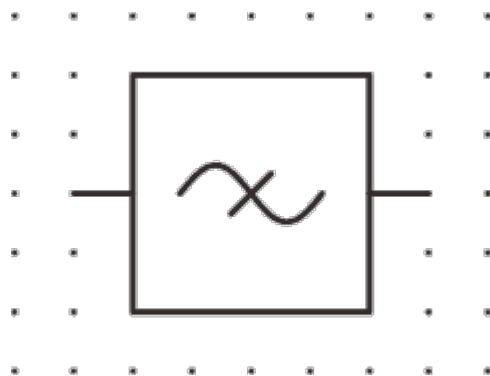
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Attenuator, fixed loss                                                      |
| Status level:         | <b>Standard</b>                                                             |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-01                                              |
| Keywords:             | attenuators, networks                                                       |
| Alternative forms:    | S00442                                                                      |
| Applied in:           | S01331, S01245                                                              |
| Applies:              | S00059                                                                      |
| Replacing:            | S01167; S01168                                                              |
| Shape class:          | Characters, Squares                                                         |
| Function class:       | K Processing signals or information, R Restricting or stabilising           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01245



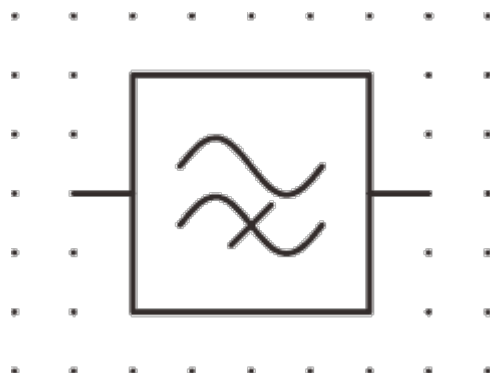
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Attenuator, variable loss                                                   |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-02                                              |
| Keywords:             | attenuators, networks                                                       |
| Applies:              | S00081; S01244                                                              |
| Shape class:          | Arrows, Characters, Squares                                                 |
| Function class:       | K Processing signals or information, R Restricting or stabilising           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01246



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Filter, general symbol                                                      |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-03                                              |
| Keywords:             | filters, networks                                                           |
| Applied in:           | S01249, S01250, S01247, S01248, S01264                                      |
| Shape class:          | Depicting shapes, Squares                                                   |
| Function class:       | K Processing signals or information, R Restricting or stabilising           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01247



Name: High-pass filter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-16-04

Keywords: filters, networks

Applies: S01246

Shape class: Depicting shapes, Squares

Function class: K Processing signals or information, R Restricting or stabilising

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams



## S01248



Name: Low-pass filter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-16-05

Keywords: filters, networks

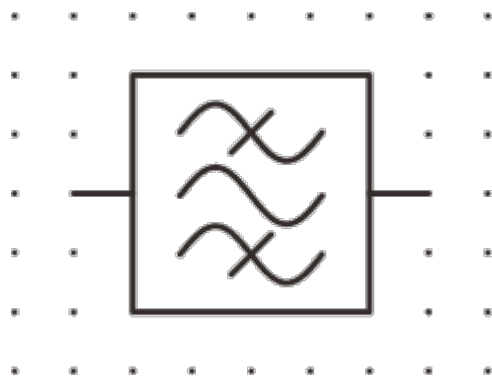
Applies: S01246

Shape class: Depicting shapes, Lines , Squares

Function class: K Processing signals or information, R Restricting or stabilising

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01249



Name: Band-pass filter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-16-06

Keywords: filters, networks

Applied in: S01429

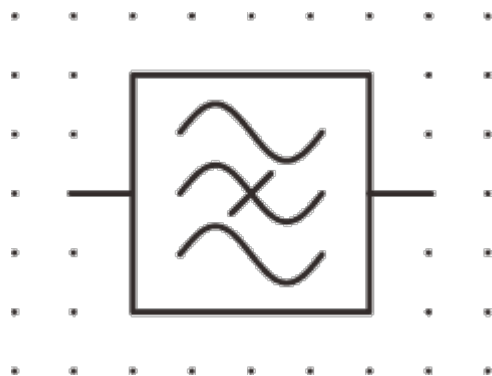
Applies: S01246

Shape class: Depicting shapes, Squares

Function class: K Processing signals or information, R Restricting or stabilising

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01250



Name: Band-stop filter

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-16-07

Keywords: filters, networks

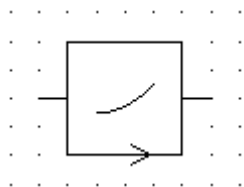
Applies: S01246

Shape class: Depicting shapes, Squares

Function class: K Processing signals or information, R Restricting or stabilising

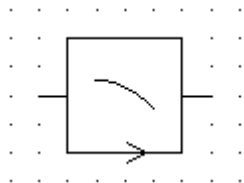
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01251



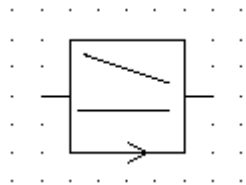
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Device for pre-emphasis of higher frequencies                               |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-08                                              |
| Keywords:             | networks                                                                    |
| Applies:              | S00099                                                                      |
| Shape class:          | Depicting shapes, Squares                                                   |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01252



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Device for de-emphasis of higher frequencies                                |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-09                                              |
| Keywords:             | networks                                                                    |
| Applies:              | S00099                                                                      |
| Shape class:          | Arrows, Depicting shapes, Squares                                           |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01253



Name: Compressor

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-16-10

Keywords: networks

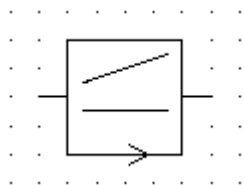
Applies: S00099

Shape class: Arrows, Lines , Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01254



Name: Expander

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-16-11

Keywords: networks

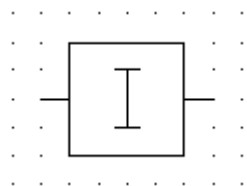
Applies: S00099

Shape class: Arrows, Lines , Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01255



Name: Artificial line

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-16-12

Keywords: networks

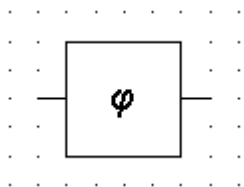
Shape class: Lines , Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

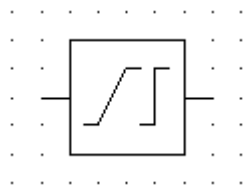


## S01256



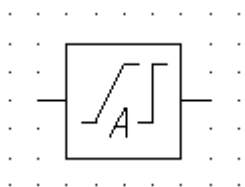
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Phase-changing network                                                      |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-13                                              |
| Keywords:             | networks                                                                    |
| Application notes:    | A00241                                                                      |
| Shape class:          | Characters, Squares                                                         |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01257



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Distortion corrector, general symbol                                        |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-14                                              |
| Keywords:             | networks                                                                    |
| Applied in:           | S01260, S01258, S01259                                                      |
| Applies:              | S00135                                                                      |
| Shape class:          | Lines , Squares                                                             |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01258



**Name:** Attenuation equalizer

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-16-15

**Keywords:** attenuators, networks

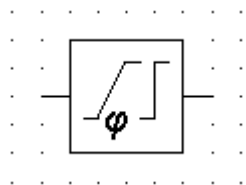
**Applies:** S01257

**Shape class:** Characters, Depicting shapes, Squares

**Function class:** K Processing signals or information

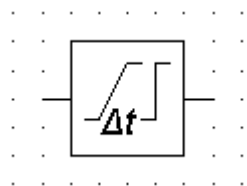
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01259



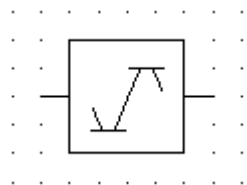
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Phase distortion corrector                                                  |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-16                                              |
| Keywords:             | networks                                                                    |
| Applies:              | S01257                                                                      |
| Application notes:    | A00244                                                                      |
| Shape class:          | Characters, Squares                                                         |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01260



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Delay distortion corrector; Delay equalizer                                 |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-17                                              |
| Keywords:             | networks                                                                    |
| Applies:              | S01257                                                                      |
| Shape class:          | Characters, Squares                                                         |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01261



**Name:** Amplitude limiter without distortion

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-16-18

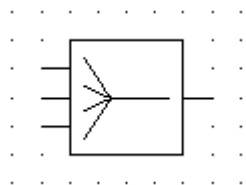
**Keywords:** networks

**Shape class:** Depicting shapes, Squares

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01262



Name: Mixing network

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-16-19

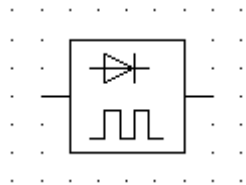
Keywords: networks

Shape class: Lines , Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

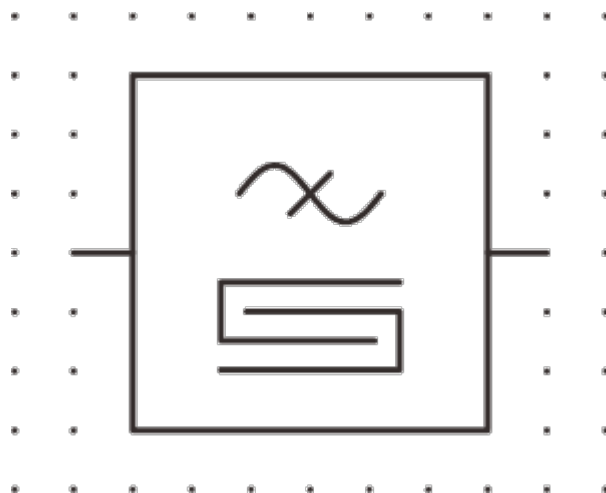
## S01263



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Electronic chopping device                                                  |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-20                                              |
| Alternative names:    | Chopper                                                                     |
| Keywords:             | choppers, networks                                                          |
| Applies:              | S00132; S00641                                                              |
| Shape class:          | Lines , Squares                                                             |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

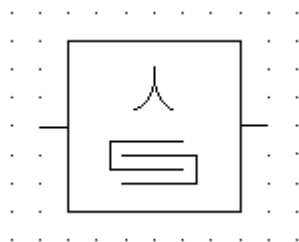


## S01264



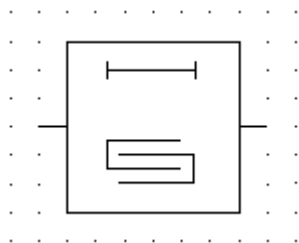
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Surface acoustic wave (SAW) filter                                          |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-21                                              |
| Keywords:             | filters, networks                                                           |
| Applies:              | S01052; S01246                                                              |
| Shape class:          | Depicting shapes, Lines , Squares                                           |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01265



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Surface acoustic wave (SAW) resonator                                       |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-16-22                                              |
| Keywords:             | filters, networks                                                           |
| Applies:              | S01052; S01153                                                              |
| Shape class:          | Depicting shapes, Lines , Squares                                           |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01266



**Name:** Surface acoustic wave (SAW) delay line

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-16-23

**Keywords:** delay lines, networks

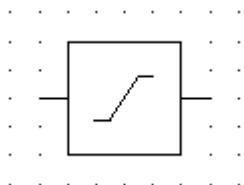
**Applies:** S00124; S01052

**Shape class:** Depicting shapes, Lines , Squares

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01267



Name: Clipper

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-17-01

Keywords: limiters

Applied in: S01269, S01268, S01270, S01271

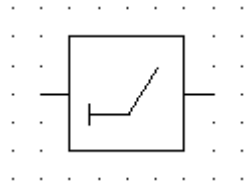
Application notes: A00245

Shape class: Lines , Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01268



**Name:** Base limiter; Threshold device

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-17-02

**Keywords:** limiters

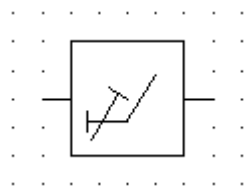
**Applies:** S01267

**Shape class:** Lines , Squares

**Function class:** K Processing signals or information

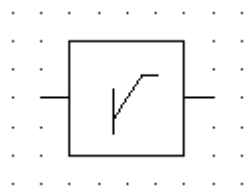
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01269



|                              |                                                                                                                |
|------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Base limiter with preset of the threshold adjustment; Threshold device with preset adjustment of the threshold |
| <b>Status level:</b>         | Standard                                                                                                       |
| <b>Released on:</b>          | 2001-07-01                                                                                                     |
| <b>Earlier published in:</b> | IEC 60617-10 (ed.2.0) 10-17-03                                                                                 |
| <b>Keywords:</b>             | limiters                                                                                                       |
| <b>Applies:</b>              | S01267                                                                                                         |
| <b>Shape class:</b>          | Lines , Squares                                                                                                |
| <b>Function class:</b>       | K Processing signals or information                                                                            |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                                    |

## S01270



Name: Positive peak clipper

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-17-04

Keywords: limiters

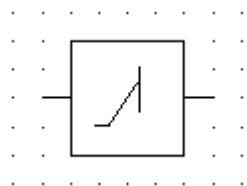
Applies: S01267

Shape class: Lines , Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01271



Name: Negative peak clipper

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-17-05

Keywords: limiters

Applies: S01267

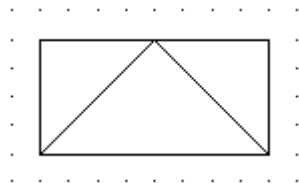
Shape class: Lines , Squares

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

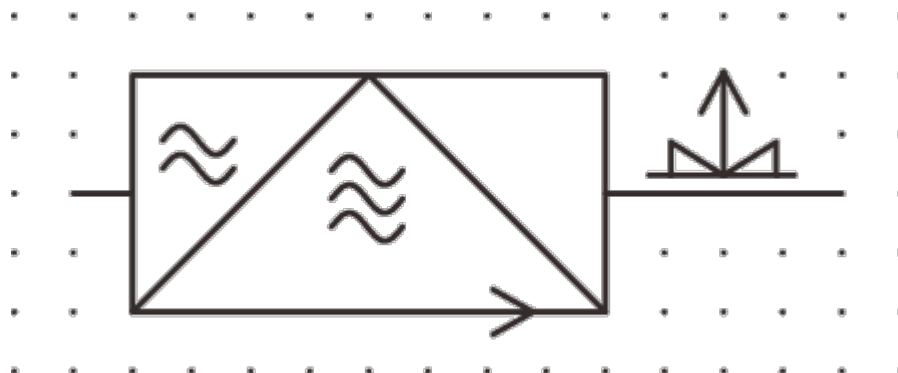


## S01278



|                              |                                                                                       |
|------------------------------|---------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Modulator, general symbol; Demodulator, general symbol; Discriminator, general symbol |
| <b>Status level:</b>         | Standard                                                                              |
| <b>Released on:</b>          | 2001-07-01                                                                            |
| <b>Earlier published in:</b> | IEC 60617-10 (ed.2.0) 10-19-01                                                        |
| <b>Keywords:</b>             | demodulators, discriminators, modulators                                              |
| <b>Applied in:</b>           | S01280, S01279, S01281                                                                |
| <b>Applies:</b>              | S00214                                                                                |
| <b>Application notes:</b>    | A00246                                                                                |
| <b>Shape class:</b>          | Lines , Rectangles                                                                    |
| <b>Function class:</b>       | K Processing signals or information                                                   |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams           |

**S01279**



**Name:** Modulator, double sideband output

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-19-02

**Keywords:** modulators

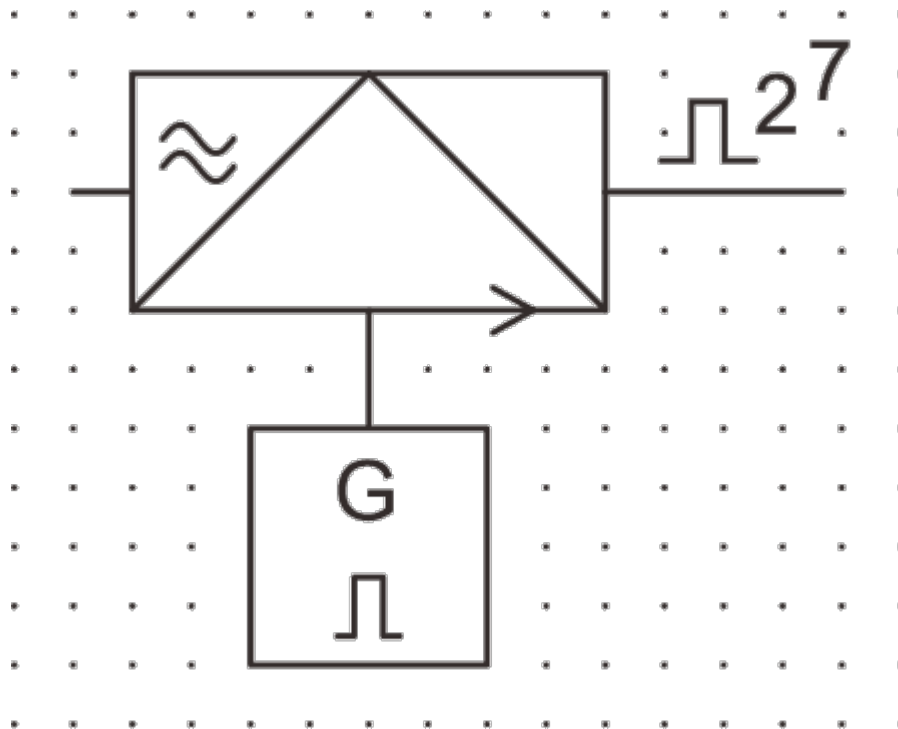
**Applies:** S00074; S00075; S00099; S01278; S01308

**Shape class:** Arrows, Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**S01280**



Name: Pulse code modulator

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-19-03

Keywords: modulators

Applies: S00074; S00099; S01223; S01228; S01278

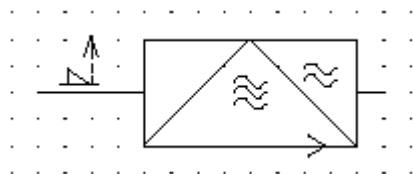
Shape class: Depicting shapes, Lines , Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

Remarks: Shown with seven-unit binary code output.

## S01281



**Name:** Demodulator, single sideband

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-19-04

**Keywords:** demodulators

**Applies:** S00074; S00075; S00099; S01278; S01312

**Shape class:** Depicting shapes, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** Demodulator, single sideband with suppressed amplitude of the carrier-frequency, with audio-output, shown.

## S01282



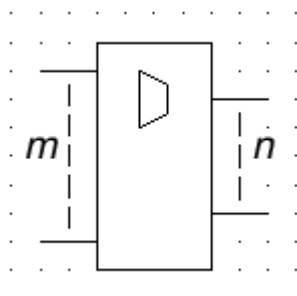
|                       |                                            |
|-----------------------|--------------------------------------------|
| Name:                 | Concentrating function                     |
| Status level:         | Standard                                   |
| Released on:          | 2001-07-01                                 |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-20-01             |
| Keywords:             | concentrators                              |
| Applied in:           | S00512, S01285, S01284                     |
| Shape class:          | Trapezoids                                 |
| Function class:       | - Functional elements or attributes        |
| Application class:    | Conceptual elements or qualifiers          |
| Remarks:              | Concentrating function from left to right. |

## S01283



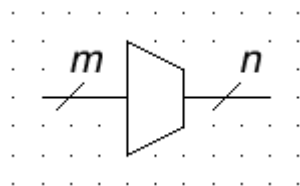
|                       |                                        |
|-----------------------|----------------------------------------|
| Name:                 | Expanding function                     |
| Status level:         | Standard                               |
| Released on:          | 2001-07-01                             |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-20-02         |
| Keywords:             | concentrators                          |
| Applied in:           | S00512                                 |
| Shape class:          | Trapezoids                             |
| Function class:       | - Functional elements or attributes    |
| Application class:    | Conceptual elements or qualifiers      |
| Remarks:              | Expanding function from left to right. |

## S01284



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Concentrator                                                                |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-20-03                                              |
| Keywords:             | concentrators                                                               |
| Form:                 | Form 1                                                                      |
| Alternative forms:    | S01285                                                                      |
| Applies:              | S01282                                                                      |
| Shape class:          | Characters, Rectangles, Trapezoids                                          |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Concentrator, shown with m input circuits and n output circuits.            |

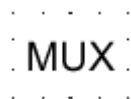
## S01285



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Concentrator                                                                |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-20-04                                              |
| Keywords:             | concentrators                                                               |
| Form:                 | Form 2                                                                      |
| Alternative forms:    | S01284                                                                      |
| Applies:              | S00003; S01282                                                              |
| Shape class:          | Characters, Trapezoids                                                      |
| Function class:       | K Processing signals or information                                         |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Concentrator, shown with m input circuits and n output circuits             |

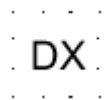


## S01286



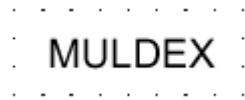
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Multiplexing function               |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-20-05      |
| Keywords:             | demultiplexers, multiplexers        |
| Applied in:           | S01289                              |
| Shape class:          | Characters                          |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01287



|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| Name:                 | Demultiplexing function                             |
| Status level:         | Standard                                            |
| Released on:          | 2001-07-01                                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-20-06                      |
| Keywords:             | demultiplexers, multiplexers                        |
| Shape class:          | Characters                                          |
| Function class:       | - Functional elements or attributes                 |
| Application class:    | Conceptual elements or qualifiers                   |
| Remarks:              | If confusion can arise, DX may be replaced by DMUX. |

## S01288



**Name:** Multiplexing and demultiplexing function

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-20-07

**Keywords:** demultiplexers, multiplexers

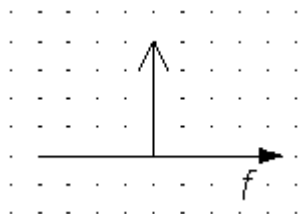
**Applied in:** S01290

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S01291



Name: Carrier frequency

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-21-01

Keywords: frequency spectra

Applied in: S01310, S01309, S01315, S01308, S01311

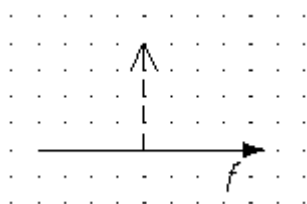
Application notes: A00149, A00185

Shape class: Arrows, Characters, Lines

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S01292



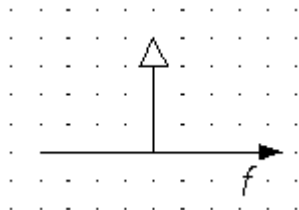
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Suppressed-carrier frequency        |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-02      |
| Keywords:             | frequency spectra                   |
| Applied in:           | S01312, S01314                      |
| Application notes:    | A00149                              |
| Shape class:          | Arrows, Lines                       |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01293



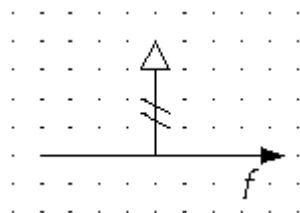
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Reduced-carrier frequency           |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-03      |
| Keywords:             | frequency spectra                   |
| Applied in:           | S01313                              |
| Application notes:    | A00149                              |
| Shape class:          | Arrows, Lines                       |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01294



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Pilot frequency                     |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-04      |
| Keywords:             | frequency spectra                   |
| Applied in:           | S01295, S01317                      |
| Application notes:    | A00149, A00187                      |
| Shape class:          | Arrows, Lines                       |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01295



Name: Pilot frequency; Supergroup pilot frequency

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-21-05

Keywords: frequency spectra

Applies: S01294

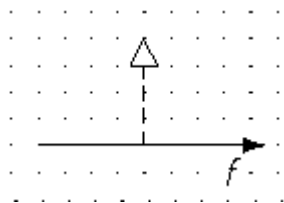
Shape class: Arrows

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

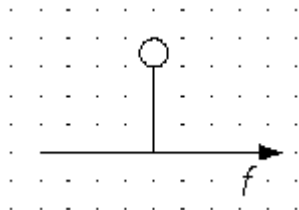


## S01296



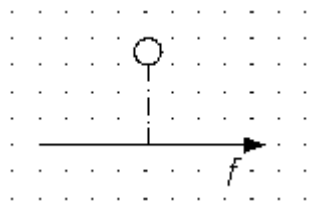
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Suppressed pilot frequency          |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-06      |
| Keywords:             | frequency spectra                   |
| Application notes:    | A00149                              |
| Shape class:          | Arrows                              |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01297



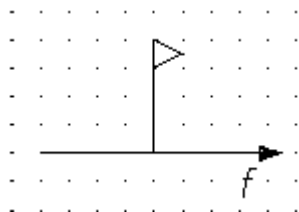
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Additional measuring frequency      |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-07      |
| Keywords:             | frequency spectra                   |
| Application notes:    | A00149                              |
| Shape class:          | Arrows, Circles                     |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01298



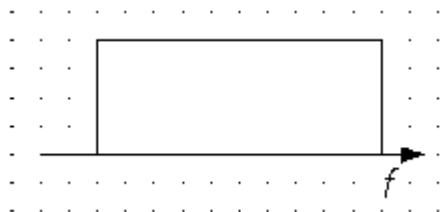
|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| Name:                 | Additional measuring frequency (on request)                         |
| Status level:         | Standard                                                            |
| Released on:          | 2001-07-01                                                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-08                                      |
| Keywords:             | frequency spectra                                                   |
| Application notes:    | A00149                                                              |
| Shape class:          | Arrows, Circles                                                     |
| Function class:       | - Functional elements or attributes                                 |
| Application class:    | Conceptual elements or qualifiers                                   |
| Remarks:              | Additional measuring frequency, transmitted or measured on request. |

## S01299



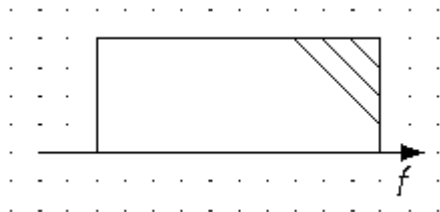
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Signalling frequency                |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-09      |
| Keywords:             | frequency spectra                   |
| Application notes:    | A00149                              |
| Shape class:          | Arrows                              |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01300



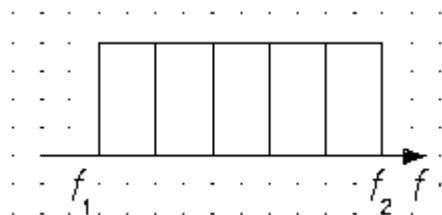
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Frequency band, general symbol      |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-10      |
| Keywords:             | frequency spectra                   |
| Applied in:           | S01310, S01309, S01301, S01302      |
| Application notes:    | A00149, A00188                      |
| Shape class:          | Rectangles                          |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01301



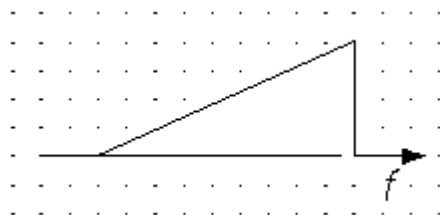
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Frequency band, mastergroup         |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-11      |
| Keywords:             | frequency spectra                   |
| Applies:              | S01300                              |
| Application notes:    | A00149, A00188                      |
| Shape class:          | Lines , Rectangles                  |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01302



|                       |                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------|
| Name:                 | Band of frequencies                                                                        |
| Status level:         | Standard                                                                                   |
| Released on:          | 2001-07-01                                                                                 |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-12                                                             |
| Keywords:             | frequency spectra                                                                          |
| Applied in:           | S01317                                                                                     |
| Applies:              | S01300                                                                                     |
| Application notes:    | A00149, A00188                                                                             |
| Shape class:          | Lines , Rectangles                                                                         |
| Function class:       | - Functional elements or attributes                                                        |
| Application class:    | Conceptual elements or qualifiers                                                          |
| Remarks:              | Band of frequencies from $f_1$ to $f_2$ divided into five channels, groups, etc. is shown. |

## S01303



Name: Erect band of frequencies

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-21-13

Keywords: frequency spectra

Applied in: S01310, S01304, S01307, S01305, S01316, S01313, S01315, S01308, S01311, S01314

Application notes: A00149, A00162

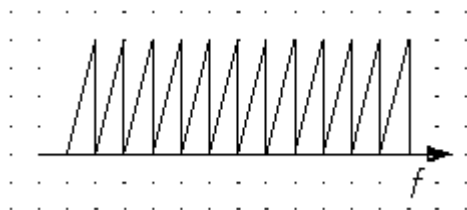
Shape class: Right-angled triangle

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

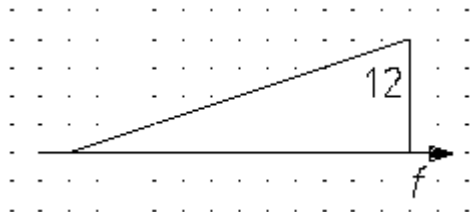


## S01304



|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| Name:                 | Erect band of frequencies, a group of several channels                   |
| Status level:         | Standard                                                                 |
| Released on:          | 2001-07-01                                                               |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-14                                           |
| Keywords:             | frequency spectra                                                        |
| Alternative forms:    | S01305                                                                   |
| Applies:              | S01303                                                                   |
| Application notes:    | A00149, A00162                                                           |
| Shape class:          | Right-angled triangle                                                    |
| Function class:       | - Functional elements or attributes                                      |
| Application class:    | Conceptual elements or qualifiers                                        |
| Remarks:              | Band of frequencies consisting of a group of 12 erect channels is shown. |

## S01305



**Name:** Erect band of frequencies, a group of several channels

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-21-15

**Keywords:** frequency spectra

**Form:** Simplified Form

**Alternative forms:** S01304

**Applies:** S01303

**Application notes:** A00149, A00162

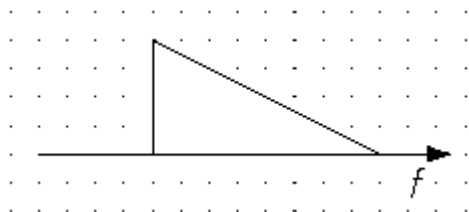
**Shape class:** Characters, Right-angled triangle

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** Band of frequencies consisting of a group of 12 erect channels is shown.

## S01306



Name: Inverted band of frequencies

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-21-16

Keywords: frequency spectra

Applied in: S01312, S01310, S01307, S01316, S01315, S01308, S01311, S01314

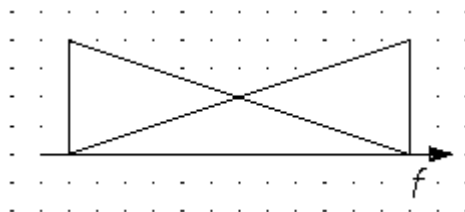
Application notes: A00149, A00162

Shape class: Characters, Right-angled triangle

Function class: - Functional elements or attributes

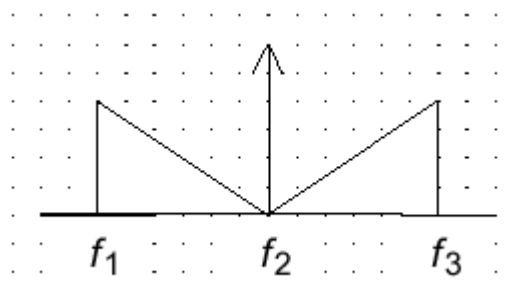
Application class: Conceptual elements or qualifiers

## S01307



|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| Name:                 | Band of mixed channels                                                        |
| Status level:         | Standard                                                                      |
| Released on:          | 2001-07-01                                                                    |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-21-17                                                |
| Keywords:             | frequency spectra                                                             |
| Applies:              | S01303; S01306                                                                |
| Application notes:    | A00149                                                                        |
| Shape class:          | Right-angled triangle                                                         |
| Function class:       | - Functional elements or attributes                                           |
| Application class:    | Conceptual elements or qualifiers                                             |
| Remarks:              | Band of mixed channels, groups etc., some erect, remainder inverted is shown. |

## S01308



Name: Amplitude-modulated carrier

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-22-01

Keywords: frequency spectra

Applied in: S01279

Applies: S01291; S01303; S01306

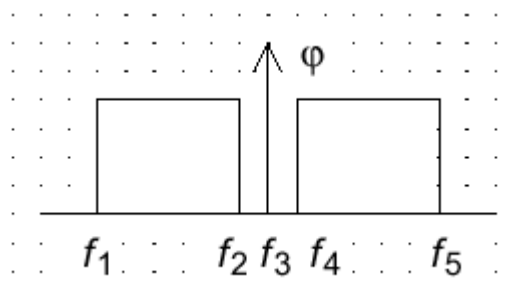
Shape class: Arrows, Right-angled triangle

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

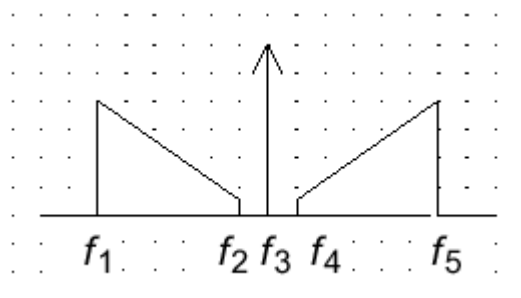
Remarks: Amplitude-modulated carrier wave with both sidebands shown.

## S01309



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Phase modulated carrier             |
| Status level:         | Standard                            |
| Released on:          | 2001-07-01                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-22-02      |
| Keywords:             | frequency spectra                   |
| Applies:              | S01291; S01300                      |
| Application notes:    | A00190                              |
| Shape class:          | Arrows, Characters, Rectangles      |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01310



**Name:** Amplitude-modulated carrier

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-22-03

**Keywords:** frequency spectra

**Applies:** S01291; S01300; S01303; S01306

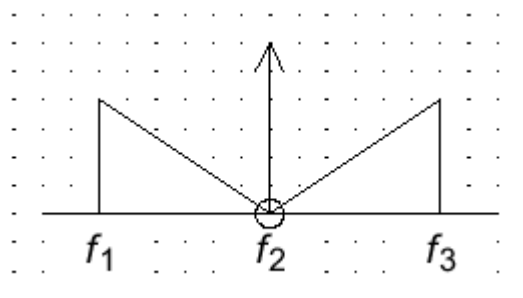
**Shape class:** Arrows, Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** Amplitude-modulated carrier wave with both sidebands, lower modulating frequencies not being transmitted.

## S01311



Name: Amplitude-modulated carrier

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-22-04

Keywords: frequency spectra

Applied in: S01315

Applies: S01291; S01303; S01306

Shape class: Arrows, Circles, Right-angled triangle

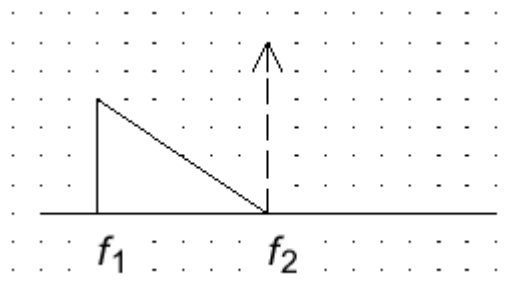
Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Amplitude-modulated carrier wave with both sidebands, modulating frequencies down to zero being transmitted.



## S01312



**Name:** Single-sideband, suppressed carrier

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-22-05

**Keywords:** frequency spectra

**Applied in:** S01281

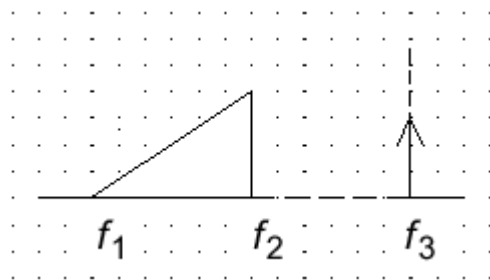
**Applies:** S01292; S01306

**Shape class:** Arrows, Right-angled triangle

**Function class:** - Functional elements or attributes

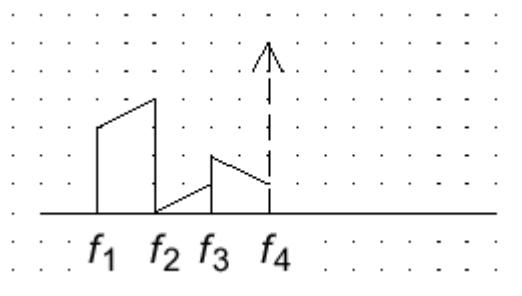
**Application class:** Conceptual elements or qualifiers

## S01313



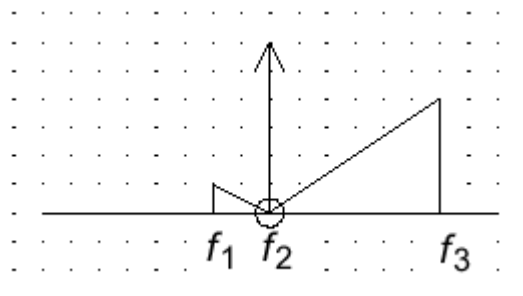
|                       |                                                          |
|-----------------------|----------------------------------------------------------|
| Name:                 | Reduced-carrier wave, single erect sideband              |
| Status level:         | Standard                                                 |
| Released on:          | 2001-07-01                                               |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-22-06                           |
| Keywords:             | frequency spectra                                        |
| Applies:              | S01293; S01303                                           |
| Shape class:          | Arrows, Right-angled triangle                            |
| Function class:       | - Functional elements or attributes                      |
| Application class:    | Conceptual elements or qualifiers                        |
| Remarks:              | Reduced-carrier wave with single, lower, erect sideband. |

## S01314



|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| Name:                 | Suppressed-carrier, scrambled                                       |
| Status level:         | Standard                                                            |
| Released on:          | 2001-07-01                                                          |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-22-07                                      |
| Keywords:             | frequency spectra                                                   |
| Applies:              | S01292; S01303; S01306                                              |
| Shape class:          | Arrows, Right-angled triangle                                       |
| Function class:       | - Functional elements or attributes                                 |
| Application class:    | Conceptual elements or qualifiers                                   |
| Remarks:              | Suppressed-carrier wave with single-sideband scrambled for secrecy. |

## S01315



Name: Amplitude-modulated carrier

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-22-08

Keywords: frequency spectra

Applies: S01291; S01303; S01306; S01311

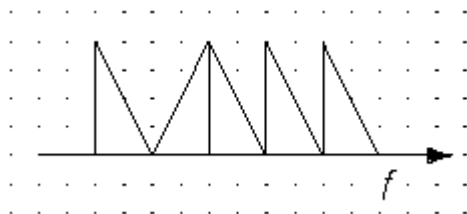
Shape class: Arrows, Circles, Right-angled triangle

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Amplitude-modulated carrier wave with upper sideband and lower vestigial sideband, modulating frequencies down to zero being transmitted.

## S01316



Name: Band of five channels

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-22-09

Keywords: frequency spectra

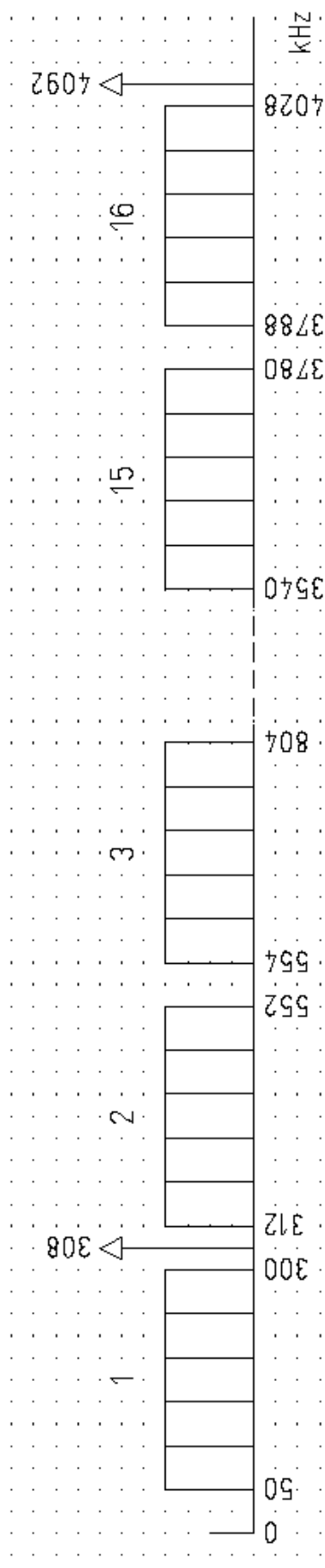
Applies: S01303; S01306

Shape class: Right-angled triangle

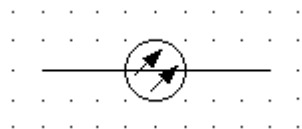
Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Band of five channels, groups, etc., four of which are inverted and one erect is shown.

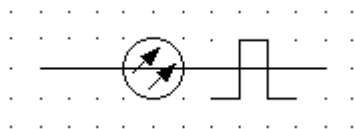
**S01317****Name:** Transmission system**Status level:** **Standard****Released on:** 2001-07-01**Earlier published in:** IEC 60617-10 (ed.2.0) 10-22-10**Keywords:** frequency spectra**Applies:** S01294; S01302**Shape class:** Characters, Equilateral triangles, Rectangles**Function class:** - Functional elements or attributes**Application class:** Conceptual elements or qualifiers**Remarks:** 4 MHz transmission system showing supergroups and pilot frequencies.

## S01318



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Optical fibre, general symbol; Optical fibre cable, general symbol                                               |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-07-01                                                                                                       |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-23-01                                                                                   |
| Keywords:             | cables, fibre optics, transmission lines                                                                         |
| Applied in:           | S01320, S01331, S01321, S01322, S01319, S01330, S01329                                                           |
| Applies:              | S00001; S00127                                                                                                   |
| Application notes:    | A00151                                                                                                           |
| Shape class:          | Arrows, Circles, Lines                                                                                           |
| Function class:       | W Guiding or transporting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |

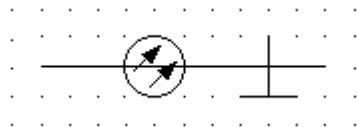
## S01319



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Optical fibre, multimode stepped index                 |
| Status level:         | Standard                                               |
| Released on:          | 2001-07-01                                             |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-23-02                         |
| Keywords:             | fibre optics, transmission lines                       |
| Applied in:           | S01323                                                 |
| Applies:              | S01318                                                 |
| Application notes:    | A00152                                                 |
| Shape class:          | Arrows, Circles, Lines                                 |
| Function class:       | W Guiding or transporting                              |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |

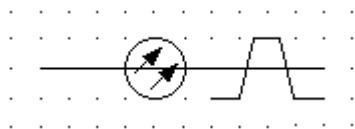


## S01320



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Optical fibre, single mode stepped index                                    |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-23-03                                              |
| Keywords:             | fibre optics, transmission lines                                            |
| Applies:              | S01318                                                                      |
| Application notes:    | A00152                                                                      |
| Shape class:          | Arrows, Circles, Lines                                                      |
| Function class:       | W Guiding or transporting                                                   |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01321



**Name:** Optical fibre, graded index

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-23-04

**Keywords:** fibre optics, transmission lines

**Applies:** S01318

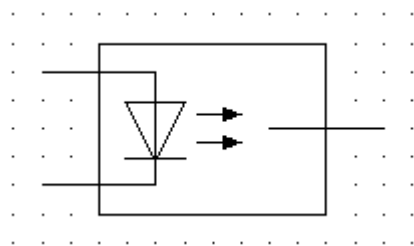
**Application notes:** A00152

**Shape class:** Arrows, Circles, Lines

**Function class:** W Guiding or transporting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01326



**Name:** Guided light transmitter

**Status level:** Standard

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-24-01

**Keywords:** fibre optics, transmission devices, transmitters

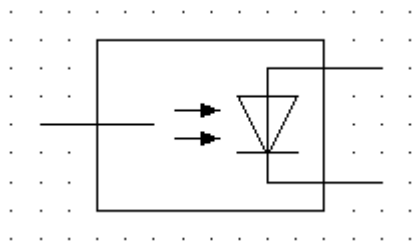
**Applies:** S00060; S00127; S00641

**Shape class:** Arrows, Equilateral triangles, Rectangles

**Function class:** B Converting variable to signal, E Providing radiant or thermal energy

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01327



**Name:** Guided light receiver

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-24-02

**Keywords:** fibre optics, receivers, transmission devices

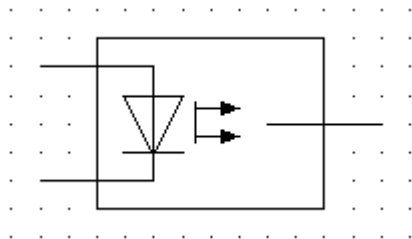
**Applies:** S00060; S00127; S00641

**Shape class:** Arrows, Equilateral triangles, Lines , Rectangles

**Function class:** B Converting variable to signal

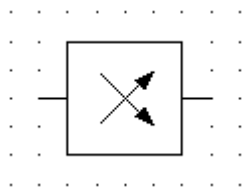
**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01328



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Guided light transmitter, coherent light                                    |
| Status level:         | Standard                                                                    |
| Released on:          | 2001-07-01                                                                  |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-24-03                                              |
| Keywords:             | coherent light, fibre optics, lasers, transmission devices, transmitters    |
| Applies:              | S00060; S00128; S00641                                                      |
| Shape class:          | Arrows, Equilateral triangles, Rectangles                                   |
| Function class:       | E Providing radiant or thermal energy                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | Coherent guided light transmitter with laser diode.                         |

## S01332



Name: Mode scrambler

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-24-07

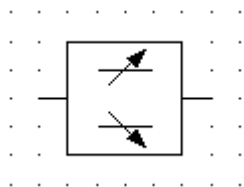
Keywords: fibre optics, transmission devices

Shape class: Arrows, Rectangles, Squares

Function class: T Converting but maintaining kind

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01333



**Name:** Cladding mode stripper

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-24-08

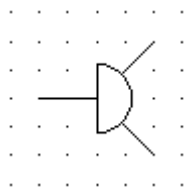
**Keywords:** fibre optics, transmission devices

**Shape class:** Arrows, Lines , Squares

**Function class:** T Converting but maintaining kind

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

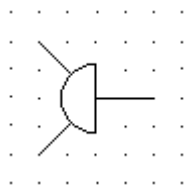
## S01334



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Splitter, general symbol                                                                           |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-24-09                                                                     |
| Alternative names:    | Splitter, two-way                                                                                  |
| Keywords:             | cabled sound and television, connection devices, fibre optics, splitters, transmission devices     |
| Applied in:           | S00435, S01335                                                                                     |
| Application notes:    | A00157                                                                                             |
| Replacing:            | S00434                                                                                             |
| Shape class:          | Half-circles                                                                                       |
| Function class:       | W Guiding or transporting, X Connecting                                                            |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |
| Remarks:              | Two-way splitter shown.                                                                            |

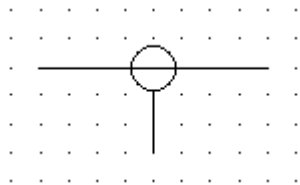


## S01335



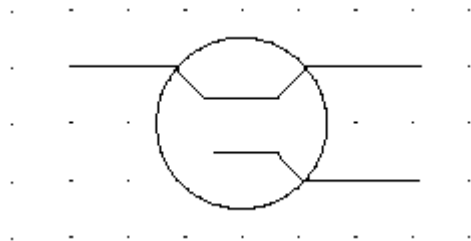
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Combiner, general symbol                                                                           |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-24-10                                                                     |
| Keywords:             | connection devices, fibre optics, transmission devices                                             |
| Applies:              | S01334                                                                                             |
| Application notes:    | A00157                                                                                             |
| Shape class:          | Half-circles                                                                                       |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |
| Remarks:              | Two-way combiner shown. Information flow from left to right.                                       |

## S01336



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Tap-off, general symbol                                                                            |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-24-11                                                                     |
| Alternative names:    | Subscriber's tap-off                                                                               |
| Keywords:             | cabled sound and television, connection devices, fibre optics, tap-off, transmission devices       |
| Applies:              | S00001                                                                                             |
| Application notes:    | A00103, A00104                                                                                     |
| Replacing:            | S00437                                                                                             |
| Shape class:          | Circles                                                                                            |
| Function class:       | X Connecting                                                                                       |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |
| Remarks:              | Single tap-off shown.                                                                              |

## S01337



Name: Fused tap

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-10 (ed.2.0) 10-24-12

Alternative names: Fused coupler

Keywords: connection devices, fibre optics, transmission devices

Application notes: A00158, A00159

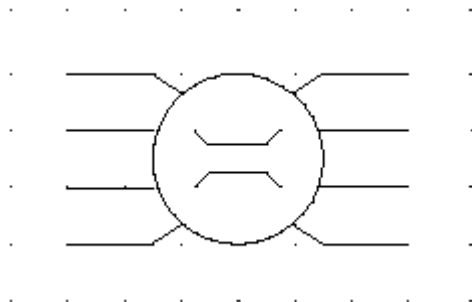
Shape class: Circles, Depicting shapes

Function class: X Connecting

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

Remarks: Fused tap, dividing a signal into two, shown.

## S01338



**Name:** Fused star coupler, transmissive type

**Status level:** **Standard**

**Released on:** 2001-07-01

**Earlier published in:** IEC 60617-10 (ed.2.0) 10-24-13

**Keywords:** connection devices, fibre optics, transmission devices

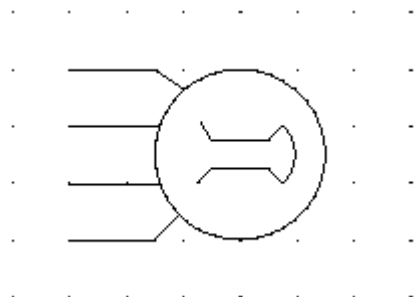
**Shape class:** Circles

**Function class:** X Connecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

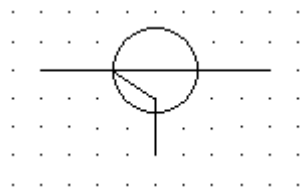
**Remarks:** A star coupler of this type connects each input with all outputs, whereas there is isolation between different inputs.

## S01339



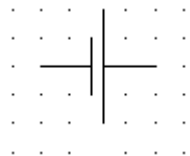
|                              |                                                                                                                                                   |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Fused star coupler, reflective type                                                                                                               |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                   |
| <b>Released on:</b>          | 2001-07-01                                                                                                                                        |
| <b>Earlier published in:</b> | IEC 60617-10 (ed.2.0) 10-24-14                                                                                                                    |
| <b>Keywords:</b>             | connection devices, fibre optics, transmission devices                                                                                            |
| <b>Shape class:</b>          | Circles                                                                                                                                           |
| <b>Function class:</b>       | X Connecting                                                                                                                                      |
| <b>Application class:</b>    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams                                                |
| <b>Remarks:</b>              | In a star coupler of this type each port is bidirectional and may be used as input and output at the same time. Each port feeds every other port. |

## S01340



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Directional coupler, general symbol                                                                |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-10 (ed.2.0) 10-24-15                                                                     |
| Keywords:             | cabled sound and television, connection devices, couplers, fibre optics, transmission devices      |
| Replacing:            | S00436                                                                                             |
| Shape class:          | Circles                                                                                            |
| Function class:       | W Guiding or transporting, X Connecting                                                            |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S01341



Name: Secondary cell

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-15-01

Keywords: secondary cells

Applied in: S01365, S01366

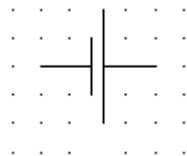
Shape class: Lines

Function class: G Initiating a flow

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

Remarks: The longer line represents the positive pole, the shorter one the negative pole.

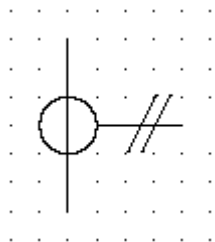
## S01342



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Battery of primary or secondary cells                                                              |
| Status level:         | Standard                                                                                           |
| Released on:          | 2001-07-01                                                                                         |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-15-01                                                                      |
| Keywords:             | accumulators, batteries, primary cells, secondary cells                                            |
| Applied in:           | S01018, S00908                                                                                     |
| Replacing:            | S01365; S01366                                                                                     |
| Shape class:          | Lines                                                                                              |
| Function class:       | G Initiating a flow                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |
| Remarks:              | The longer line represents the positive pole, the shorter one the negative pole.                   |



## S01343



Name: Pulse transformer

Status level: **Standard**

Released on: 2001-07-01

Earlier published in: IEC 60617-6 (ed.2.0) 06-09-10

Keywords: pulse transformers, transformers

Form: Form 1

Alternative forms: S01344

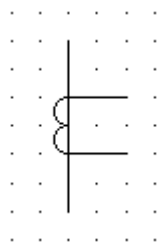
Application notes: A00128, A00129

Shape class: Circles, Lines

Function class: B Converting variable to signal

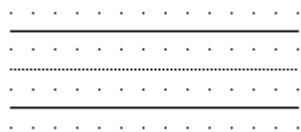
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S01344



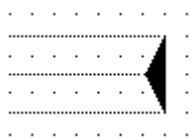
|                       |                                  |
|-----------------------|----------------------------------|
| Name:                 | Pulse transformer                |
| Status level:         | <b>Standard</b>                  |
| Released on:          | 2001-07-01                       |
| Earlier published in: | IEC 60617-6 (ed.2.0) 06-09-11    |
| Keywords:             | pulse transformers, transformers |
| Form:                 | Form 2                           |
| Alternative forms:    | S01343                           |
| Applies:              | S00842                           |
| Application notes:    | A00127, A00128, A00129, A00130   |
| Shape class:          | Half-circles, Lines              |
| Function class:       | B Converting variable to signal  |
| Application class:    | Circuit diagrams                 |

## S01391



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Gas insulated enclosure with internal conductor                             |
| Status level:         | Standard                                                                    |
| Released on:          | 2002-09-21                                                                  |
| Earlier published in: | Not applicable                                                              |
| Keywords:             | conductors, gas insulated enclosures, gas zones                             |
| Applied in:           | S01399, S01400                                                              |
| Applies:              | S00001; S00063                                                              |
| Application notes:    | A00262                                                                      |
| Shape class:          | Lines                                                                       |
| Function class:       | W Guiding or transporting                                                   |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |
| Remarks:              | The internal conductor is indicated with a dotted line.                     |

## S01392



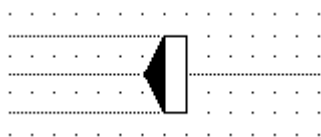
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Gas insulated enclosure - gas-sealing end of compartment                    |
| Status level:         | <b>Standard</b>                                                             |
| Released on:          | 2002-09-21                                                                  |
| Earlier published in: | Not applicable                                                              |
| Keywords:             | gas insulated enclosures, gas zones, sealings                               |
| Applied in:           | S01396, S01393, S01397                                                      |
| Application notes:    | A00262                                                                      |
| Shape class:          | Equilateral triangles                                                       |
| Function class:       | U Keeping in defined position                                               |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01393



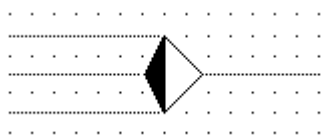
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Gas insulated enclosure - partition between compartments                    |
| Status level:         | Standard                                                                    |
| Released on:          | 2002-09-21                                                                  |
| Earlier published in: | Not applicable                                                              |
| Keywords:             | gas insulated enclosures, gas zones                                         |
| Applied in:           | S01398                                                                      |
| Applies:              | S01392                                                                      |
| Application notes:    | A00262                                                                      |
| Shape class:          | Equilateral triangles, Parallelograms                                       |
| Function class:       | U Keeping in defined position                                               |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01396



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Gas insulated conductor - boundary with air insulated bushing               |
| Status level:         | Standard                                                                    |
| Released on:          | 2002-09-21                                                                  |
| Earlier published in: | Not applicable                                                              |
| Keywords:             | conductors, gas insulated conductors, gas insulated enclosures, gas zones   |
| Applies:              | S01392                                                                      |
| Application notes:    | A00262                                                                      |
| Shape class:          | Equilateral triangles, Rectangles                                           |
| Function class:       | X Connecting                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01397



|                       |                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------|
| Name:                 | Gas insulated conductor - boundary with cable sealing end                                           |
| Status level:         | Standard                                                                                            |
| Released on:          | 2002-09-21                                                                                          |
| Earlier published in: | Not applicable                                                                                      |
| Keywords:             | cable fittings, conductors, gas insulated conductors, gas insulated enclosures, gas zones, sealings |
| Applies:              | S00050; S01392                                                                                      |
| Application notes:    | A00262                                                                                              |
| Shape class:          | Equilateral triangles                                                                               |
| Function class:       | X Connecting                                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams                         |

## S01398



**Name:** Gas insulated conductor - boundary with transformer or reactor bushing

**Status level:** **Standard**

**Released on:** 2002-09-21

**Earlier published in:** Not applicable

**Keywords:** bushings, conductors, gas insulated conductors, gas insulated enclosures, gas zones

**Applies:** S01393

**Application notes:** A00262

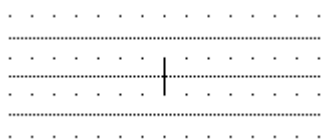
**Shape class:** Equilateral triangles, Half-circles

**Function class:** X Connecting

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams



## S01399



**Name:** Conductor support insulator without gas boundary

**Status level:** **Standard**

**Released on:** 2003-01-16

**Earlier published in:** Not applicable

**Keywords:** conductors, gas insulated conductors, gas insulated enclosures, gas zones

**Applies:** S01391

**Application notes:** A00262

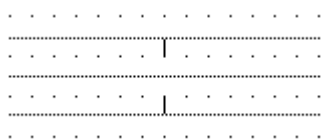
**Shape class:** Lines

**Function class:** U Keeping in defined position

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** This kind of support allows gas flow.

## S01400



Name: Straight flange

Status level: **Standard**

Released on: 2003-01-16

Earlier published in: Not applicable

Keywords: conductors, gas insulated conductors, gas insulated enclosures, gas zones

Applies: S01391

Application notes: A00262

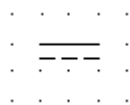
Shape class: Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

Remarks: Flange without insulator.

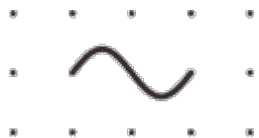
## S01401



|                       |                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Direct current                                                                                                                         |
| Status level:         | Standard                                                                                                                               |
| Released on:          | 2001-09-15                                                                                                                             |
| Earlier published in: | IEC 60617-2 (ed.2.0) 02-02-03                                                                                                          |
| Keywords:             | current, kind of current and voltage, voltage                                                                                          |
| Form:                 | Form 1                                                                                                                                 |
| Alternative forms:    | S01402                                                                                                                                 |
| Applied in:           | S00004, S00896, S00894, S00823, S00893, S00832, S00824, S00833, S00826, S00897, S00418, S00405, S00835, S00827, S00406, S00825, S00834 |
| Application notes:    | A00259                                                                                                                                 |
| Replacing:            | S00067                                                                                                                                 |
| Shape class:          | Lines                                                                                                                                  |
| Function class:       | - Functional elements or attributes                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                      |
| Remarks:              | The shape of this symbol is equivalent to UCS 2393 of ISO/IEC 10646 "DIRECT CURRENT SYMBOL FORM TWO".                                  |

|                       |                                                                                                                                                                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>S01402</b>         | <b>DC</b>                                                                                                                                                                                                                                                        |
| Name:                 | Direct current                                                                                                                                                                                                                                                   |
| Status level:         | <b>Standard</b>                                                                                                                                                                                                                                                  |
| Released on:          | 2001-09-15                                                                                                                                                                                                                                                       |
| Earlier published in: | Not applicable                                                                                                                                                                                                                                                   |
| Keywords:             | current, kind of current and voltage, voltage                                                                                                                                                                                                                    |
| Form:                 | Form 2                                                                                                                                                                                                                                                           |
| Alternative forms:    | S01401                                                                                                                                                                                                                                                           |
| Application notes:    | A00259                                                                                                                                                                                                                                                           |
| Shape class:          | Characters                                                                                                                                                                                                                                                       |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                              |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                |
| Remarks:              | Note that "DC" (written with upper-case letters, without any dots and language independent) is a letter symbol in accordance with IEC 61293. The established abbreviation, on the other hand, for "direct current" is "d.c." (with lower-case letters and dots). |

## S01403



Name: Alternating current

Status level: **Standard**

Released on: 2001-09-15

Earlier published in: IEC 60617-2 (ed.2.0) 02-02-04

Keywords: current, kind of current and voltage, voltage

Form: Form 1

Alternative forms: S01404

Applied in: S01903, S00069, S00316, S01219, S00828, S00896, S00894, S00832, S00829, S00800, S00799, S00831, S00836, S01226, S01229, S00897, S00443, S00837, S00405, S00005, S00838, S01904, S00417, S00835, S00830, S00406, S00840

Application notes: A00258, A00260

Replacing: S00070; S00071; S00072; S00107

Shape class: Depicting shapes

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

**S01404**

**AC**

Name: Alternating current

Status level: **Standard**

Released on: 2001-09-15

Earlier published in: Not applicable

Keywords: current, kind of current and voltage, voltage

Form: Form 2

Alternative forms: S01403

Application notes: A00258

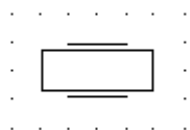
Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Note that "AC" (written with upper-case letters, without any dots and language independent) is a letter symbol in accordance with IEC 61293. The established abbreviation, on the other hand, for "alternating current" is "a.c." (with lower-case letters and dots).

## S01405



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Piezo-electric effect               |
| Status level:         | Standard                            |
| Released on:          | 2001-10-13                          |
| Earlier published in: | Not applicable                      |
| Keywords:             | dependence, effect, piezoelectric   |
| Applied in:           | S00600, S00602, S00601              |
| Shape class:          | Lines , Rectangles                  |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01406



**Name:** Spring-operated device

**Status level:** **Standard**

**Released on:** 2001-10-13

**Earlier published in:** Not applicable

**Keywords:** mechanical control, other control, springs

**Applied in:** S00295

**Applies:** S00186

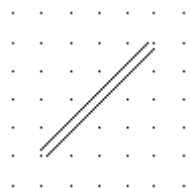
**Shape class:** Lines , Rectangles

**Function class:** C Storing

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams



## S01407



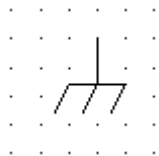
|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| Name:                 | Conversion with electrical separation                       |
| Status level:         | <b>Standard</b>                                             |
| Released on:          | 2001-10-13                                                  |
| Earlier published in: | Not applicable                                              |
| Keywords:             | conversion, converters, power converters, signal converters |
| Applied in:           | S01791, S01788                                              |
| Applies:              | S00214                                                      |
| Shape class:          | Lines                                                       |
| Function class:       | - Functional elements or attributes                         |
| Application class:    | Conceptual elements or qualifiers                           |

## S01408



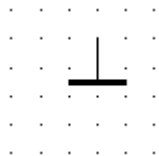
|                       |                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Functional earthing; Functional grounding (US)                                                                                                      |
| Status level:         | Standard                                                                                                                                            |
| Released on:          | 2001-11-10                                                                                                                                          |
| Earlier published in: | Not applicable                                                                                                                                      |
| Alternative names:    | Functional earthing conductor; Functional earthing terminal                                                                                         |
| Keywords:             | earth connection, equipotentiality, frame connection                                                                                                |
| Applies:              | S00200                                                                                                                                              |
| Replacing:            | S00201                                                                                                                                              |
| Shape class:          | Half-circles, Lines                                                                                                                                 |
| Function class:       | - Functional elements or attributes, W Guiding or transporting, X Connecting                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams, Conceptual elements or qualifiers |
| Remarks:              | For the definition of "functional earthing", see IEV 195-01-13.                                                                                     |

## S01409



|                       |                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Functional equipotential bonding                                                                                                                    |
| Status level:         | Standard                                                                                                                                            |
| Released on:          | 2001-11-10                                                                                                                                          |
| Earlier published in: | Not applicable                                                                                                                                      |
| Alternative names:    | Functional bonding conductor; Functional bonding terminal                                                                                           |
| Keywords:             | equipotentiality, frame connection, functional bonding                                                                                              |
| Alternative forms:    | S01410                                                                                                                                              |
| Replacing:            | S00203                                                                                                                                              |
| Shape class:          | Lines                                                                                                                                               |
| Function class:       | - Functional elements or attributes, W Guiding or transporting, X Connecting                                                                        |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams, Conceptual elements or qualifiers |
| Remarks:              | For the definition of "functional equipotential bonding", see IEC 195-01-16".                                                                       |

## S01410



|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| Name:                 | Functional equipotential bonding                                                                                 |
| Status level:         | Standard                                                                                                         |
| Released on:          | 2001-11-10                                                                                                       |
| Earlier published in: | Not applicable                                                                                                   |
| Alternative names:    | Functional bonding conductor; Functional bonding terminal                                                        |
| Keywords:             | equipotentiality, frame connection, functional bonding                                                           |
| Form:                 | Simplified form                                                                                                  |
| Alternative forms:    | S01409                                                                                                           |
| Replacing:            | S00203                                                                                                           |
| Shape class:          | Lines                                                                                                            |
| Function class:       | W Guiding or transporting, X Connecting                                                                          |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams |
| Remarks:              | For the definition of "functional equipotential bonding", see IEC 195-01-16".                                    |

## S01411



**Name:** Capacitor, lead-through

**Status level:** Standard

**Released on:** 2001-11-10

**Earlier published in:** Not applicable

**Alternative names:** Capacitor, feed-through

**Keywords:** capacitors

**Replacing:** S00569

**Shape class:** Lines

**Function class:** C Storing

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams

## S01413



**Name:** Multiple-function switching device

**Status level:** **Standard**

**Released on:** 2003-11-10

**Earlier published in:** Not applicable

**Alternative names:** Control and protective switching device (CPS); Reversing CPS

**Keywords:** circuit breakers, contactors, isolators, reversing

**Applies:** S00024; S00218; S00219; S00220; S00222; S00227

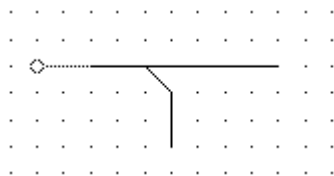
**Shape class:** Half-circles, Lines , Squares

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

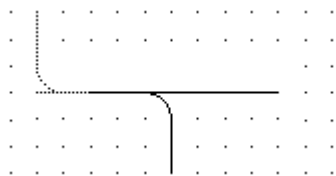
**Remarks:** The represented multi-function switching device contains: reversing function, circuit breaker function, disconnecting function, contactor function and automatic tripping function, as indicated through application of the relevant function symbols. The reversing function is indicated by the symbol for phase interchange. When the symbol is used, the symbol elements for not applicable functions shall be omitted.

## S01414



|                       |                                                                                                                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Directed connection                                                                                                                                                                                                                                        |
| Status level:         | Standard                                                                                                                                                                                                                                                   |
| Released on:          | 2003-01-24                                                                                                                                                                                                                                                 |
| Earlier published in: | Not applicable                                                                                                                                                                                                                                             |
| Keywords:             | branchings, cables, conductors, connections                                                                                                                                                                                                                |
| Applies:              | S00001; S00058                                                                                                                                                                                                                                             |
| Application notes:    | A00192, A00262, A00264                                                                                                                                                                                                                                     |
| Shape class:          | Lines                                                                                                                                                                                                                                                      |
| Function class:       | W Guiding or transporting, X Connecting                                                                                                                                                                                                                    |
| Application class:    | Circuit diagrams, Connection diagrams, Installation diagrams, Overview diagrams                                                                                                                                                                            |
| Symbol restrictions:  | This symbol shall not be used if there is no electrical connection, e.g. at bundling.                                                                                                                                                                      |
| Remarks:              | The slanting line shall point in the direction of the the connection point. The symbol is shown with a conductor coming from the right side going to the left side, with a connection going to the bottom through a connection point situated to the left. |

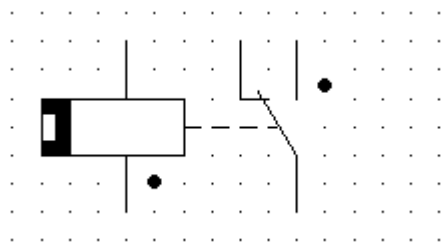
## S01415



|                       |                                                                                                                                                                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Point of access to a bundle                                                                                                                                                                                                                                                             |
| Status level:         | Standard                                                                                                                                                                                                                                                                                |
| Released on:          | 2003-01-24                                                                                                                                                                                                                                                                              |
| Earlier published in: | Not applicable                                                                                                                                                                                                                                                                          |
| Keywords:             | branchings, bundles, cables                                                                                                                                                                                                                                                             |
| Applies:              | S00001                                                                                                                                                                                                                                                                                  |
| Application notes:    | A00192, A00262                                                                                                                                                                                                                                                                          |
| Shape class:          | Circle segments, Lines                                                                                                                                                                                                                                                                  |
| Function class:       | - Functional elements or attributes, W Guiding or transporting                                                                                                                                                                                                                          |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Network maps, Overview diagrams                                                                                                                                                                        |
| Symbol restrictions:  | This symbol shall not be used to represent an electrical connection.                                                                                                                                                                                                                    |
| Remarks:              | In diagrams with topographical layout this symbol indicates a point of access to a physical bundle of conductors. In diagrams with functional layout, this symbol represent "graphical bundling", i.e. two or more connecting lines are partly occupying the same space on the diagram. |



## S01416



**Name:** Polarized relay, stable positions

**Status level:** **Standard**

**Released on:** 2002-03-23

**Earlier published in:** IEC 60617-2 (ed.2.0)

**Keywords:** all-or-nothing relays, operating devices

**Applies:** S00230; S00319

**Replacing:** S00322

**Shape class:** Dots (points), Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** Shown with two stable positions.

## S01417



|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Acoustic signalling device, general symbol                                                         |
| Status level:         | Standard                                                                                           |
| Released on:          | 2003-01-24                                                                                         |
| Earlier published in: | Not applicable                                                                                     |
| Alternative names:    | Horn; Bell; Single-stroke bell; Whistle                                                            |
| Keywords:             | bells, horns, indicators, signalling devices, whistles                                             |
| Applied in:           | S01902, S01893                                                                                     |
| Replacing:            | S00969; S00970; S00971; S00974                                                                     |
| Shape class:          | Half-circles, Lines                                                                                |
| Function class:       | P Presenting information                                                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S01418



Name: Balancing unit; Balun

Status level: **Standard**

Released on: 2002-07-01

Earlier published in: Not applicable

Keywords: antennas

Applied in: S01119

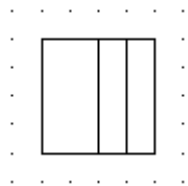
Replacing: S01118

Shape class: Circle segments, Dots (points)

Function class: W Guiding or transporting

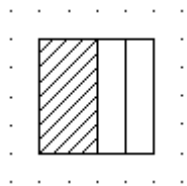
Application class: Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

## S01419



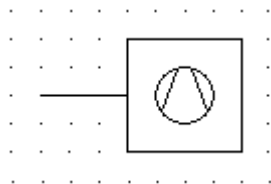
|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| Name:                 | Combined electric and heat generated station, planned      |
| Status level:         | <b>Standard</b>                                            |
| Released on:          | 2002-07-05                                                 |
| Earlier published in: | Not applicable                                             |
| Keywords:             | generating station                                         |
| Applies:              | S00060                                                     |
| Application notes:    | A00071                                                     |
| Replacing:            | S00387                                                     |
| Shape class:          | Rectangles, Squares                                        |
| Function class:       | E Providing radiant or thermal energy, G Initiating a flow |
| Application class:    | Network maps                                               |

## S01420



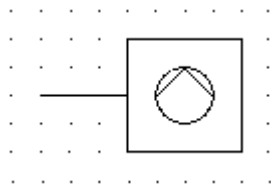
|                       |                                                                          |
|-----------------------|--------------------------------------------------------------------------|
| Name:                 | Combined electric and heat generating station, in service or unspecified |
| Status level:         | <b>Standard</b>                                                          |
| Released on:          | 2002-07-05                                                               |
| Earlier published in: | Not applicable                                                           |
| Keywords:             | generating station                                                       |
| Applies:              | S00060                                                                   |
| Application notes:    | A00071, A00072                                                           |
| Replacing:            | S00388                                                                   |
| Shape class:          | Rectangles, Squares                                                      |
| Function class:       | E Providing radiant or thermal energy, G Initiating a flow               |
| Application class:    | Network maps                                                             |

## S01421



|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
| Name:                 | Fan                                                                           |
| Status level:         | Standard                                                                      |
| Released on:          | 2002-07-01                                                                    |
| Earlier published in: | Not applicable                                                                |
| Keywords:             | fans, installations in buildings, ventilators                                 |
| Applied in:           | S01821, S01824, S01827                                                        |
| Applies:              | S00059                                                                        |
| Replacing:            | S00494                                                                        |
| Shape class:          | Circles, Lines , Squares                                                      |
| Function class:       | G Initiating a flow                                                           |
| Application class:    | Installation diagrams                                                         |
| Remarks:              | The symbol is shown with wiring. The symbol applies symbol 2302 of ISO 14617. |

## S01422



Name: Pump

Status level: **Standard**

Released on: 2002-07-01

Earlier published in: Not applicable

Keywords: installations in buildings, pumps

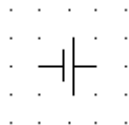
Shape class: Circles, Lines , Squares

Function class: G Initiating a flow

Application class: Installation diagrams

Remarks: The symbol is shown with wiring. The symbol applies symbol 2301 of ISO 14617.

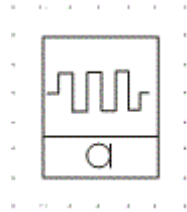
## S01423



|                       |                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------|
| Name:                 | DC supply function, general symbol                                                                          |
| Status level:         | Standard                                                                                                    |
| Released on:          | 2003-08-12                                                                                                  |
| Earlier published in: | Not applicable                                                                                              |
| Keywords:             | power generators                                                                                            |
| Shape class:          | Lines                                                                                                       |
| Function class:       | - Functional elements or attributes                                                                         |
| Application class:    | Conceptual elements or qualifiers                                                                           |
| Remarks:              | The longer line represents the positive pole, the shorter one (with the same line width) the negative pole. |



## S01445



**Name:** Glass break detector (window foil), burglar alarm

**Status level:** **Standard**

**Released on:** 2012-04-12

**Earlier published in:** Not applicable

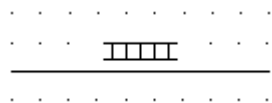
**Keywords:** alarms, detectors

**Shape class:** Depicting shapes, Lines

**Function class:** B Converting variable to signal

**Application class:** Installation diagrams

## S01449



**Name:** Connection on cable ladder

**Status level:** **Standard**

**Released on:** 2003-08-12

**Earlier published in:** Not applicable

**Alternative names:** Line on cable ladder

**Keywords:** connections, ladders, lines

**Applies:** S00001

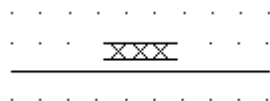
**Shape class:** Lines

**Function class:** X Connecting

**Application class:** Installation diagrams

**Remarks:** Cable ladder (IEV 826-06-08): A table support consisting of a series of transverse supporting elements rigidly fixed to main longitudinal supporting members.

## S01450



**Name:** Connection within cable tray

**Status level:** Standard

**Released on:** 2002-08-12

**Earlier published in:** Not applicable

**Alternative names:** Line within cable tray

**Keywords:** connections, lines

**Shape class:** Lines

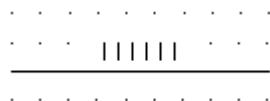
**Function class:** X Connecting

**Application class:** Installation diagrams

**Remarks:** Cable tray (IEV 826-06-07): A table support consisting of a continuous base and raised edges and no covering.

A table tray may be perforated or non perforated.

## S01451



**Name:** Connection within wall mounted cable channel

**Status level:** **Standard**

**Released on:** 2003-08-12

**Earlier published in:** Not applicable

**Keywords:** connections, lines

**Shape class:** Lines

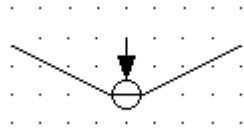
**Function class:** X Connecting

**Application class:** Installation diagrams

**Remarks:** Cable channel (IEV 826-06-05): An element of a wiring system above or in the ground or floor, open, ventilated or closed, and having dimensions which do not permit the entry of persons but allow access to the conduits and/or tables throughout their length during and after installation.

A table channel may or may not form part of the building construction.

## S01452



Name: Overhead line on pole with strut

Status level: **Standard**

Released on: 2003-08-12

Earlier published in: Not applicable

Keywords: connections, lines

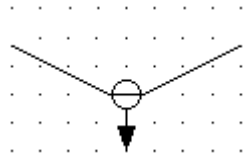
Applies: S00093; S00409

Shape class: Lines

Function class: X Connecting

Application class: Network maps

## S01453



Name: Overhead line on pole with stay

Status level: **Standard**

Released on: 2003-08-12

Earlier published in: Not applicable

Keywords: connections, lines

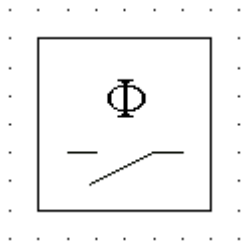
Applies: S00093; S00409

Shape class: Arrows, Lines

Function class: X Connecting

Application class: Network maps

## S01454



|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Name:                 | Complex switch, general symbol                                                 |
| Status level:         | Standard                                                                       |
| Released on:          | 2003-03-03                                                                     |
| Earlier published in: | Not applicable                                                                 |
| Keywords:             | complex switches, switches                                                     |
| Applied in:           | S01856, S01855                                                                 |
| Applies:              | S00227; S01808                                                                 |
| Application notes:    | A00268                                                                         |
| Replacing:            | S00273; S00274; S00275; S00276; S00277; S00280                                 |
| Shape class:          | Characters, Lines , Rectangles                                                 |
| Function class:       | B Converting variable to signal, S Converting a manual operation into a signal |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams    |

## S01457



**Name:** Amplification, general symbol

**Status level:** **Standard**

**Released on:** 2003-03-31

**Earlier published in:** Not applicable

**Keywords:** amplification, amplifiers

**Applied in:** S01499, S01594, S01597, S01603, S01737, S01598, S01601, S01240, S01239, S01596, S01600, S01500, S01781, S01618, S01595, S01599, S01602

**Application notes:** A00238

**Shape class:** Equilateral triangles

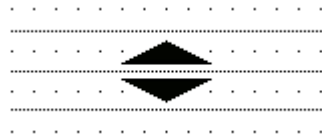
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The shape of the left-to-right pointing symbol is equivalent to UCS 25B7 of ISO/IEC 10646 "WHITE RIGHT-POINTING TRIANGLE". The shape of the right-to-left pointing symbol is equivalent to UCS 25C1 of ISO/IEC 10646 "WHITE LEFT-POINTING TRIANGLE".



## S01458



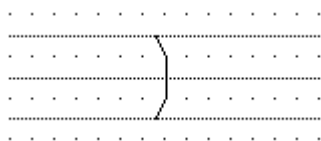
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Gas insulated enclosure - gas through spacer                                |
| Status level:         | Standard                                                                    |
| Released on:          | 2003-03-31                                                                  |
| Earlier published in: | Not applicable                                                              |
| Keywords:             | gas insulated conductors, gas insulated enclosures, gas zones               |
| Application notes:    | A00262                                                                      |
| Shape class:          | Equilateral triangles                                                       |
| Function class:       | U Keeping in defined position                                               |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01459



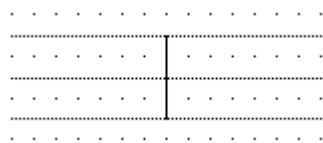
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Gas insulated enclosure - partition between two compartments                |
| Status level:         | Standard                                                                    |
| Released on:          | 2003-03-31                                                                  |
| Earlier published in: | Not applicable                                                              |
| Keywords:             | gas insulated conductors, gas insulated enclosures, gas zones               |
| Form:                 | Form 2                                                                      |
| Alternative forms:    | S01393                                                                      |
| Application notes:    | A00262                                                                      |
| Shape class:          | Equilateral triangles                                                       |
| Function class:       | U Keeping in defined position                                               |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01460



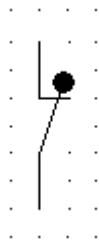
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Gas insulated enclosure - support insulator, inside module                  |
| Status level:         | Standard                                                                    |
| Released on:          | 2003-03-31                                                                  |
| Earlier published in: | Not applicable                                                              |
| Keywords:             | gas insulated conductors, gas insulated enclosures, gas zones               |
| Application notes:    | A00262                                                                      |
| Shape class:          | Lines                                                                       |
| Function class:       | U Keeping in defined position                                               |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01461



|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Gas insulated enclosure - support insulator, external module                |
| Status level:         | Standard                                                                    |
| Released on:          | 2003-03-31                                                                  |
| Earlier published in: | Not applicable                                                              |
| Keywords:             | gas insulated conductors, gas insulated enclosures, gas zones               |
| Application notes:    | A00262                                                                      |
| Shape class:          | Lines                                                                       |
| Function class:       | U Keeping in defined position                                               |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01462



Name: Mirror contact

Status level: **Standard**

Released on: 2003-08-27

Earlier published in: Not applicable

Keywords: contacts

Applied in: S01720, S01719

Applies: S00229

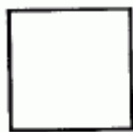
Shape class: Dots (points), Lines

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams, Overview diagrams

Remarks: A mirror contact is a normally closed auxiliary contact, which cannot be in closed position simultaneously with the normally open main contact, not even during abnormal conditions like welding of the main contact.

## S01463



Name: Element outline

Status level: **Standard**

Released on: 2004-08-27

Earlier published in: IEC 60617-12 (ed.3.0) 12-05-01

Keywords: binary logic elements, elements, envelopes, outlines

Applied in: S01791, S01796, S01573, S01571, S01578, S01610, S01629, S01623, S01637, S01636, S01660, S01663, S01662, S01665, S01570, S01675, S01723, S01566, S01567, S01685, S01661, S01668, S01669, S01687, S01734, S01678, S01569, S01627, S01638, S01607, S01639, S01628, S01686, S01709, S01710, S01778, S01659, S01640, S01706, S01781, S01641, S01674, S01800, S01731, S01707, S01708, S01667, S01670, S01626, S01568, S01572, S01664

Applies: S00059

Application notes: A00269, A00270, A00271

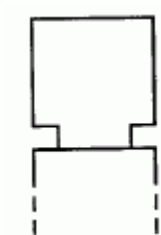
Shape class: Rectangles

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Square shown.

## S01464



Name: Common control block outline

Status level: **Standard**

Released on: 2004-08-27

Earlier published in: IEC 60617-12 (ed.3.0) 12-05-02

Keywords: binary logic elements, elements, envelopes, outlines

Applied in: S01738, S01701, S01586, S01634, S01684, S01690, S01720, S01598, S01593, S01588, S01631, S01653, S01711, S01691, S01693, S01669, S01713, S01692, S01734, S01624, S01717, S01694, S01635, S01654, S01699, S01730, S01698, S01696, S01721, S01667, S01670, S01632, S01592, S01602, S01719, S01728

Applies: S00059

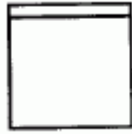
Application notes: A00269, A00270, A00271

Shape class: Rectangles

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

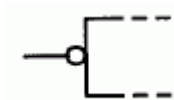
## S01465



|                       |                                                      |
|-----------------------|------------------------------------------------------|
| Name:                 | Common output element outline                        |
| Status level:         | Standard                                             |
| Released on:          | 2004-08-27                                           |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-05-03                       |
| Keywords:             | binary logic elements, elements, envelopes, outlines |
| Applied in:           | S01587                                               |
| Applies:              | S00059                                               |
| Application notes:    | A00269, A00270, A00271                               |
| Shape class:          | Rectangles                                           |
| Function class:       | - Functional elements or attributes                  |
| Application class:    | Conceptual elements or qualifiers                    |



## S01466



**Name:** Logic negation, input

**Status level:** **Standard**

**Released on:** 2004-08-27

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-07-01

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01716, S01619, S01647, S01597, S01603, S01630, S01652, S01649, S01665, S01677, S01690, S01666, S01726, S01735, S01789, S01806, S01593, S01705, S01711, S01745, S01669, S01734, S01654, S01746, S01473, S01730, S01809, S01792, S01620, S01616, S01805, S01712, S01714, S01715, S01670, S01633, S01599, S01728, S01793, S01646, S01664, S01478

**Application notes:** A00269, A00272, A00351

**Shape class:** Circles

**Function class:** - Functional elements or attributes

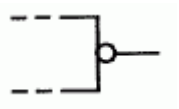
**Application class:** Conceptual elements or qualifiers

**Remarks:** The symbol is shown at an input.

The internal 1-state corresponds to the external 0-state.

The connecting line may extend through the circle.

## S01467



**Name:** Logic negation, output

**Status level:** **Standard**

**Released on:** 2004-08-27

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-07-02

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01647, S01579, S01586, S01597, S01614, S01630, S01665, S01677, S01688, S01593, S01734, S01582, S01624, S01609, S01654, S01746, S01659, S01730, S01616, S01667, S01580, S01633, S01595, S01599, S01793, S01646

**Application notes:** A00269, A00272, A00351

**Shape class:** Circles

**Function class:** - Functional elements or attributes

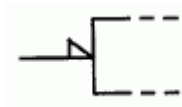
**Application class:** Conceptual elements or qualifiers

**Remarks:** The symbol is shown at an output.

The internal 1-state corresponds to the external 0-state.

The connecting line may extend through the circle.

## S01468



**Name:** Polarity indicator, input

**Status level:** **Standard**

**Released on:** 2004-08-27

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-07-03

**Alternative names:** Logic polarity, input

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01787, S01738, S01740, S01474, S01621, S01605, S01615, S01625, S01634, S01648, S01676, S01684, S01666, S01720, S01803, S01802, S01598, S01727, S01653, S01713, S01718, S01683, S01736, S01584, S01596, S01600, S01717, S01741, S01729, S01739, S01743, S01698, S01744, S01712, S01715, S01721, S01618, S01602, S01606, S01644, S01650, S01719

**Application notes:** A00269, A00272, A00351

**Shape class:** Right-angled triangle

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The symbol is shown at an input.

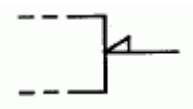
The internal 1-state corresponds to the L-level on the connecting line.

## S01469



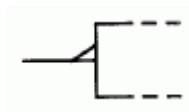
|                       |                                                                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Polarity indicator, output                                                                                                                                                                                             |
| Status level:         | Standard                                                                                                                                                                                                               |
| Released on:          | 2004-08-27                                                                                                                                                                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-07-04                                                                                                                                                                                         |
| Alternative names:    | Logic polarity, output                                                                                                                                                                                                 |
| Keywords:             | binary logic elements, combinative elements                                                                                                                                                                            |
| Applied in:           | S01581, S01583, S01594, S01615, S01613, S01660, S01662, S01676, S01720, S01737, S01661, S01668, S01683, S01736, S01584, S01590, S01596, S01600, S01608, S01611, S01742, S01612, S01618, S01585, S01602, S01644, S01719 |
| Application notes:    | A00269, A00272, A00351                                                                                                                                                                                                 |
| Shape class:          | Right-angled triangle                                                                                                                                                                                                  |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                      |
| Remarks:              | The symbol is shown at an output.<br>The internal 1-state corresponds to the L-level on the connecting line.                                                                                                           |

## S01470



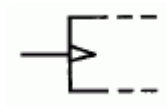
|                       |                                                                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Polarity indicator, input, right to the left                                                                                                                  |
| Status level:         | Standard                                                                                                                                                      |
| Released on:          | 2004-08-27                                                                                                                                                    |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-07-05                                                                                                                                |
| Alternative names:    | Logic polarity, input, right to left                                                                                                                          |
| Keywords:             | binary logic elements, combinative elements                                                                                                                   |
| Applied in:           | S01596                                                                                                                                                        |
| Application notes:    | A00269, A00272, A00351                                                                                                                                        |
| Shape class:          | Right-angled triangle                                                                                                                                         |
| Function class:       | - Functional elements or attributes                                                                                                                           |
| Application class:    | Conceptual elements or qualifiers                                                                                                                             |
| Remarks:              | The symbol is shown at an input in the case of signal flow from right to left.<br><br>The internal 1-state corresponds to the L-level on the connecting line. |

## S01471



|                       |                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Polarity indicator, output, right to the left                                                                                                                  |
| Status level:         | Standard                                                                                                                                                       |
| Released on:          | 2004-08-27                                                                                                                                                     |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-07-06                                                                                                                                 |
| Alternative names:    | Logic polarity, output, right to left                                                                                                                          |
| Keywords:             | binary logic elements, combinative elements                                                                                                                    |
| Applied in:           | S01736, S01618                                                                                                                                                 |
| Application notes:    | A00269, A00272, A00351                                                                                                                                         |
| Shape class:          | Right-angled triangle                                                                                                                                          |
| Function class:       | - Functional elements or attributes                                                                                                                            |
| Application class:    | Conceptual elements or qualifiers                                                                                                                              |
| Remarks:              | The symbol is shown at an output in the case of signal flow from right to left.<br><br>The internal 1-state corresponds to the L-level on the connecting line. |

## S01472



**Name:** Dynamic input

**Status level:** Standard

**Released on:** 2004-08-27

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-07-07

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01701, S01474, S01663, S01665, S01675, S01676, S01684, S01677, S01690, S01688, S01720, S01722, S01727, S01661, S01691, S01668, S01745, S01669, S01477, S01683, S01692, S01734, S01694, S01746, S01473, S01674, S01698, S01721, S01667, S01670, S01719, S01478

**Application notes:** A00269, A00272, A00351

**Shape class:** Equilateral triangles

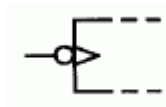
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The (transitory) internal 1-state corresponds to the transition from the external 0-state to the external 1-state. At all other times, the internal logic state is 0.

On diagrams using the symbol for logic polarity the (transitory) internal 1-state corresponds to the transition from the L-level to the H-level on the connecting line. At all other times, the internal logic state is 0.

## S01473



**Name:** Dynamic input with logic negation

**Status level:** **Standard**

**Released on:** 2004-08-27

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-07-08

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01703, S01697, S01696

**Applies:** S01466; S01472

**Application notes:** A00269, A00272, A00351

**Shape class:** Circles, Equilateral triangles

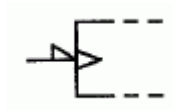
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The (transitory) internal 1-state corresponds to the transition from the external 1-state to the external 0-state. At all other times the internal logic state is 0.

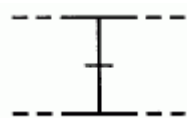


## S01474



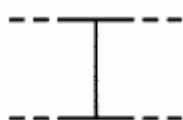
|                       |                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Dynamic input with polarity indicator                                                                                                                                      |
| Status level:         | Standard                                                                                                                                                                   |
| Released on:          | 2004-08-27                                                                                                                                                                 |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-07-09                                                                                                                                             |
| Keywords:             | binary logic elements, combinative elements                                                                                                                                |
| Applied in:           | S01704, S01702, S01722, S01689, S01691, S01693, S01695, S01718, S01694, S01699, S01700                                                                                     |
| Applies:              | S01468; S01472                                                                                                                                                             |
| Application notes:    | A00269, A00272, A00351                                                                                                                                                     |
| Shape class:          | Equilateral triangles, Right-angled triangle                                                                                                                               |
| Function class:       | - Functional elements or attributes                                                                                                                                        |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                          |
| Remarks:              | The (transitory) internal 1-state corresponds to the transition from the H-level to the L-level on the connecting line. At all other times, the internal logic state is 0. |

## S01475



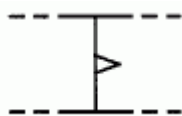
|                       |                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Internal connection                                                                                                                                             |
| Status level:         | Standard                                                                                                                                                        |
| Released on:          | 2004-09-01                                                                                                                                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-08-01                                                                                                                                  |
| Keywords:             | binary logic elements, combinative elements, internal connections                                                                                               |
| Alternative forms:    | S01476; S01485                                                                                                                                                  |
| Applied in:           | S01702, S01806, S01591, S01713, S01683, S01730, S01792, S01729, S01715, S01721, S01670, S01592                                                                  |
| Application notes:    | A00269, A00273, A00351                                                                                                                                          |
| Shape class:          | Lines                                                                                                                                                           |
| Function class:       | - Functional elements or attributes                                                                                                                             |
| Application class:    | Conceptual elements or qualifiers                                                                                                                               |
| Symbol restrictions:  | This symbol may be used for a signal flow from right to left only if the direction of signal flow is obvious. Otherwise, symbol S01485 shall be used.           |
| Remarks:              | The internal 1-state [0-state] of the input of the element on the right corresponds to the internal 1-state [0-state] of the output of the element on the left. |

## S01476



|                       |                                                                                                                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Internal connection                                                                                                                                                                                                                                                                 |
| Status level:         | Standard                                                                                                                                                                                                                                                                            |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                          |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-08-01A                                                                                                                                                                                                                                                     |
| Keywords:             | binary logic elements, combinative elements, internal connections                                                                                                                                                                                                                   |
| Form:                 | Simplified form                                                                                                                                                                                                                                                                     |
| Alternative forms:    | S01475; S01485                                                                                                                                                                                                                                                                      |
| Applied in:           | S01581, S01704, S01619, S01583, S01615, S01789, S01631, S01477, S01584, S01624, S01809, S01620, S01618, S01478                                                                                                                                                                      |
| Application notes:    | A00269, A00271, A00273                                                                                                                                                                                                                                                              |
| Shape class:          | Lines                                                                                                                                                                                                                                                                               |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                 |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                   |
| Symbol restrictions:  | <p>Symbol S01476 may be used if no confusion is likely about the number of logic connections. See also A00271 1.2.</p> <p>This symbol may be used for a signal flow from right to left only if the direction of signal flow is obvious. Otherwise, symbol S01485 shall be used.</p> |
| Remarks:              | <p>The internal 1-state [0-state] of the input of the element on the right corresponds to the internal 1-state [0-state] of the output of the element on the left.</p>                                                                                                              |

## S01477



**Name:** Internal connection with dynamic character

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-08-03

**Keywords:** binary logic elements, combinative elements, internal connections

**Applied in:** S01737, S01806, S01718

**Applies:** S01472; S01476

**Application notes:** A00269, A00273, A00351

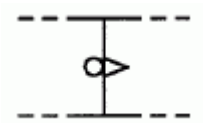
**Shape class:** Equilateral triangles

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

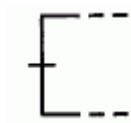
**Remarks:** The (transitory) internal 1-state of the input of the element on the right corresponds to the transition from the internal 0-state to the internal 1-state of the output of the element on the left. At all other times, the internal logic state of the input of the element on the right is 0.

## S01478



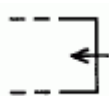
|                              |                                                                                                                                                                                                                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Internal connection with negation and dynamic character                                                                                                                                                                                                                                          |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                                                                                                                                  |
| <b>Released on:</b>          | 2004-09-01                                                                                                                                                                                                                                                                                       |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-08-04                                                                                                                                                                                                                                                                   |
| <b>Keywords:</b>             | binary logic elements, combinative elements, internal connections                                                                                                                                                                                                                                |
| <b>Applies:</b>              | S01466; S01472; S01476                                                                                                                                                                                                                                                                           |
| <b>Application notes:</b>    | A00269, A00273, A00351                                                                                                                                                                                                                                                                           |
| <b>Shape class:</b>          | Circles, Equilateral triangles                                                                                                                                                                                                                                                                   |
| <b>Function class:</b>       | - Functional elements or attributes                                                                                                                                                                                                                                                              |
| <b>Application class:</b>    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                |
| <b>Remarks:</b>              | The (transitory) internal 1-state of the input of the element on the right corresponds to the transition from the internal 1-state to the internal 0-state of the output of the element on the left. At all other times, the internal logic state of the input of the element on the right is 0. |

## S01479



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Internal input (left hand side)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Status level:         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-08-05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Alternative names:    | Virtual input (left hand side)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Keywords:             | binary logic elements, combinative elements, internal connections                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Applied in:           | S01483, S01689, S01696, S01617, S01715, S01667, S01670, S01632                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Application notes:    | A00269, A00273, A00351                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Shape class:          | Lines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Symbol restrictions:  | The symbols associated with negation, logic polarity and dynamic input shall not be applied to internal inputs and outputs, except as shown in symbol S01483.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remarks:              | <p>The symbol is shown on the left-hand side.</p> <p>This input always stands at its internal 1-state unless it is affected by a dependency relationship that has an overriding or modifying effect. (see symbols S01670 and S01689) .</p> <p>This symbol may be shown at the external boundary of an element to emphasize the fact that there is no external input line that has been forgotten. A virtual input at the common boundary of two abutted elements should be indicated by dependency notation without these symbols.</p> <p>Internal inputs and outputs have internal logic states only.</p> <p>This symbol should not be confused with symbol S01475, which is used for a connection between abutted elements.</p> |

## S01480



**Name:** Internal input (right-hand side)

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-08-05A

**Alternative names:** Virtual input (right-hand side)

**Keywords:** binary logic elements, combinative elements, internal connections

**Applied in:** S01696

**Application notes:** A00269, A00273, A00351

**Shape class:** Arrows

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

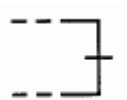
**Remarks:** The symbol is shown on the right-hand side.

This input always stands at its internal 1-state unless it is affected by a dependency relationship that has an overriding or modifying effect. (see symbols S01670 and S01689) .

This symbol may be shown at the external boundary of an element to emphasize the fact that there is no external input line that has been forgotten. A virtual input at the common boundary of two abutted elements should be indicated by dependency notation without these symbols.

Internal inputs and outputs have internal logic states only.

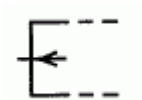
## S01481



|                       |                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Internal output (right-hand side)                                                                                                                                                                                                                                                                                                                                        |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                 |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                               |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-08-06                                                                                                                                                                                                                                                                                                                                           |
| Alternative names:    | Virtual output (right-hand side)                                                                                                                                                                                                                                                                                                                                         |
| Keywords:             | binary logic elements, combinative elements, internal connections                                                                                                                                                                                                                                                                                                        |
| Applied in:           | S01483                                                                                                                                                                                                                                                                                                                                                                   |
| Application notes:    | A00269, A00273, A00351                                                                                                                                                                                                                                                                                                                                                   |
| Shape class:          | Lines                                                                                                                                                                                                                                                                                                                                                                    |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                      |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                        |
| Symbol restrictions:  | The symbols associated with negation, logic polarity and dynamic input shall not be applied to internal inputs and outputs, except as shown in symbol S01483.                                                                                                                                                                                                            |
| Remarks:              | <p>The symbol is shown on the right-hand side.</p> <p>The effect of this output on an input or output to which it is connected shall be indicated by dependency notation.</p> <p>Internal inputs and outputs have internal logic states only.</p> <p>This symbol should not be confused with symbol S01475, which is used for a connection between abutted elements.</p> |



## S01482



**Name:** Internal output (left-hand side)

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-08-06A

**Alternative names:** Virtual output (left-hand side)

**Keywords:** binary logic elements, combinative elements, internal connections

**Application notes:** A00269, A00273, A00351

**Shape class:** Arrows

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

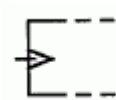
**Remarks:** The symbol is shown on the left-hand side.

This output always stands at its internal 1-state unless it is affected by a dependency relationship that has an overriding or modifying effect. (See symbols S01670 and S01689) .

This symbol may be shown at the external boundary of an element to emphasize the fact that there is no external input line that has been forgotten. A virtual input at the common boundary of two abutted elements should be indicated by dependency notation without these symbols.

Internal inputs and outputs have internal logic states only.

## S01483



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Internal input with dynamic character (left-hand side)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-08-07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Alternative names:    | Virtual input with dynamic character (left-hand side)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Keywords:             | binary logic elements, combinative elements, internal connections                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Applied in:           | S01683, S01700                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Applies:              | S01479; S01481                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Application notes:    | A00269, A00273                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Shape class:          | Equilateral triangles, Lines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remarks:              | <p>The symbol is shown on the left-hand side.</p> <p>The (transitory) internal 1-state corresponds to the transition from the internal 0-state to the internal 1-state that would occur if this input were not dynamic.</p> <p>The source of the transitioning signal shall be shown by dependency notation. The identifying number of the transitioning signal shall be the left-most character in the label string at this input. This holds whether this input is shown on the left-hand side or on the right-hand side of the symbol outline.</p> |

## S01484



**Name:** Internal input with dynamic character (right-hand side)

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-08-07A

**Alternative names:** Virtual input with dynamic character (right-hand side)

**Keywords:** binary logic elements, combinative elements, internal connections

**Application notes:** A00269, A00273

**Shape class:** Arrows, Lines

**Function class:** - Functional elements or attributes

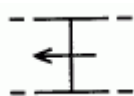
**Application class:** Conceptual elements or qualifiers

**Remarks:** The symbol is shown on the right-hand side.

The (transitory) internal 1-state corresponds to the transition from the internal 0-state to the internal 1-state that would occur if this input were not dynamic.

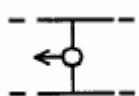
The source of the transitioning signal shall be shown by dependency notation. The identifying number of the transitioning signal shall be the left-most character in the label string at this input. This holds whether this input is shown on the left-hand side or on the right-hand side of the symbol outline.

## S01485



|                       |                                                                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Internal connection for signal flow from right to left                                                                                                                                                                                                 |
| Status level:         | Standard                                                                                                                                                                                                                                               |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-08-08                                                                                                                                                                                                                         |
| Keywords:             | binary logic elements, combinative elements, internal connections                                                                                                                                                                                      |
| Alternative forms:    | S01475; S01476                                                                                                                                                                                                                                         |
| Application notes:    | A00269, A00273                                                                                                                                                                                                                                         |
| Shape class:          | Arrows                                                                                                                                                                                                                                                 |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                      |
| Remarks:              | <p>The internal 1-state [0-state] of the input of the element on the left corresponds to the internal 1-state [0-state] of the output of the element on the right.</p> <p>If no confusion is likely, symbols S01475 or S01476 may be used instead.</p> |

## S01486



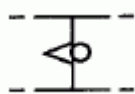
|                       |                                                                                                                                                                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Internal connection with logic negation for signal flow from right to left                                                                                                                                                                                                                          |
| Status level:         | Standard                                                                                                                                                                                                                                                                                            |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                          |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-08-09                                                                                                                                                                                                                                                                      |
| Keywords:             | binary logic elements, combinative elements, internal connections                                                                                                                                                                                                                                   |
| Applied in:           | S01721                                                                                                                                                                                                                                                                                              |
| Applies:              | S01809                                                                                                                                                                                                                                                                                              |
| Application notes:    | A00269, A00273                                                                                                                                                                                                                                                                                      |
| Shape class:          | Arrows, Circles                                                                                                                                                                                                                                                                                     |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                 |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                   |
| Remarks:              | <p>The internal 1-state [0-state] of the input of the element on the left corresponds to the internal 0-state [1-state] of the output of the element on the right.</p> <p>If no confusion is likely, symbol S01809 may be used instead.</p> <p>The vertical line may extend through the circle.</p> |

## S01487



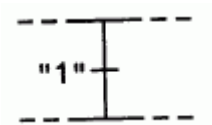
|                              |                                                                                                                                                                                                                                                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Internal connection with dynamic character for signal flow from right to left                                                                                                                                                                                                                   |
| <b>Status level:</b>         | Standard                                                                                                                                                                                                                                                                                        |
| <b>Released on:</b>          | 2004-09-01                                                                                                                                                                                                                                                                                      |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-08-10                                                                                                                                                                                                                                                                  |
| <b>Keywords:</b>             | binary logic elements, combinative elements, internal connections                                                                                                                                                                                                                               |
| <b>Application notes:</b>    | A00269, A00273                                                                                                                                                                                                                                                                                  |
| <b>Shape class:</b>          | Equilateral triangles                                                                                                                                                                                                                                                                           |
| <b>Function class:</b>       | - Functional elements or attributes                                                                                                                                                                                                                                                             |
| <b>Application class:</b>    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                               |
| <b>Remarks:</b>              | The (transitory) internal 1-state of the input of the element on the left corresponds to the transition from the internal 0-state to the internal 1-state of the output of the element on the right. At all other times, the internal logic state of the input of the element on the left is 0. |

## S01488



|                              |                                                                                                                                                                                                                                                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Internal connection with logic negation and dynamic character for signal flow from right to left                                                                                                                                                                                                |
| <b>Status level:</b>         | Standard                                                                                                                                                                                                                                                                                        |
| <b>Released on:</b>          | 2004-09-01                                                                                                                                                                                                                                                                                      |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-08-11                                                                                                                                                                                                                                                                  |
| <b>Keywords:</b>             | binary logic elements, combinative elements, internal connections                                                                                                                                                                                                                               |
| <b>Application notes:</b>    | A00269, A00273                                                                                                                                                                                                                                                                                  |
| <b>Shape class:</b>          | Circle segments, Equilateral triangles                                                                                                                                                                                                                                                          |
| <b>Function class:</b>       | - Functional elements or attributes                                                                                                                                                                                                                                                             |
| <b>Application class:</b>    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                               |
| <b>Remarks:</b>              | The (transitory) internal 1-state of the input of the element on the left corresponds to the transition from the internal 1-state to the internal 0-state of the output of the element on the right. At all other times, the internal logic state of the input of the element on the left is 0. |

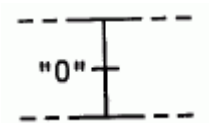
## S01489



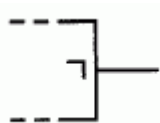
|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| Name:                 | Fixed 1-state output, shown at an internal connection             |
| Status level:         | Standard                                                          |
| Released on:          | 2004-09-01                                                        |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-08-12                                    |
| Keywords:             | binary logic elements, combinative elements, internal connections |
| Applies:              | S01543                                                            |
| Application notes:    | A00269, A00273                                                    |
| Shape class:          | Characters                                                        |
| Function class:       | - Functional elements or attributes                               |
| Application class:    | Conceptual elements or qualifiers                                 |



## S01490



|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| Name:                 | Fixed 0-state output, shown at an internal connection             |
| Status level:         | Standard                                                          |
| Released on:          | 2004-09-01                                                        |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-08-13                                    |
| Keywords:             | binary logic elements, combinative elements, internal connections |
| Applies:              | S01544                                                            |
| Application notes:    | A00269, A00273                                                    |
| Shape class:          | Characters                                                        |
| Function class:       | - Functional elements or attributes                               |
| Application class:    | Conceptual elements or qualifiers                                 |

**S01491**

**Name:** Postponed output

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-01

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01702, S01663, S01662, S01666

**Application notes:** A00269, A00304, A00335

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

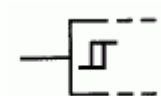
**Remarks:** The change of the internal state of this output is postponed until the input signal which initiates the change returns to its initial external logic state or logic level. The internal logic state of any input(s) affecting or affected by the initiating input must not change while this initiating input stands at its internal 1-state or the resulting output state will not be specified by the symbol. If the input signal which initiates the change appears at an internal connection, the change of state is postponed until the output of the preceding element returns to its initial internal logic state.

If this symbol is shown without prefix, it should be assumed that the output is postponed with respect to each  $\rightarrow$ ,  $\leftarrow$ ,  $+$ ,  $-$ , and T-input and to each  $C_m$ -input or  $C_m$ -output (see symbols S01558 and S01559); in all other cases, the identifying numbers (or if necessary the full labels) of all inputs and outputs with respect to which the output is postponed shall be shown as a prefix to this symbol. See symbol S01702.

Care should be taken that this symbol is a right angle with lines of equal length, to avoid confusion with other symbols, for example the character 7.

For the application of this symbol and additional explanation, see A00304.

The symbol is defined equivalent to UCS 2510 of ISO/IEC 10646 "BOX DRAWINGS LIGHT DOWN AND LEFT".

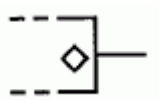
**S01492**

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Bi-threshold input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-09-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Alternative names:    | Input with hysteresis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Keywords:             | binary logic elements, combinative elements, hysteresis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Applied in:           | S01597, S01676, S01737, S01806, S01683, S01608, S01609, S01607, S01700, S01602                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Application notes:    | A00269, A00336                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Shape class:          | Characters, Lines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remarks:              | <p>The input takes on its internal 1-state when the external signal level reaches a threshold value <math>V_1</math>. It maintains this state until the external signal level has returned through <math>V_1</math> and reaches another threshold value <math>V_0</math>. If this symbol (without the negation symbol or polarity symbol) appears on a diagram that uses either the symbol for logic polarity or the positive-logic convention, <math>V_1</math> is more positive than <math>V_0</math>. If it appears on a diagram that uses the negative-logic convention, <math>V_1</math> is more negative than <math>V_0</math>.</p> <p>If the negation or polarity symbol is present at the input, the relationship between <math>V_1</math> and <math>V_0</math> is reversed.</p> <p>For an illustration to the text, see A00336.</p> <p>The symbols S01607, S01608 and S01608 show the use of the symbol as a general qualifying symbol for an element.</p> <p>The absence of this symbol does not necessarily indicate the absence of hysteresis. Most practical devices exhibit this characteristic to some extent. This symbol should only be used when an identification of the</p> |

characteristic is important to the application of the device.

The symbol is equivalent to UCS 238E of ISO/IEC 10646  
"HYSTERESIS SYMBOL".

## S01493



**Name:** Open-circuit output

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-03

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01495, S01494

**Application notes:** A00269, A00289

**Shape class:** Squares

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** Examples: open-collector, open-emitter, open-drain, open-source.

One of the two possible internal logic states of this type of output corresponds to an external high-impedance condition. In order to produce a proper logic level in this condition, an externally connected component or circuit, often a resistor, is required. This type of output is usually capable of forming part of a distributed connection.

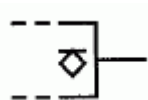
This symbol should be drawn adjacent to the output line, except when using the bit-grouping symbol (symbol S01517) in the manner defined in A00289, where an alternative position is permitted.

Although this symbol is shown inside the outline, it refers to external states and levels only.

If it is necessary to indicate which logic level is the one with the low impedance, use can be made of symbol S01494 or S01495.

The symbol is equivalent to UCS 25C7 of ISO/IEC 10646 "WHITE DIAMOND".

## S01494



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Open-circuit output (H-type)                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-09-04                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Keywords:             | binary logic elements, combinative elements                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Applied in:           | S01578, S01583, S01586, S01587, S01634, S01806, S01591, S01654, S01667, S01496                                                                                                                                                                                                                                                                                                                                                                                        |
| Applies:              | S01493                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Application notes:    | A00269                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Shape class:          | Lines , Squares                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remarks:              | <p>Examples: PNP open-collector, NPN open-emitter, P-channel open-drain, N-channel open-source.</p> <p>When not in its external high-impedance condition, this type of output produces a relatively low-impedance H-level.</p> <p>See also symbol S01578.</p> <p>The meaning of this symbol is not altered by the presence of a negation or polarity indicator.</p> <p>The symbol is equivalent to UCS 238F of ISO/IEC 10646 "OPEN-CIRCUIT-OUTPUT H-TYPE SYMBOL".</p> |

## S01495



Name: Open-circuit output (L-type)

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-05

Keywords: binary logic elements, combinative elements

Applied in: S01738, S01578, S01594, S01648, S01649, S01794, S01806, S01801, S01653, S01582, S01596, S01717, S01497, S01739, S01747, S01618, S01650, S01622

Applies: S01493

Application notes: A00269

Shape class: Lines , Squares

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Examples: NPN open-collector, PNP open-emitter, N-channel open-drain, P-channel open-source.

When not in its external high-impedance condition, this type of output produces a relatively low-impedance L-level.

The meaning of this symbol is not altered by the presence of a negation or polarity indicator.

See also symbol S01578.

The symbol is equivalent to UCS 2390 of ISO/IEC 10646 "OPEN-CIRCUIT-OUTPUT L-TYPE SYMBOL".



## S01496



Name: Passive-pull-down output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-06

Keywords: binary logic elements, combinative elements

Applied in: S01578

Applies: S01494

Application notes: A00269

Shape class: Lines , Squares

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

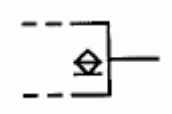
Remarks: This type of output is similar to the H-type open-circuit output (symbol S01494) and can likewise be used as part of a distributed connection but without the need for an additional external component or circuit.

See also symbol S01578.

The meaning of this symbol is not altered by the presence of a negation or polarity indicator.

The symbol is equivalent to UCS 2391 of ISO/IEC 10646 "PASSIVE-OUTPUT-PULL-DOWN SYMBOL.

## S01497



Name: Passive-pull-up output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-07

Keywords: binary logic elements, combinative elements

Applied in: S01578, S01803, S01742, S01618, S01602, S01644

Applies: S01495

Application notes: A00269

Shape class: Lines , Squares

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

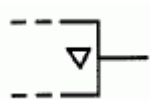
Remarks: This type of output is similar to the L-type open-circuit output (symbol S01495) and can likewise be used as part of a distributed connection but without the need for an additional external component or circuit.

See also symbol S01578.

The meaning of this symbol is not altered by the presence of a negation or polarity indicator.

The symbol is equivalent to UCS 2392 of ISO/IEC 10646 "PASSIVE-OUTPUT-PULL-UP SYMBOL".

## S01498



Name: 3-state output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-08

Keywords: binary logic elements, combinative elements

Applied in: S01619, S01621, S01597, S01603, S01652, S01735, S01598, S01711, S01745, S01713, S01736, S01734, S01742, S01620, S01743, S01744, S01712, S01714, S01715, S01670, S01599, S01793

Application notes: A00269

Shape class: Equilateral triangles

Function class: - Functional elements or attributes

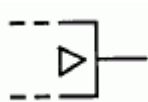
Application class: Conceptual elements or qualifiers

Remarks: This output can take on a third external state, which is a high-impedance condition, having no logic significance.

This symbol should be drawn adjacent to the output line, except when using the bit-grouping symbol (symbol S01517) in the manner defined in A00289, where an alternative position is permitted.

The symbol is equivalent to UCS 25BD of ISO/IEC 10646 "WHITE DOWN-POINTING TRIANGLE".

## S01499



**Name:** Output with special amplification (drive capability)

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-08A

**Keywords:** binary logic elements, combinative elements

**Applies:** S01457

**Application notes:** A00269, A00351

**Shape class:** Equilateral triangles

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The symbol S01457 emphasizes the function of amplification. It shall point in the direction of signal flow.

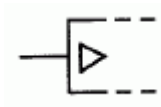
This symbol should be drawn adjacent to the output line, except when using the bit-grouping symbol (symbol S01517) in the manner defined in A00289, where an alternative position is permitted.

If this symbol is used with symbols S01493, S01494, S01495, S01496, S01497 and S01498, those symbols are placed between the amplification symbol and the edge of the element.

The absence of this symbol does not necessarily indicate the absence of special amplification.

The symbols S01594 to S01599 show the use of symbol S01457 as a general qualifying symbol for an element.

## S01500



**Name:** Input with special amplification (sensitivity)

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-08B

**Keywords:** binary logic elements, combinative elements

**Applies:** S01457

**Application notes:** A00269, A00351

**Shape class:** Equilateral triangles

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

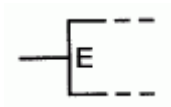
**Remarks:** The symbol S01457 emphasizes the function of amplification. It shall point in the direction of signal flow.

If one or more of the symbols S01540, S01500 or S01492 are required at an input, they shall be shown, as needed, in the following order: symbol S01540 shall be placed closest to the input(s), followed by symbol S01500, and then by symbol S01492.

The absence of this symbol does not necessarily indicate the absence of special amplification.

The symbols S01594 to S01599 show the use of symbol S01457 as a general qualifying symbol for an element. Its use at an input, rather than as a general qualifying symbol, shows that the input is unusually sensitive rather than that the output has increased drive capability.

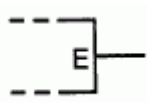
## S01501



|                       |                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------|
| Name:                 | Extension input                                                                                               |
| Status level:         | Standard                                                                                                      |
| Released on:          | 2004-09-01                                                                                                    |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-09-09                                                                                |
| Keywords:             | binary logic elements, combinative elements                                                                   |
| Application notes:    | A00269                                                                                                        |
| Shape class:          | Characters                                                                                                    |
| Function class:       | - Functional elements or attributes                                                                           |
| Application class:    | Conceptual elements or qualifiers                                                                             |
| Remarks:              | An input of a binary element to which the output of an extender element may be connected (see symbol S01502). |

The description that characterizes the relationship between the external logic states of binary variables and their corresponding physical quantities is normally not valid for extension inputs and extender outputs.

## S01502



**Name:** Extender output

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-10

**Keywords:** binary logic elements, combinative elements

**Application notes:** A00269

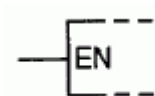
**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** An output of a binary element that may be connected to the extension input of another binary element in order to extend the number of inputs of that element (see symbol S01501).

The description that characterizes the relationship between the external logic states of binary variables and their corresponding physical quantities is normally not valid for extension inputs and extender outputs.

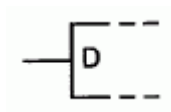
**S01503**

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Enable input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-09-11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Keywords:             | binary logic elements, combinative elements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Applied in:           | S01716, S01619, S01621, S01562, S01597, S01630, S01648, S01652, S01649, S01775, S01598, S01727, S01717, S01730, S01620, S01729, S01714, S01650, S01728                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Application notes:    | A00269, A00274, A00337                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remarks:              | <p>If this input stands at its internal 1-state, all outputs stand at their normally defined internal logic states and have their normally defined effect on elements or distributed connections that may be connected to the outputs, provided no other inputs or outputs have an overriding and contradicting effect.</p> <p>If the input stands at its internal 0-state, all outputs of the type S01493, S01494 or S01495 are in their external high-impedance conditions, all passive-pull-down outputs stand at their high-impedance L-levels, all passive-pull-up outputs stand at their high-impedance H-levels, all 3-state outputs stand at their normally defined internal logic states and are in their external high-impedance conditions, and all other outputs stand at their internal 0-states.</p> <p>This input only affects outputs shown as external outputs. If it is an input of an element having an internal connection indicated by the symbols S01475, S01476, S01477 and S01809, even when the remark with symbol S01475 is applied, or if an internal connection is implied (for example, by a common control block, common output element or dependency notation), the input is also an EN-input of the element to which the internal connection is connected. If ambiguity can arise, for</p> |



example because of the presence of embedded outlines, EN-dependency should be used.

## S01504



Name: D-input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-12

Keywords: binary logic elements, combinative elements

Applied in: S01660, S01668, S01669, S01667, S01670

Application notes: A00269, A00274

Shape class: Characters

Function class: - Functional elements or attributes

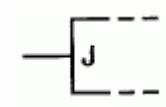
Application class: Conceptual elements or qualifiers

Remarks: The internal logic state of the D-input is stored by the element.

See symbol S01660.

The internal logic state of this input is always subject to an affecting input or output.

## S01505



Name: J-input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-13

Keywords: binary logic elements, combinative elements

Applied in: S01663, S01662, S01661

Application notes: A00269, A00274, A00338

Shape class: Characters

Function class: - Functional elements or attributes

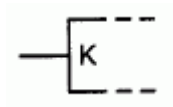
Application class: Conceptual elements or qualifiers

Remarks: When this input takes on its internal 1-state, a 1 is stored by the element.

When the input stands at its internal 0-state, it has no effect on the element.

See also symbol S01506: Each occurrence of the combination  $J=K=1$  causes a single change of the internal state of the output to its complement.

## S01506



Name: K-input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-14

Keywords: binary logic elements, combinative elements

Applied in: S01663, S01662, S01661

Application notes: A00269, A00274, A00338

Shape class: Characters

Function class: - Functional elements or attributes

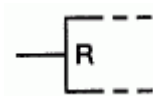
Application class: Conceptual elements or qualifiers

Remarks: When this input takes on its internal 1-state, a 0 is stored by the element.

When the input stands at its internal 0-state, it has no effect on the element.

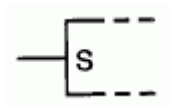
See also symbol S01505: Each occurrence of the combination  $J=K=1$  causes a single change of the internal state of the output to its complement.

## S01507



|                       |                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | R-input                                                                                                                                                                                                                                                                                                                                       |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                      |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                    |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-09-15                                                                                                                                                                                                                                                                                                                |
| Keywords:             | binary logic elements, combinative elements                                                                                                                                                                                                                                                                                                   |
| Applied in:           | S01663, S01662, S01665, S01676, S01677, S01666, S01661, S01659, S01667, S01664                                                                                                                                                                                                                                                                |
| Application notes:    | A00269, A00274, A00338                                                                                                                                                                                                                                                                                                                        |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                    |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                           |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                             |
| Remarks:              | <p>When this input takes on its internal 1-state, a 0 is stored by the element.</p> <p>When the input stands at its internal 0-state, it has no effect on the element.</p> <p>See also symbol S01508: The effect of the combination R=S=1 is not specified by the symbol; this effect may be indicated by means of SET-/RESET-dependency.</p> |

## S01508



Name: S-input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-16

Keywords: binary logic elements, combinative elements

Applied in: S01663, S01665, S01666, S01668, S01659, S01667, S01664

Application notes: A00269, A00274, A00338

Shape class: Characters

Function class: - Functional elements or attributes

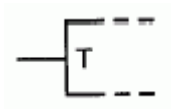
Application class: Conceptual elements or qualifiers

Remarks: When this input takes on its internal 1-state, a 1 is stored by the element.

When the input stands at its internal 0-state, it has no effect on the element.

See also symbol S01507: The effect of the combination R=S=1 is not specified by the symbol; this effect may be indicated by means of SET-/RESET-dependency.

## S01509



Name: T-input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-17

Keywords: binary logic elements, combinative elements

Application notes: A00269, A00274, A00338

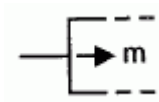
Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Each time this input takes on its internal 1-state, a single change of the internal state of the output to its complement takes place. When the input stands at its internal 0-state, it has no effect on the element.

## S01510



**Name:** Shifting input, left to right or top to bottom

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-18

**Keywords:** binary logic elements, combinative elements

**Application notes:** A00269, A00274, A00338

**Shape class:** Arrows, Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** Each time this input takes on its internal 1-state, the information contained in the element will be shifted once  $m$  positions from left to right or from top to bottom, depending on the orientation of the symbol for the element.

When the input stands at its internal 0-state, it has no effect on the element.

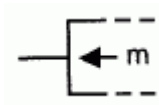
$m$  shall be replaced by the relevant value. If  $m=1$ , the 1 may be omitted.

All directions above are relative to an orientation of the symbol in which the arrow is pointing to the right.

The symbol "→" is equivalent to UCS 2192 of ISO/IEC 10646 "RIGHTWARDS ARROW".



## S01511



**Name:** Shifting input, right to left or bottom to top

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-19

**Keywords:** binary logic elements, combinative elements

**Application notes:** A00269, A00274, A00338

**Shape class:** Arrows

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** Each time this input takes on its internal 1-state, the information contained in the element will be shifted once  $m$  positions from right to left or from bottom to top, depending on the orientation of the symbol for the element.

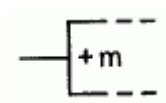
When the input stands at its internal 0-state, it has no effect on the element.

$m$  shall be replaced by the relevant value. If  $m=1$ , the 1 may be omitted.

NOTE - All directions above are relative to an orientation of the symbol in which the arrow is pointing to the left.

The symbol "←" is equivalent to UCS 2190 (Table 59) of ISO/IEC 10646 "LEFTWARDS ARROW".

## S01512



Name: Counting-up input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-20

Keywords: binary logic elements, combinative elements

Application notes: A00269, A00274, A00338

Shape class: Characters

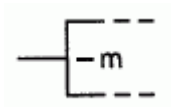
Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Each time this input takes on its internal 1-state, the content of the element is increased once by  $m$  units. When the input stands at its internal 0-state, it has no effect on the element.

$m$  shall be replaced by the relevant value. If  $m=1$ , the 1 may be omitted.

## S01513



Name: Counting-down input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-21

Keywords: binary logic elements, combinative elements

Application notes: A00269, A00274, A00338

Shape class: Characters

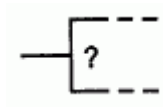
Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Each time this input takes on its internal 1-state, the content of the element is decreased once by  $m$  units. When the input stands at its internal 0-state, it has no effect on the element.

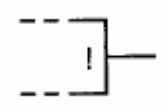
$m$  shall be replaced by the relevant value. If  $m=1$ , the 1 may be omitted.

## S01514



|                       |                                                                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Query input of an associative memory                                                                                                                                                   |
| Status level:         | <b>Standard</b>                                                                                                                                                                        |
| Released on:          | 2004-09-01                                                                                                                                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-09-22                                                                                                                                                         |
| Alternative names:    | Interrogate input of an associative memory                                                                                                                                             |
| Keywords:             | binary logic elements, combinative elements                                                                                                                                            |
| Application notes:    | A00269, A00274, A00338                                                                                                                                                                 |
| Shape class:          | Characters                                                                                                                                                                             |
| Function class:       | - Functional elements or attributes                                                                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                      |
| Remarks:              | If this input takes on its internal 1-state, an interrogation of the content of the element takes place. If the input stands at its internal 0-state, it has no effect on the element. |

## S01515



**Name:** Compare output of an associative memory

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-23

**Alternative names:** Match output of an associative memory

**Keywords:** binary logic elements, combinative elements

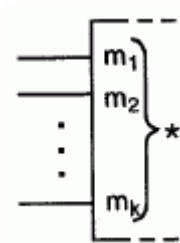
**Application notes:** A00269

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

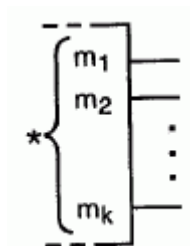
**Remarks:** The internal 1-state at this output indicates a match.

**S01516**

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Bit grouping for multibit input, general symbol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Released on:</b>          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-09-24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Keywords:</b>             | binary logic elements, combinative elements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Applied in:</b>           | S01716, S01645, S01740, S01634, S01630, S01648, S01652, S01649, S01722, S01631, S01653, S01711, S01713, S01717, S01635, S01654, S01741, S01712, S01714, S01715, S01651, S01633, S01650, S01646                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Application notes:</b>    | A00269, A00339, A00351                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Shape class:</b>          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Function class:</b>       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Application class:</b>    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Remarks:</b>              | <p>Inputs grouped by this symbol produce a number that is the sum of the individual weights of the inputs standing at their internal 1-states. The individual inputs shall be shown in ascending or descending order by weight.</p> <p>This number can be regarded</p> <ul style="list-style-type: none"> <li>- as a number on which a mathematical function is performed, or</li> <li>- as defining an identifying number in the sense of dependency notation, or</li> <li>- as a value to become the content of the element.</li> </ul> <p><math>m_1 \dots m_k</math> shall be replaced by the decimal equivalents of the actual</p> |

weights. If all weights are powers of 2,  $m_1 \dots m_k$  may be replaced by the exponents of the powers of 2. Labels between  $m_1$  and  $m_k$  may be omitted to the extent that no confusion is likely.

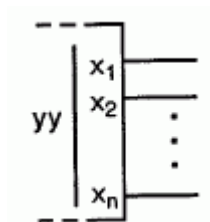
The asterisk shall be replaced by an appropriate indication of the operand on which the mathematical function is performed (for example P or Q), by an appropriate indication in the sense of dependency notation or by CT. In the latter case, the number produced by the inputs is the value that is loaded into the element.

**S01517**

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Bit grouping for multibit output, general symbol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Released on:</b>          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-09-25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Keywords:</b>             | binary logic elements, combinative elements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Applied in:</b>           | S01645, S01648, S01649, S01697, S01735, S01742, S01743, S01747, S01646                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Application notes:</b>    | A00269, A00339, A00351                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Shape class:</b>          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Function class:</b>       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Application class:</b>    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Remarks:</b>              | <p>Outputs grouped by this symbol represent a number that is the sum of the individual weights of the outputs standing at their internal 1-states. The individual outputs shall be shown in ascending or descending order by weight.</p> <p>This number can be regarded</p> <ul style="list-style-type: none"> <li>- as the result of the performance of a mathematical function, or</li> <li>- as the value of the content of the element.</li> </ul> <p><math>m_1 \dots m_k</math> shall be replaced by the decimal equivalents of the actual weights. If all weights are powers of 2, <math>m_1 \dots m_k</math> may be replaced by the exponents of the powers of 2. Labels between <math>m_1</math> and <math>m_k</math> may be omitted to the extent that no confusion is likely.</p> |



The asterisk shall be replaced by an appropriate indication of the result of the performance of the mathematical function or by CT. In the latter case, the number represented by the outputs standing at their internal 1-states is the actual value of the content of the element.

**S01518**

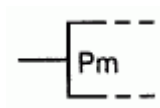
|                              |                                                                                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Label grouping, general symbol                                                                                                                                         |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                        |
| <b>Released on:</b>          | 2004-09-01                                                                                                                                                             |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-09-25A                                                                                                                                        |
| <b>Keywords:</b>             | arithmetic elements, binary logic elements, combinative elements                                                                                                       |
| <b>Applied in:</b>           | S01716, S01704, S01738, S01703, S01720, S01722, S01735, S01737, S01803, S01718, S01736, S01734, S01788, S01739, S01744, S01747, S01786, S01712, S01714, S01715, S01719 |
| <b>Application notes:</b>    | A00269, A00340                                                                                                                                                         |
| <b>Shape class:</b>          | Lines                                                                                                                                                                  |
| <b>Function class:</b>       | - Functional elements or attributes                                                                                                                                    |
| <b>Application class:</b>    | Conceptual elements or qualifiers                                                                                                                                      |
| <b>Remarks:</b>              | Symbol shown at the output side.                                                                                                                                       |

This symbol indicates the grouping of adjacent and associated connecting lines whose labels are partially alike.

The differing portions of these labels ( $x_1, \dots, x_n$ ) are placed at the side of the vertical line against the connecting lines. The common portion ( $yy$ ) is placed only once at the other side of the vertical line. If the differing portions are numbers, intermediate numbers within consecutive groups may be omitted to the extent that no confusion is likely. Although the differing portions may be numeric, the numbers they contain should not be considered as weights for the respective inputs and outputs. They might, for example, only identify the relative ordering of inputs or outputs.

This symbol may be applied in cases where the bit grouping symbol is not applicable because the inputs or outputs grouped together do not produce or represent a number.

## S01519



Name: Operand input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-26

Keywords: binary logic elements, combinative elements

Application notes: A00269, A00274

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Pm-input shown.

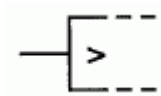
This input represents one bit of an operand on which one or more mathematical functions are performed.

m shall be replaced by the decimal equivalent of the weight of the bit. If the weights of all Pm-inputs of the element are powers of 2, at each Pm-input m may be replaced by the exponent of the power of 2.

If an operand consists of two or more bits represented by adjacent input lines, the bit grouping symbol S01516 may be used.

Preferred letters for operands are P and Q. If these letters are not suitable or if more than two operands are involved, other characters may be used providing no confusion is likely.

## S01520



**Name:** Greater-than input of a magnitude comparator

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-27

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01651

**Application notes:** A00269, A00274

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

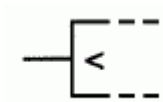
**Remarks:** This symbol is intended for use when representing cascaded comparators. For an example of use, see symbol S01651.

This symbol should not be drawn adjacent to the outline, to avoid confusion with the dynamic input indicator symbol S01472.

Other symbols in accordance with ISO 31-11 may be used to qualify other inputs of magnitude comparators, as follows:  $\geq$ ,  $\leq$ ,  $\neq$ .

The symbol " $\geq$ " is equivalent to UCS 2265 of ISO/IEC 10646 "GREATER-THAN OR EQUAL TO".

## S01521



**Name:** Less-than input of a magnitude comparator

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-28

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01651

**Application notes:** A00269, A00274

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** This symbol is intended for use when representing cascaded comparators. For an example of use, see symbol S01651.

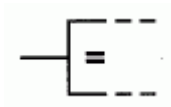
Other symbols in accordance with ISO 31-11 may be used to qualify other inputs of magnitude comparators, as follows:  $\geq$ ,  $\leq$ ,  $\neq$ .

The symbol " $\geq$ " is equivalent to UCS 2265 of ISO/IEC 10646 "GREATER-THAN OR EQUAL TO".

The symbol " $\leq$ " is equivalent to UCS 2264 of ISO/IEC 10646 "LESS-THAN OR EQUAL TO".

The symbol " $\neq$ " is equivalent to UCS 2260 of ISO/IEC 10646 "NOT EQUAL TO".

## S01522



**Name:** Equal input of a magnitude comparator

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-29

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01651

**Application notes:** A00269, A00274

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

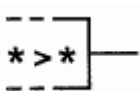
**Remarks:** This symbol is intended for use when representing cascaded comparators. For an example of use, see symbol S01651.

Other symbols in accordance with ISO 31-11 may be used to qualify other inputs of magnitude comparators, as follows:  $\geq$ ,  $\leq$ ,  $\neq$ .

The symbol " $\geq$ " is equivalent to UCS 2265 of ISO/IEC 10646 "GREATER-THAN OR EQUAL TO".

The symbol " $\leq$ " is equivalent to UCS 2264 of ISO/IEC 10646 "LESS-THAN OR EQUAL TO".

The symbol " $\neq$ " is equivalent to UCS 2260 of ISO/IEC 10646 "NOT EQUAL TO".

**S01523**

**Name:** Greater-than output of a magnitude comparator

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-30

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01652, S01770, S01651

**Application notes:** A00269

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The asterisks shall be replaced by designations of the operands, for example P and Q, respectively.

If this symbol appears in one element of a series of cascaded comparators, the output marked with this symbol is affected not only by the operands, but also by the inputs marked with the symbols S01520, S01521 or S01522.

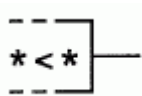
Other symbols in accordance with ISO 31-11 may be used to qualify other outputs of magnitude comparators, as follows:  $* \geq *$ ,  $* \leq *$ ,  $* \neq *$ .

The symbol " $\geq$ " is equivalent to UCS 2265 of ISO/IEC 10646 "GREATER-THAN OR EQUAL TO".

The symbol " $\leq$ " is equivalent to UCS 2264 of ISO/IEC 10646 "LESS-THAN OR EQUAL TO".

The symbol " $\neq$ " is equivalent to UCS 2260 of ISO/IEC 10646 "NOT EQUAL TO".

## S01524



**Name:** Less-than output of a magnitude comparator

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-31

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01771, S01652, S01651

**Application notes:** A00269

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The asterisks shall be replaced by designations of the operands, for example P and Q, respectively.

If this symbol appears in one element of a series of cascaded comparators, the output marked with this symbol is affected not only by the operands, but also by the inputs marked with the symbols S01520, S01521 or S01522.

Other symbols in accordance with ISO 31-11 may be used to qualify other outputs of magnitude comparators, as follows:  $* \geq *$ ,  $* \leq *$ ,  $* \neq *$ .

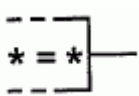
The symbol " $\geq$ " is equivalent to UCS 2265 of ISO/IEC 10646 "GREATER-THAN OR EQUAL TO".

The symbol " $\leq$ " is equivalent to UCS 2264 of ISO/IEC 10646 "LESS-THAN OR EQUAL TO".

The symbol " $\neq$ " is equivalent to UCS 2260 of ISO/IEC 10646 "NOT EQUAL TO".



## S01525



**Name:** Equal output of a magnitude comparator

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-32

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01772, S01652, S01651

**Application notes:** A00269

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The asterisks shall either be replaced by designations of the operands, for example P and Q, respectively, or, providing no confusion is likely, be omitted.

If this symbol appears in one element of a series of cascaded comparators, the output marked with this symbol is affected not only by the operands, but also by the inputs marked with the symbols S01520, S01521 or S01522.

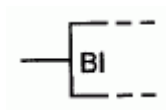
Other symbols in accordance with ISO 31-11 may be used to qualify other outputs of magnitude comparators, as follows:  $* \geq *$ ,  $* \leq *$ ,  $* \neq *$ .

The symbol " $\geq$ " is defined as character 3/10 of IEC 61286 "GREATER-THAN OR EQUAL TO", equivalent to UCS 2265 (Table 60) of ISO/IEC 10646 "GREATER-THAN OR EQUAL TO".

The symbol " $\leq$ " is defined as character 2/10 of IEC 61286 "LESS-THAN OR EQUAL TO", equivalent to UCS 2264 (Table 60) of ISO/IEC 10646 "LESS-THAN OR EQUAL TO".

The symbol " $\neq$ " is defined as character 3/6 of IEC 61286 "NOT EQUAL TO", equivalent to UCS 2260 (Table 60) of ISO/IEC 10646 "NOT EQUAL TO".

## S01526



**Name:** Borrow-in input of an arithmetic element

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-33

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01646

**Application notes:** A00269, A00274

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** If this input stands at its internal 1-state, this indicates that a subtraction operation performed by a lower-ordered arithmetic element produces an arithmetic borrow.

A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.

## S01527



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Borrow-generate input of an arithmetic element                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-09-34                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Keywords:             | binary logic elements, combinative elements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Application notes:    | A00269, A00274                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Remarks:              | <p>If this input stands at its internal 1-state, this indicates to a borrow-acceleration element that the arithmetic element that produces the BG-signal is in the borrow-generate state (see description of symbol S01528). The borrow acceleration element uses its BG-, BP-, and BI-input signals to determine, with reduced propagation delays, the states of the arithmetic borrow signals for a group of arithmetic elements performing binary subtraction.</p> <p>A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.</p> |

## S01528



**Name:** Borrow-generate output of an arithmetic element

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-35

**Keywords:** binary logic elements, combinative elements

**Application notes:** A00269

**Shape class:** Characters

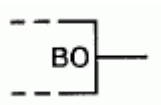
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** If this output stands at its internal 1-state, this indicates that an arithmetic element performing subtraction is in the borrow-generate state, that is, that the subtrahend applied to the element is larger than the minuend, causing a borrow from that element independent of the state of the BI-input to that element.

A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.

## S01529



**Name:** Borrow-out output of an arithmetic element

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-36

**Alternative names:** Ripple-borrow output of an arithmetic element

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01646

**Application notes:** A00269

**Shape class:** Characters

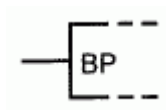
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** If this output stands at its internal 1-state, this indicates that a subtraction operation performed by an arithmetic element produces an arithmetic borrow (see description of symbol S01526).

A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.

## S01530



**Name:** Borrow-propagate input of an arithmetic element

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-37

**Keywords:** binary logic elements, combinative elements

**Application notes:** A00269, A00274

**Shape class:** Characters

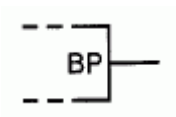
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** If this input stands at its internal 1-state, this indicates to a borrow-acceleration element that the arithmetic element that produces the BP-signal is in the borrow-propagate state. See description of symbol S01531.

A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.

## S01531



**Name:** Borrow-propagate output of an arithmetic element

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-38

**Keywords:** binary logic elements, combinative elements

**Application notes:** A00269

**Shape class:** Characters

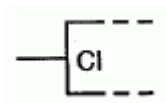
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** If this output stands at its internal 1-state, this indicates that an arithmetic element performing subtraction is in the borrow-propagate state, that is, that the subtrahend and minuend applied to the element are equal in value, so that the BO-output will stand at its internal 1-state if and only if the BI-input is at its internal 1-state.

A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.

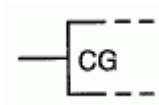
## S01532



|                       |                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Carry-in input of an arithmetic element                                                                                                                                                                                                                                                                                                                        |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                       |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                     |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-09-39                                                                                                                                                                                                                                                                                                                                 |
| Keywords:             | binary logic elements, combinative elements                                                                                                                                                                                                                                                                                                                    |
| Applied in:           | S01647, S01653, S01654, S01643                                                                                                                                                                                                                                                                                                                                 |
| Application notes:    | A00269, A00274                                                                                                                                                                                                                                                                                                                                                 |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                                     |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                            |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                              |
| Remarks:              | <p>If this input stands at its internal 1-state, this indicates that an addition performed by a lower-ordered arithmetic element produces an arithmetic carry.</p> <p>A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.</p> |



## S01533



**Name:** Carry-generate input of an arithmetic element

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-40

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01647

**Application notes:** A00269, A00274

**Shape class:** Characters

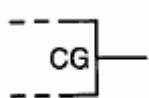
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** If this input stands at its internal 1-state, this indicates to a carry-acceleration element whether or not the arithmetic element that produces the CG-signal is in the carry-generate state (see description of symbol S01534). The carry-acceleration element uses its CG-, CP-, and CI-input signals to determine, with reduced propagation delays, the states of the arithmetic carry signals for a group of elements performing addition.

A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.

## S01534



**Name:** Carry-generate output of an arithmetic element

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-41

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01647, S01653, S01654

**Application notes:** A00269

**Shape class:** Characters

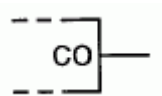
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** If this output stands at its internal 1-state, this indicates that an arithmetic element performing addition is in the carry-generate state, that is, that the sum of its addends is sufficiently large to cause a carry from the element independent of the state of the CI-input to that element.

A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.

## S01535



**Name:** Carry-out output of an arithmetic element

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-42

**Alternative names:** Ripple-carry output of an arithmetic element

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01647, S01642, S01653, S01654, S01643

**Application notes:** A00269

**Shape class:** Characters

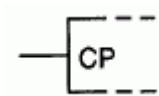
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** If this output stands at its internal 1-state, this indicates that an addition operation performed by an arithmetic element produces an arithmetic carry (see description of symbol S01532).

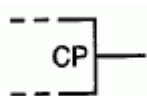
A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.

## S01536



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Carry-propagate input of an arithmetic element                                                                                                                                                                                                                                                                                                                                                                              |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-09-43                                                                                                                                                                                                                                                                                                                                                                                              |
| Keywords:             | binary logic elements, combinative elements                                                                                                                                                                                                                                                                                                                                                                                 |
| Applied in:           | S01647                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Application notes:    | A00269, A00274                                                                                                                                                                                                                                                                                                                                                                                                              |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                         |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                           |
| Remarks:              | <p>If this input stands at its internal 1-state, this indicates to a carry-acceleration element that the arithmetic element that produces the CP-signal is in the carry-propagate state (see description of symbol S01537).</p> <p>A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.</p> |

## S01537



**Name:** Carry-propagate output of an arithmetic element

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-44

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01647, S01653

**Application notes:** A00269

**Shape class:** Characters

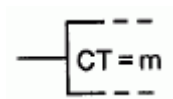
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** If this output stands at its internal 1-state, this indicates that an arithmetic element performing addition is in the carry-propagate state, that is that the sum of its addends is one less than the value at which the element produces an output carry. As a result, the CO-output will stand at its internal 1-state if and only if its CI-input is at its internal 1-state.

A decimal indication of the weight may be added as a suffix to this label; if the weight is a power of 2, this indication may be replaced by the exponent if no confusion is likely.

## S01538



Name: Content input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-45

Keywords: binary logic elements, combinative elements

Applied in: S01703

Application notes: A00269

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: m shall be replaced by an appropriate indication of the content of the element (for example a counter) that results whenever this input takes on its internal 1-state.

If this input stands at its internal 0-state, it has no effect on the element.

## S01539



Name: Content output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-46

Keywords: binary logic elements, combinative elements

Applied in: S01699, S01618

Application notes: A00269

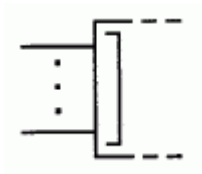
Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: The asterisk shall be replaced by an appropriate indication of those values of the content of the element (for example a counter) for which the output stands at its internal 1-state.

## S01540



**Name:** Line grouping at the input side

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-47

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01787, S01605, S01625, S01724, S01584, S01600

**Application notes:** A00269, A00351

**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** This symbol indicates that two or more connections are needed to implement a single logic input.

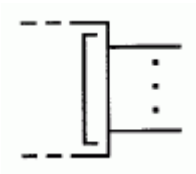
The logic levels on connections grouped by this symbol may differ from those on the other input and output terminals. See symbol S01600.

The absence of this symbol does not necessarily indicate the absence of special amplification.

The symbols S01594 to S01599 show the use of symbol S01457 as a general qualifying symbol for an element. Its use at an input, rather than as a general qualifying symbol, shows that the input is unusually sensitive rather than that the output has increased drive capability.



## S01541



**Name:** Line grouping at the output side

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-48

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01585

**Application notes:** A00269, A00351

**Shape class:** Lines

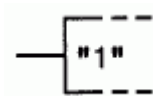
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** This symbol indicates that two or more connections are needed to implement a single logic output.

The logic levels on connections grouped by this symbol may differ from those on the other input and output terminals.

## S01542



Name: Fixed-mode input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-49

Keywords: binary logic elements, combinative elements

Applied in: S01695, S01694

Application notes: A00269

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: If an element can perform several functions but only a restricted number of functions is of interest, this representation can be used to identify an input that must be in the internal 1-state for the element to perform the functions of interest indicated by the symbol.

A fixed-mode input must not be affected by dependency notation nor have other functions.

## S01543



Name: Fixed-1-state output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-09-50

Keywords: binary logic elements, combinative elements

Applied in: S01489, S01622

Application notes: A00269, A00274

Shape class: Characters

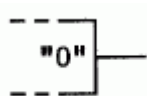
Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: This representation may be used to identify an output that always stands at its internal 1-state.

This output shall neither be affected by dependency notation nor have other functions.

## S01544



**Name:** Fixed-0-state output

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-51

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01490

**Application notes:** A00269, A00274

**Shape class:** Characters

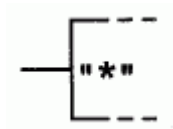
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** This representation may be used to identify an output that always stands at its internal 0-state.

This output shall neither be affected by dependency notation nor have other functions.

## S01545



**Name:** Required connection

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-09-52

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01704, S01658

**Application notes:** A00269, A00274

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

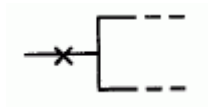
**Remarks:** Shown at an input.

This symbol identifies an input or output that must be connected to one or more other inputs or outputs in the same element for the element to perform as otherwise indicated by the symbol.

The asterisk shall be replaced by a label other than 0 or 1. Each input and output that is to be connected (outside the element) to this one shall have an identical required-connection label.

A required connection shall not be affected by dependency notation. However, the input or output may have other functions that are affected by dependency notation.

## S01546



**Name:** Non-logic connection

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-10-01

**Keywords:** binary logic elements, connections

**Applied in:** S01785, S01799, S01676, S01684, S01677, S01683, S01798, S01752, S01792

**Application notes:** A00269, A00275

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

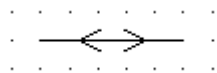
**Remarks:** Symbol shown on the left-hand side.

This symbol may be used to indicate a connection which does not carry any logic information (for example reference voltage connection).

Additional information associated with non-logic connections may be shown without brackets inside the outline.

The symbol is equivalent to UCS 00D7 of ISO/IEC 10646 "MULTIPLICATION SIGN".

## S01547



Name: Bidirectional signal flow

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-10-02

Keywords: binary logic elements, flow, signal flow

Applied in: S01604, S01603, S01605

Applies: S00101

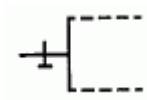
Application notes: A00269, A00275

Shape class: Arrows

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

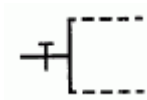
## S01548



|                       |                                                                                                                                                                               |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Input with internal pulldown                                                                                                                                                  |
| Status level:         | Standard                                                                                                                                                                      |
| Released on:          | 2004-09-01                                                                                                                                                                    |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-10-03                                                                                                                                                |
| Keywords:             | binary logic elements                                                                                                                                                         |
| Applied in:           | S01705                                                                                                                                                                        |
| Application notes:    | A00269, A00275                                                                                                                                                                |
| Shape class:          | Lines                                                                                                                                                                         |
| Function class:       | - Functional elements or attributes                                                                                                                                           |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                             |
| Remarks:              | When this input is not connected externally, the external logic level is L.<br><br>The absence of this symbol does not necessarily indicate the absence of internal pulldown. |

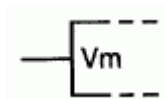


## S01549



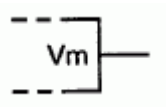
|                       |                                                                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Input with internal pullup                                                                                                                                                  |
| Status level:         | Standard                                                                                                                                                                    |
| Released on:          | 2004-09-01                                                                                                                                                                  |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-10-04                                                                                                                                              |
| Keywords:             | binary logic elements                                                                                                                                                       |
| Application notes:    | A00269, A00275                                                                                                                                                              |
| Shape class:          | Lines                                                                                                                                                                       |
| Function class:       | - Functional elements or attributes                                                                                                                                         |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                           |
| Remarks:              | When this input is not connected externally, the external logic level is H.<br><br>The absence of this symbol does not necessarily indicate the absence of internal pullup. |

## S01550



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Vm-input                                                                                                                                                                                                                                                                                                                                                                                                            |
| Status level:         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                     |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                          |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-15-01                                                                                                                                                                                                                                                                                                                                                                                      |
| Keywords:             | binary logic elements, dependency notation, OR dependency                                                                                                                                                                                                                                                                                                                                                           |
| Applied in:           | S01802, S01617, S01618, S01622                                                                                                                                                                                                                                                                                                                                                                                      |
| Application notes:    | A00269, A00276, A00278, A00288, A00289                                                                                                                                                                                                                                                                                                                                                                              |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                                                                                          |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                 |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                   |
| Remarks:              | <p>If a Vm-input stands at its internal 1-state, all inputs and outputs affected by this Vm-input stand at their internal 1-states.</p> <p>If a Vm-input stands at its internal 0-state, all inputs and outputs affected by this Vm-input stand at their normally defined internal logic states.</p> <p>m shall be replaced by the relevant identifying number.</p> <p>The note with table I of A00276 applies.</p> |

## S01551



Name: Vm-output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-15-02

Keywords: binary logic elements, dependency notation, OR dependency

Applied in: S01665

Application notes: A00269, A00276, A00278, A00288, A00289

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks:

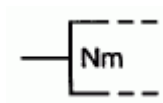
If a Vm-output stands at its internal 1-state, all inputs and outputs affected by this Vm-output stand at their internal 1-states.

If a Vm-output stands at its internal 0-state, all inputs and outputs affected by this Vm-output stand at their normally defined internal logic states.

m shall be replaced by the relevant identifying number.

The note with table I of A00276 applies.

## S01552



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Nm-input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-16-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Keywords:             | binary logic elements, dependency notation, NEGATE dependency                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Applied in:           | S01634, S01593, S01653, S01654                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Application notes:    | A00269, A00276, A00279, A00288, A00289                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remarks:              | <p>If a Nm-input stands at its internal 1-state, the internal logic state of each input and each output affected by this Nm-input is the complement of the normally defined internal logic state of that input.</p> <p>If a Nm-input stands at its internal 0-state, all inputs and outputs affected by this Nm-input stand at their normally defined internal logic states.</p> <p>m shall be replaced by the relevant identifying number.</p> <p>The note with table I of A00276 applies.</p> |

## S01553



Name: Nm-output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-16-02

Keywords: binary logic elements, dependency notation, NEGATE dependency

Application notes: A00269, A00276, A00279, A00288, A00289

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

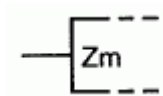
Remarks: If a Nm-output stands at its internal 1-state, the internal logic state of each input and each output affected by this Nm-output is the complement of the normally defined internal logic state of that output.

If a Nm-output stands at its internal 0-state, all inputs and outputs affected by this Nm-output stand at their normally defined internal logic states.

m shall be replaced by the relevant identifying number.

The note with table I of A00276 applies.

## S01554



Name: Zm-input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-17-01

Keywords: binary logic elements, dependency notation, INTERCONNECTION dependency

Applied in: S01591, S01766, S01729, S01617, S01721, S01667, S01670

Application notes: A00269, A00276, A00280, A00288, A00289

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

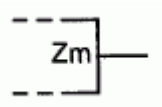
Remarks: If a Zm-input stands at its internal 1-state, all inputs and outputs affected by this Zm-input stand at their internal 1-states unless modified by additional dependency notation.

If a Zm-input stands at its internal 0-state, all inputs and outputs affected by this Zm-input stand at their internal 0-states unless modified by additional dependency notation.

m shall be replaced by the relevant identifying number.

The note with table I of A00276 applies.

## S01555



Name: Zm-output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-17-02

Keywords: binary logic elements, dependency notation, INTERCONNECTION dependency

Applied in: S01689, S01683, S01767, S01696

Application notes: A00269, A00276, A00280, A00288, A00289

Shape class: Characters

Function class: - Functional elements or attributes

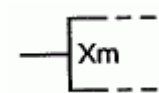
Application class: Conceptual elements or qualifiers

Remarks: If a Zm-output stands at its internal 1-state, all inputs and outputs affected by this Zm-output stand at their internal 1-states unless modified by additional dependency notation.

If a Zm-output stands at its internal 0-state, all inputs and outputs affected by this Zm-output stand at their internal 0-states unless modified by additional dependency notation.

m shall be replaced by the relevant identifying number.

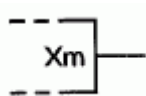
The note with table I de A00276 applies.

**S01556**

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Xm-input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Released on:</b>          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-17A-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Keywords:</b>             | binary logic elements, dependency notation, TRANSMISSION dependency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Applied in:</b>           | S01604, S01605, S01776, S01805, S01606                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Application notes:</b>    | A00269, A00276, A00281, A00288, A00289                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Shape class:</b>          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Function class:</b>       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Application class:</b>    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Remarks:</b>              | <p>If an Xm-input stands at its internal 1-state, a transmission path is established to which all ports affected by this input are connected. However, if a port is affected by two or more Xm-inputs and/or Xm-outputs whose identifying numbers are separated by commas, then the port is connected to the transmission paths established by these Xm-inputs only if all these affecting inputs stand at their internal 1-states. All ports connected to a transmission path stand at the same analogue signal level or internal logic state unless modified by additional notation, for example dependency notation.</p> <p>If an Xm-input stands at its internal 0-state, no transmission paths are established by this input or output.</p> <p>If an Xm-input is modified by additional notation to have no effect on the function of the element, there is no transmission path established by that input or output.</p> <p>m shall be replaced by the relevant identifying number.</p> <p>The note with table I of A00276 applies.</p> |



## S01557



Name: Xm-output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-17A-02

Keywords: binary logic elements, dependency notation, TRANSMISSION dependency

Applied in: S01777, S01635

Application notes: A00269, A00276, A00281, A00288, A00289

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

**Remarks:** If an Xm-output stands at its internal 1-state, a transmission path is established to which all ports affected by this output are connected. However, if a port is affected by two or more Xm-inputs and/or Xm-outputs whose identifying numbers are separated by commas, then the port is connected to the transmission paths established by these Xm-outputs only if all these affecting outputs stand at their internal 1-states. All ports connected to a transmission path stand at the same analogue signal level or internal logic state unless modified by additional notation, for example dependency notation.

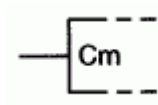
If an Xm-output stands at its internal 0-state, no transmission paths are established by this input or output.

If an Xm-output is modified by additional notation to have no effect on the function of the element, there is no transmission path established by that input or output.

m shall be replaced by the relevant identifying number.

The note with table I of A00276 applies.

## S01558



Name: Cm-input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-18-01

Keywords: binary logic elements, CONTROL dependency, dependency notation

Applied in: S01716, S01701, S01702, S01660, S01663, S01662, S01676, S01677, S01690, S01688, S01666, S01722, S01806, S01727, S01689, S01661, S01693, S01668, S01695, S01669, S01713, S01718, S01692, S01717, S01694, S01654, S01792, S01698, S01721, S01667

Application notes: A00269, A00276, A00282, A00286

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

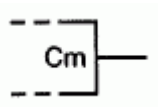
Remarks: If a Cm-input stands at its internal 1-state, the inputs affected by this Cm-input have their normally defined effect on the function of the element.

If a Cm-input stands at its internal 0-state, the inputs affected by this Cm-input have no effect on the function of the element.

m shall be replaced by the relevant identifying number.

The note with table I of A00276 applies.

## S01559



Name: Cm-output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-18-02

Keywords: binary logic elements, CONTROL dependency, dependency notation

Applied in: S01676, S01677, S01737

Application notes: A00269, A00276, A00282, A00286, A00288, A00289

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

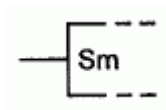
Remarks: If a Cm-output stands at its internal 1-state, the inputs affected by this Cm-output have their normally defined effect on the function of the element.

If a Cm-output stands at its internal 0-state, the inputs affected by this Cm-output have no effect on the function of the element.

m shall be replaced by the relevant identifying number.

The note with table I of A00276 applies.

## S01560



Name: Sm-input

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-19-01

Keywords: binary logic elements, dependency notation, SET dependency

Applied in: S01806

Application notes: A00269, A00276, A00283, A00288, A00289

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

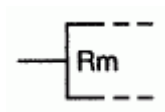
Remarks: If an Sm-input stands at its internal 1-state, the outputs affected by this Sm-input will take on the internal logic state they normally would take on for the combination  $S=1, R=0$ , regardless of the state of any R-input.

If an Sm-input stands at its internal 0-state, it has no effect.

m shall be replaced by the relevant identifying number.

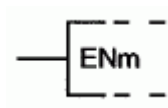
The note with table I of A00276 applies.

## S01561



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Rm-input                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-19-02                                                                                                                                                                                                                                                                                                                                                                                             |
| Keywords:             | binary logic elements, dependency notation, RESET dependency                                                                                                                                                                                                                                                                                                                                                               |
| Applied in:           | S01701, S01690, S01803, S01691, S01695, S01692, S01694, S01698, S01696, S01670                                                                                                                                                                                                                                                                                                                                             |
| Application notes:    | A00269, A00276, A00283, A00288, A00289                                                                                                                                                                                                                                                                                                                                                                                     |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                        |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                          |
| Remarks:              | <p>If an Rm-input stands at its internal 1-state, the outputs affected by this Rm-input will take on the internal logic state they normally would take on for the combination S=0, R=1, regardless of the state of any S-input.</p> <p>If an Rm-input stands at its internal 0-state, it has no effect.</p> <p>m shall be replaced by the relevant identifying number.</p> <p>The note with table I of A00276 applies.</p> |

## S01562



|                       |                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | ENm-input                                                                                                                                                                                                                                                                                                                                     |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                      |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                    |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-20-01                                                                                                                                                                                                                                                                                                                |
| Keywords:             | binary logic elements, dependency notation, ENABLE dependency                                                                                                                                                                                                                                                                                 |
| Alternative forms:    | S01503; S01562                                                                                                                                                                                                                                                                                                                                |
| Applied in:           | S01702, S01603, S01615, S01596, S01746, S01620, S01617, S01805, S01721, S01670, S01599, S01606, S01793                                                                                                                                                                                                                                        |
| Applies:              | S01503; S01563; S01620                                                                                                                                                                                                                                                                                                                        |
| Application notes:    | A00269, A00276, A00284, A00286, A00288, A00289                                                                                                                                                                                                                                                                                                |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                    |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                           |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                             |
| Remarks:              | <p>The effect of this input on its affected outputs is the same as that of an EN-input (see symbol S01503).</p> <p>The effect of this input on its affected inputs is the same as that of an Mm-input (see symbol S01563).</p> <p>m shall be replaced by the relevant identifying number.</p> <p>The note with table I of A00276 applies.</p> |

**S01563**

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Mm-input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Released on:</b>          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-21-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Keywords:</b>             | binary logic elements, dependency notation, MODE dependency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Applied in:</b>           | S01702, S01562, S01634, S01690, S01689, S01705, S01695, S01713, S01698                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Application notes:</b>    | A00269, A00276, A00285, A00286, A00288, A00289                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Shape class:</b>          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Function class:</b>       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Application class:</b>    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Remarks:</b>              | <p>If an Mm-input stands at its internal 1-state, any input affected by this Mm-input has its normally defined effect on the function of the element, and any output affected by this Mm-input stands at its normally defined internal logic state or analogue signal value. That is, the inputs and outputs are enabled.</p> <p>If an Mm-input stands at its internal 0-state, its effect on inputs and outputs is as follows:</p> <ul style="list-style-type: none"> <li>- any input affected by this Mm-input has no effect on the function of the element;</li> <li>- if an affected input has several sets of labels separated by solidi, any set containing the identifying number of the Mm-input has no effect and shall be ignored. This represents disabling some of the functions of a multifunction input;</li> <li>- at each output affected by this Mm-input, any set of labels containing the identifying number of that Mm-input has no effect and shall be ignored;</li> <li>- if an output has several sets of labels separated by solidi (see A00289), any set containing the identifying number of this Mm-input shall be ignored. This represents disabling or selecting some of the functions of a multifunction output or modifying some of the</li> </ul> |

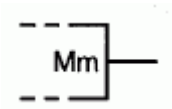
characteristics or dependent relationships of the output.

m shall be replaced by the relevant identifying number.

The note with table I of A00276 applies.



## S01564



Name: Mm-output

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-21-02

Keywords: binary logic elements, dependency notation, MODE dependency

Application notes: A00269, A00276, A00285, A00286, A00288, A00289

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

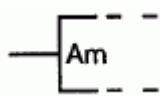
Remarks: If an Mm-output stands at its internal 1-state, any input affected by this Mm-output has its normally defined effect on the function of the element, and any output affected by this Mm-output stands at its normally defined internal logic state or analogue signal value. That is, the inputs and outputs are enabled.

If an Mm-output stands at its internal 0-state, its effect on inputs and outputs is as follows:

- any input affected by this Mm-output has no effect on the function of the element;
- if an affected input has several sets of labels separated by solidi, any set containing the identifying number of the Mm-output has no effect and shall be ignored. This represents disabling some of the functions of a multifunction input;
- at each output affected by this Mm-output, any set of labels containing the identifying number of that Mm-output has no effect and shall be ignored;
- if an output has several sets of labels separated by solidi (see A00289), any set containing the identifying number of this Mm-output shall be ignored. This represents disabling or selecting some of the functions of a multifunction output or modifying some of the characteristics or dependent relationships of the output.

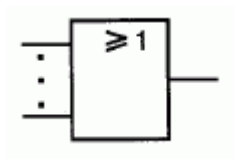
m shall be replaced by the relevant identifying number.

The note with table I of A00276 applies.

**S01565**

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Am-input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-23-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Keywords:             | ADDRESS dependency, binary logic elements, dependency notation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Applied in:           | S01716, S01722, S01711, S01713, S01718, S01717, S01730, S01712, S01714, S01715                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Application notes:    | A00269, A00276, A00287, A00288, A00289                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Remarks:              | <p>If this input stands at its internal 1-state, the inputs affected by this input (that is the inputs of the section of the array selected by this input) have their normally defined effect on the elements of the selected section and the internal logic states of the outputs affected by this input (that is the outputs of the selected section) have their normal effect on the OR functions (or the indicated functions) determining the internal logic states of the outputs of the array.</p> <p>If the input stands at its internal 0-state, the inputs affected by this input (that is the inputs of the section selected by this input) have no effect on the elements of this section and the outputs affected by this input (that is the outputs of the section selected by this input) have no effect on the outputs of the array.</p> <p>m shall be replaced by the relevant identifying number.</p> <p>The note with table I of A00276 applies.</p> |

## S01566



**Name:** OR element, general symbol

**Status level:** Standard

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-27-01

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01581, S01583, S01586, S01587, S01584, S01617, S01667, S01670, S01580, S01632, S01618, S01644

**Applies:** S01463

**Application notes:** A00269, A00290, A00291, A00348

**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

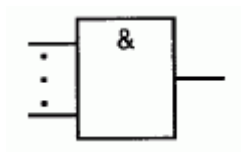
**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

**Remarks:** The output stands at its 1-state if and only if one or more of the inputs stand at their 1-states.

">" is equivalent to UCS 2265 of ISO/IEC 10646 "GREATER-THAN OR EQUAL TO".

"≥1" may be replaced by "1" if no ambiguity is likely.

## S01567



**Name:** AND element, general symbol

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-27-02

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01581, S01704, S01619, S01579, S01583, S01615, S01634, S01648, S01652, S01649, S01676, S01688, S01666, S01722, S01789, S01711, S01693, S01718, S01683, S01692, S01582, S01584, S01624, S01609, S01620, S01721, S01670, S01700, S01618, S01633, S01585, S01595, S01602, S01644

**Applies:** S01463

**Application notes:** A00269, A00290, A00291, A00348

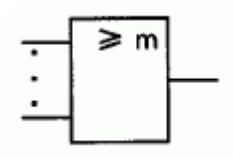
**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

**Remarks:** The output stands at its 1-state if and only if all inputs stand at their 1-states.

## S01568



**Name:** Logic threshold element, general symbol

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-27-03

**Keywords:** binary logic elements, combinative elements

**Applies:** S01463

**Application notes:** A00269, A00290

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

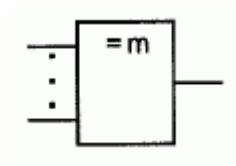
**Remarks:** The output stands at its 1-state if and only if the number of inputs which stand at their 1-states is equal to or greater than the number in the qualifying symbol, represented here by  $m$ .

$m$  shall always be smaller than the number of inputs.

An element with  $m=1$  is generally known as an OR element (see symbol S01566).

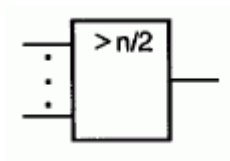
" $\geq$ " is equivalent to UCS 2265 of ISO/IEC 10646 "GREATER-THAN OR EQUAL TO".

## S01569



|                       |                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | m and only m element, general symbol                                                                                                                                                                                                                                                                                                                            |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                        |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-27-04                                                                                                                                                                                                                                                                                                                                  |
| Keywords:             | binary logic elements, combinative elements                                                                                                                                                                                                                                                                                                                     |
| Applies:              | S01463                                                                                                                                                                                                                                                                                                                                                          |
| Application notes:    | A00269, A00290, A00291                                                                                                                                                                                                                                                                                                                                          |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                                                                                                                                          |
| Function class:       | K Processing signals or information                                                                                                                                                                                                                                                                                                                             |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                                                          |
| Remarks:              | <p>The output stands at its 1-state if and only if the number of inputs which stand at their 1-states is equal to the number in the qualifying symbol, represented here by m.</p> <p>A 2-input element with <math>m=1</math> is generally known as an exclusive-OR element (see symbol S01574).</p> <p>m shall always be smaller than the number of inputs.</p> |

## S01570



**Name:** MAJORITY element, general symbol

**Status level:** Standard

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-27-05

**Keywords:** binary logic elements, combinative elements

**Applies:** S01463

**Application notes:** A00269, A00290, A00291

**Shape class:** Characters, Rectangles

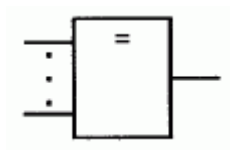
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

**Remarks:** The output stands at its 1-state if and only if the majority of the inputs stand at their 1-states.

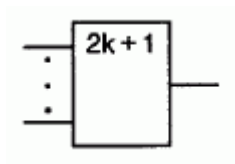


## S01571



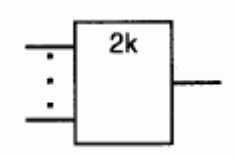
|                       |                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------|
| Name:                 | LOGIC IDENTITY element, general symbol                                                    |
| Status level:         | <b>Standard</b>                                                                           |
| Released on:          | 2004-09-01                                                                                |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-27-06                                                            |
| Keywords:             | binary logic elements, combinative elements                                               |
| Applied in:           | S01631, S01592                                                                            |
| Applies:              | S01463                                                                                    |
| Application notes:    | A00269, A00290, A00291                                                                    |
| Shape class:          | Characters, Rectangles                                                                    |
| Function class:       | K Processing signals or information                                                       |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                    |
| Remarks:              | The output stands at its 1-state if and only if all inputs stand at the same logic state. |

## S01572



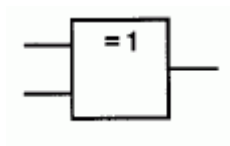
|                       |                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------|
| Name:                 | ODD element, general symbol                                                                                                |
| Status level:         | Standard                                                                                                                   |
| Released on:          | 2004-09-01                                                                                                                 |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-27-07                                                                                             |
| Alternative names:    | ODD-parity element, general symbol; Addition modulo 2 element, general symbol                                              |
| Keywords:             | binary logic elements, combinative elements                                                                                |
| Applied in:           | S01589, S01591                                                                                                             |
| Applies:              | S01463                                                                                                                     |
| Application notes:    | A00269, A00290, A00291                                                                                                     |
| Shape class:          | Characters, Rectangles                                                                                                     |
| Function class:       | K Processing signals or information                                                                                        |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                     |
| Remarks:              | The output stands at its 1-state if and only if the number of inputs which stand at their 1-states is odd (1, 3, 5, etc.). |

## S01573



|                       |                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Name:                 | EVEN element, general symbol                                                                                                |
| Status level:         | Standard                                                                                                                    |
| Released on:          | 2004-09-01                                                                                                                  |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-27-08                                                                                              |
| Alternative names:    | EVEN-parity element, general symbol                                                                                         |
| Keywords:             | binary logic elements, combinative elements                                                                                 |
| Applied in:           | S01590, S01592                                                                                                              |
| Applies:              | S01463                                                                                                                      |
| Application notes:    | A00269, A00290, A00291                                                                                                      |
| Shape class:          | Characters, Rectangles                                                                                                      |
| Function class:       | K Processing signals or information                                                                                         |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                      |
| Remarks:              | The output stands at its 1-state if and only if the number of inputs which stand at their 1-states is even (0, 2, 4, etc.). |

## S01574



**Name:** Exclusive-OR element

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-27-09

**Keywords:** binary logic elements, combinative elements

**Applied in:** S01587, S01588, S01632

**Application notes:** A00269, A00290, A00291, A00348

**Shape class:** Characters, Rectangles

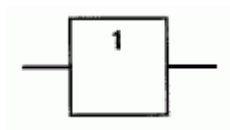
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

**Remarks:** The output stands at its 1-state if one and only one of the two inputs stands at its 1-state.

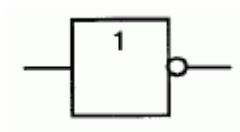
In the case of more than two inputs, either symbol S01569 with  $m=1$  or symbol S01572 should be used depending on the function involved.

## S01575



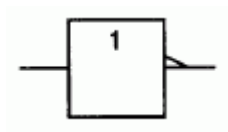
|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Buffer without specially amplified output                                        |
| Status level:         | Standard                                                                         |
| Released on:          | 2004-09-01                                                                       |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-27-10                                                   |
| Keywords:             | binary logic elements, combinative elements                                      |
| Applied in:           | S01593, S01596, S01607                                                           |
| Application notes:    | A00269, A00290, A00291, A00348                                                   |
| Shape class:          | Characters, Rectangles                                                           |
| Function class:       | K Processing signals or information                                              |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                           |
| Remarks:              | The output stands at its 1-state if and only if the input stands at its 1-state. |

## S01576

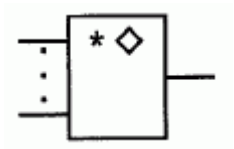


|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Negator                                                                                            |
| Status level:         | Standard                                                                                           |
| Released on:          | 2004-09-01                                                                                         |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-27-11                                                                     |
| Alternative names:    | Inverter (in the case of device representation using the logic-negation symbol)                    |
| Keywords:             | binary logic elements, combinative elements                                                        |
| Application notes:    | A00269, A00290, A00291, A00348                                                                     |
| Shape class:          | Characters, Rectangles                                                                             |
| Function class:       | K Processing signals or information                                                                |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                             |
| Remarks:              | The output stands at its external 0-state if and only if the input stands at its external 1-state. |

## S01577



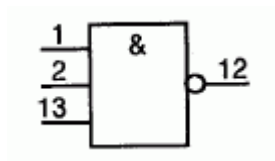
|                              |                                                                                                |
|------------------------------|------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Inverter (in the case of device representation using the qualifying symbol for logic polarity) |
| <b>Status level:</b>         | <b>Standard</b>                                                                                |
| <b>Released on:</b>          | 2004-09-01                                                                                     |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-27-12                                                                 |
| <b>Keywords:</b>             | binary logic elements, combinative elements                                                    |
| <b>Applied in:</b>           | S01601                                                                                         |
| <b>Application notes:</b>    | A00269, A00290, A00291, A00348                                                                 |
| <b>Shape class:</b>          | Characters, Rectangles                                                                         |
| <b>Function class:</b>       | K Processing signals or information                                                            |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams, Overview diagrams                                         |
| <b>Remarks:</b>              | The output stands at its L-level if and only if the input stands at its H-level.               |

**S01578**

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Distributed connection, general symbol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Status level:</b>         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Released on:</b>          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-27-13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Alternative names:</b>    | Dot function, general symbol; Wired function, general symbol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Keywords:</b>             | binary logic elements, combinative elements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Applies:</b>              | S01463; S01494; S01495; S01496; S01497                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Application notes:</b>    | A00269, A00290, A00291                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Shape class:</b>          | Characters, Rectangles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Function class:</b>       | K Processing signals or information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Remarks:</b>              | <p>A distributed connection is a connection of specific outputs of a number of elements which are joined together to achieve either the AND- or the OR-function.</p> <p>The asterisk shall be replaced by the qualifying symbol for the function, that is, &amp; or <math>\geq 1</math>.</p> <p>As an alternative to the use of the general symbol, a distributed connection may be shown by one of the symbols for a junction of conductors (S00019 and S00020). At each point where lines are joined together the qualifying symbol for the function, that is, &amp; or <math>\geq 1</math>, shall be shown if confusion is otherwise likely.</p> |

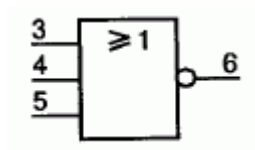


## S01579



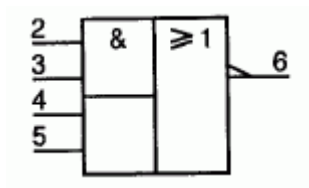
|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | AND with negated output (NAND)                         |
| Status level:         | Standard                                               |
| Released on:          | 2004-09-01                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-28-01                         |
| Keywords:             | binary logic circuits, combinative circuits            |
| Applies:              | S01467; S01567                                         |
| Application notes:    | A00269, A00348                                         |
| Shape class:          | Characters, Rectangles                                 |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |
| Remarks:              | (e.g. part of SN 7410)                                 |

## S01580



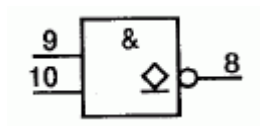
|                       |                                             |
|-----------------------|---------------------------------------------|
| Name:                 | OR with negated output (NOR)                |
| Status level:         | Standard                                    |
| Released on:          | 2004-09-01                                  |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-28-02              |
| Keywords:             | binary logic circuits, combinative circuits |
| Applies:              | S01467; S01566                              |
| Application notes:    | A00269                                      |
| Shape class:          | Characters, Rectangles                      |
| Function class:       | K Processing signals or information         |
| Application class:    | Circuit diagrams, Function diagrams         |
| Remarks:              | (e.g. part of SN 7427)                      |

## S01581



|                       |                                             |
|-----------------------|---------------------------------------------|
| Name:                 | AND-OR-Invert                               |
| Status level:         | Standard                                    |
| Released on:          | 2004-09-01                                  |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-28-03              |
| Keywords:             | binary logic circuits, combinative circuits |
| Applies:              | S01469; S01476; S01566; S01567              |
| Application notes:    | A00269                                      |
| Shape class:          | Characters, Rectangles                      |
| Function class:       | K Processing signals or information         |
| Application class:    | Circuit diagrams, Function diagrams         |
| Remarks:              | (e.g. part of SN 74L51)                     |

## S01582



**Name:** NAND with open-circuit output of the L-type

**Status level:** Standard

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-28-04

**Keywords:** binary logic circuits, combinative circuits

**Applies:** S01467; S01495; S01567

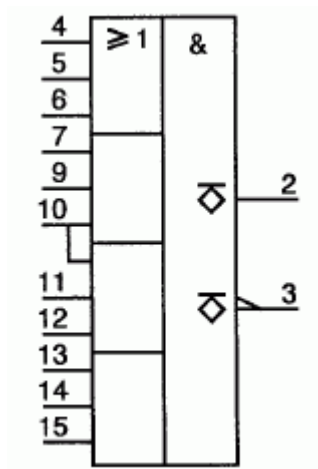
**Application notes:** A00269, A00348

**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** (e.g. part of SN 7403)

**S01583**

**Name:** OR-AND with complementary open-circuit outputs of the H-type

**Status level:** Standard

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-28-05

**Keywords:** binary logic circuits, combinative circuits

**Applies:** S01469; S01476; S01494; S01566; S01567

**Application notes:** A00269

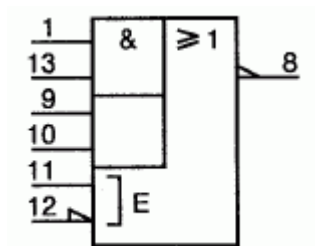
**Shape class:** Characters, Lines , Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** (e.g. MC 10121)

## S01584



Name: AND-OR-Invert, expandable

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-28-06

Keywords: binary logic circuits, combinative circuits

Applies: S01468; S01469; S01476; S01540; S01566; S01567

Application notes: A00269

Shape class: Characters, Lines , Rectangles

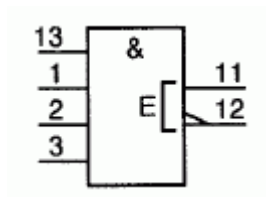
Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

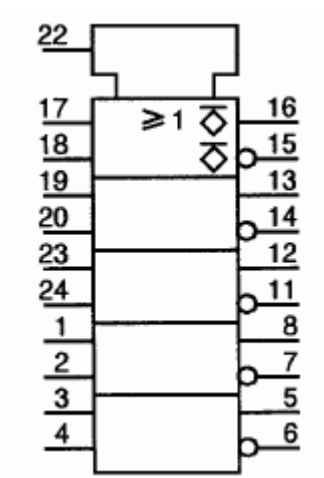
Remarks: (e.g. part of SN 7450)

The line grouping symbol (S01540) indicates that two wires are needed to implement the single extension connection.

## S01585

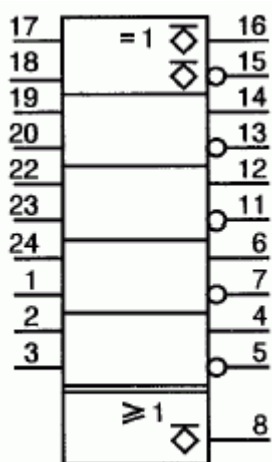


|                       |                                             |
|-----------------------|---------------------------------------------|
| Name:                 | Expander                                    |
| Status level:         | Standard                                    |
| Released on:          | 2004-09-01                                  |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-28-07              |
| Keywords:             | binary logic circuits, combinative circuits |
| Applies:              | S01469; S01541; S01567                      |
| Application notes:    | A00269                                      |
| Shape class:          | Characters, Lines , Rectangles              |
| Function class:       | K Processing signals or information         |
| Application class:    | Circuit diagrams, Function diagrams         |
| Remarks:              | (e.g. part of SN 7460)                      |

**S01586**

|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| Name:                 | OR, with one common input and with complementary outputs, quintuple |
| Status level:         | Standard                                                            |
| Released on:          | 2004-09-01                                                          |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-28-08                                      |
| Keywords:             | binary logic circuits, combinative circuits                         |
| Applies:              | S01464; S01467; S01494; S01566                                      |
| Application notes:    | A00269                                                              |
| Shape class:          | Characters, Rectangles                                              |
| Function class:       | K Processing signals or information                                 |
| Application class:    | Circuit diagrams, Function diagrams                                 |
| Remarks:              | (e.g. F 100102)                                                     |



**S01587**

**Name:** Exclusive-OR, with complementary outputs and one common output, quintuple

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-28-09

**Keywords:** binary logic circuits, combinative circuits

**Applies:** S01465; S01494; S01566; S01574

**Application notes:** A00269, A00271

**Shape class:** Characters, Rectangles

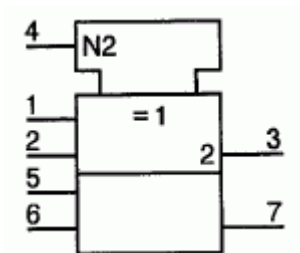
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** (e.g. F 100107)

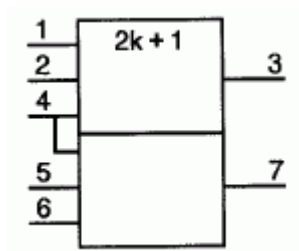
One output of each of the five elements is internally connected to an input of the common output element. The internal logic state of this input corresponds with that of the output to which it is connected and does not depend on the choice of that output because both outputs of each element have identical internal logic states (see application note A00271).

## S01588



|                       |                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------|
| Name:                 | Exclusive-OR/NOR, dual                                                                |
| Status level:         | Standard                                                                              |
| Released on:          | 2004-09-01                                                                            |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-28-10                                                        |
| Keywords:             | binary logic circuits, combinative circuits                                           |
| Alternative forms:    | S01589                                                                                |
| Applies:              | S01464; S01574                                                                        |
| Application notes:    | A00269                                                                                |
| Shape class:          | Characters, Rectangles                                                                |
| Function class:       | K Processing signals or information                                                   |
| Application class:    | Circuit diagrams, Function diagrams                                                   |
| Remarks:              | (e.g. part of SN 74S135)<br><br>Symbol S01589 depicts the same device in another way. |

## S01589



**Name:** ODD element, with one common input, dual

**Status level:** Standard

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-28-11

**Keywords:** binary logic circuits, combinative circuits

**Alternative forms:** S01588

**Applies:** S01572

**Application notes:** A00269

**Shape class:** Characters, Rectangles

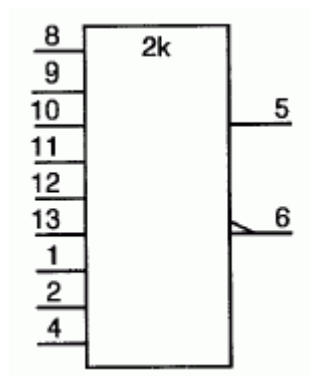
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** (e.g. part of SN 74S135)

Symbol S01588 depicts the same device in another way.

## S01590



**Name:** Parity generator/checker with complementary outputs

**Status level:** Standard

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-28-12

**Keywords:** binary logic circuits, combinative circuits

**Applies:** S01469; S01573

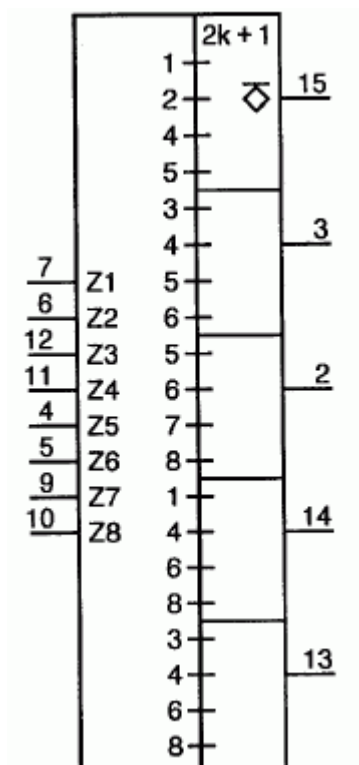
**Application notes:** A00269

**Shape class:** Characters, Rectangles

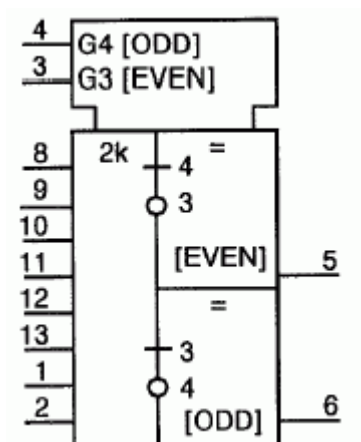
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** (e.g. SN 74280)

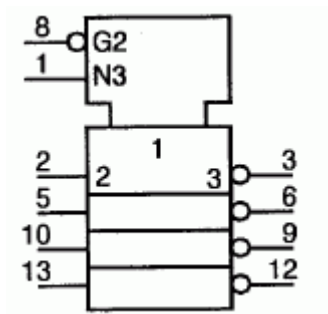
**S01591**

|                       |                                             |
|-----------------------|---------------------------------------------|
| Name:                 | Error detection/correction element          |
| Status level:         | Standard                                    |
| Released on:          | 2004-09-01                                  |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-28-13              |
| Keywords:             | binary logic circuits, combinative circuits |
| Applies:              | S01475; S01494; S01554; S01572              |
| Application notes:    | A00269                                      |
| Shape class:          | Characters, Lines , Rectangles              |
| Function class:       | K Processing signals or information         |
| Application class:    | Circuit diagrams, Function diagrams         |
| Remarks:              | (e.g. MC 10163)                             |

**S01592**

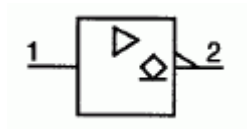
|                              |                                             |
|------------------------------|---------------------------------------------|
| <b>Name:</b>                 | Parity generator/checker, odd/even          |
| <b>Status level:</b>         | <b>Standard</b>                             |
| <b>Released on:</b>          | 2004-09-01                                  |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-28-14              |
| <b>Keywords:</b>             | binary logic circuits, combinative circuits |
| <b>Applies:</b>              | S01464; S01475; S01571; S01573; S01809      |
| <b>Application notes:</b>    | A00269                                      |
| <b>Shape class:</b>          | Characters, Lines , Rectangles              |
| <b>Function class:</b>       | K Processing signals or information         |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams         |
| <b>Remarks:</b>              | (e.g. SN 74180)                             |

## S01593



|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | True/complement, zero/one element, quadruple   |
| Status level:         | Standard                                       |
| Released on:          | 2004-09-01                                     |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-28-15                 |
| Keywords:             | binary logic circuits, combinative circuits    |
| Applies:              | S01464; S01466; S01467; S01552; S01575; S01810 |
| Application notes:    | A00269                                         |
| Shape class:          | Characters, Rectangles                         |
| Function class:       | K Processing signals or information            |
| Application class:    | Circuit diagrams, Function diagrams            |
| Remarks:              | (e.g. SN 74H87)                                |

## S01594



**Name:** Buffer/driver with inverted open-circuit output of the L-type

**Status level:** Standard

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-29-01

**Keywords:** amplifiers, binary logic circuits, buffers, drivers

**Applies:** S01457; S01469; S01495

**Application notes:** A00269, A00293

**Shape class:** Equilateral triangles, Rectangles

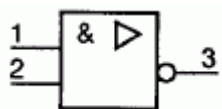
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

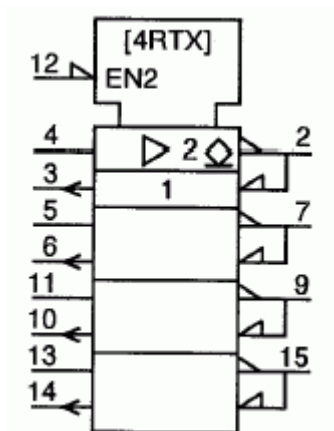
**Remarks:** (e.g. part of SN 7406)



## S01595



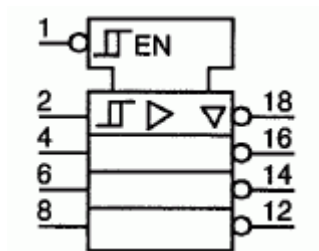
|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| Name:                 | NAND buffer                                         |
| Status level:         | Standard                                            |
| Released on:          | 2004-09-01                                          |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-29-02                      |
| Keywords:             | amplifiers, binary logic circuits, buffers, drivers |
| Applies:              | S01457; S01467; S01567                              |
| Application notes:    | A00269, A00293                                      |
| Shape class:          | Characters, Equilateral triangles, Rectangles       |
| Function class:       | K Processing signals or information                 |
| Application class:    | Circuit diagrams, Function diagrams                 |
| Remarks:              | (e.g. part of SN 7437)                              |

**S01596**

|                              |                                                                |
|------------------------------|----------------------------------------------------------------|
| <b>Name:</b>                 | Bus transceiver, quadruple                                     |
| <b>Status level:</b>         | Standard                                                       |
| <b>Released on:</b>          | 2004-09-01                                                     |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-29-03                                 |
| <b>Keywords:</b>             | binary logic circuits, drivers, receivers, transceivers        |
| <b>Applies:</b>              | S00099; S01457; S01468; S01469; S01470; S01495; S01562; S01575 |
| <b>Application notes:</b>    | A00269, A00271, A00293                                         |
| <b>Shape class:</b>          | Arrows, Characters, Equilateral triangles, Rectangles          |
| <b>Function class:</b>       | K Processing signals or information                            |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                            |
| <b>Remarks:</b>              | (e.g. Am 26S10)                                                |

The general qualifying symbols and those associated with the inputs and outputs of the two outlines forming the first element of the array have been omitted from the remaining elements of the array in accordance with application note A00271.

## S01597



**Name:** Bus driver with bi-threshold inputs and 3-state outputs, quad

**Status level:** Standard

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-29-04

**Keywords:** binary logic circuits, drivers

**Applies:** S01457; S01466; S01467; S01492; S01498; S01503

**Application notes:** A00269, A00293

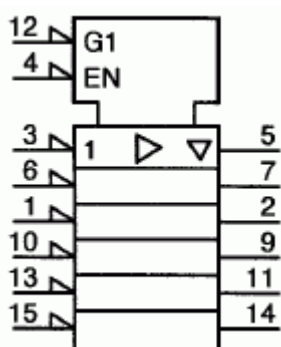
**Shape class:** Characters, Equilateral triangles, Rectangles

**Function class:** K Processing signals or information

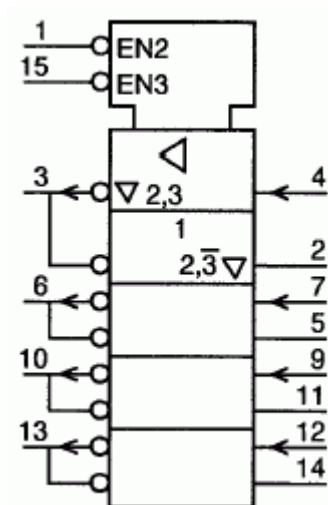
**Application class:** Circuit diagrams, Function diagrams

**Remarks:** (e.g. part of SN 74S240)

## S01598



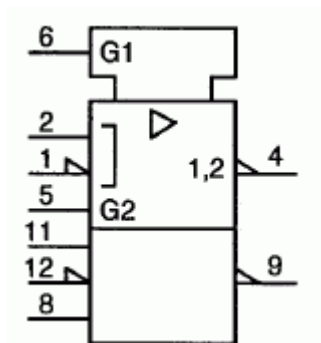
|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| Name:                 | Buffer, inverting, with 3-state outputs, hex                         |
| Status level:         | Standard                                                             |
| Released on:          | 2004-09-01                                                           |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-29-05                                       |
| Keywords:             | binary logic circuits, buffers, inverters                            |
| Applies:              | S01457; S01464; S01468; S01498; S01503; S01810                       |
| Application notes:    | A00269                                                               |
| Shape class:          | Characters, Equilateral triangles, Rectangles, Right-angled triangle |
| Function class:       | K Processing signals or information                                  |
| Application class:    | Circuit diagrams, Function diagrams                                  |
| Remarks:              | (e.g. CD 4502B)                                                      |

**S01599**

|                              |                                                       |
|------------------------------|-------------------------------------------------------|
| <b>Name:</b>                 | Bus driver, bidirectional, quadruple                  |
| <b>Status level:</b>         | <b>Standard</b>                                       |
| <b>Released on:</b>          | 2004-09-01                                            |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-29-06                        |
| <b>Keywords:</b>             | binary logic circuits, drivers                        |
| <b>Applies:</b>              | S00099; S01457; S01466; S01467; S01498; S01562        |
| <b>Application notes:</b>    | A00269                                                |
| <b>Shape class:</b>          | Arrows, Characters, Equilateral triangles, Rectangles |
| <b>Function class:</b>       | K Processing signals or information                   |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                   |
| <b>Remarks:</b>              | (e.g. 8226)                                           |

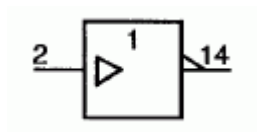
Terminal 1 could be labelled as an EN-input (symbol S01503) without dependency notation, that is, the identifying number 2 may be omitted at three places inside the outline.

## S01600

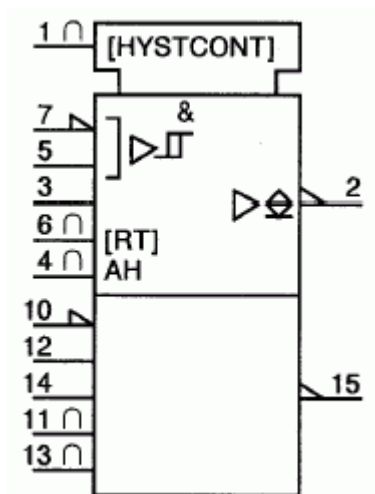


|                       |                                               |
|-----------------------|-----------------------------------------------|
| Name:                 | Line receiver, dual                           |
| Status level:         | Standard                                      |
| Released on:          | 2004-09-01                                    |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-29-07                |
| Keywords:             | binary logic circuits, receivers              |
| Applies:              | S01457; S01468; S01469; S01540; S01810        |
| Application notes:    | A00269                                        |
| Shape class:          | Characters, Equilateral triangles, Rectangles |
| Function class:       | K Processing signals or information           |
| Application class:    | Circuit diagrams, Function diagrams           |
| Remarks:              | (e.g. SN 75107)                               |

## S01601

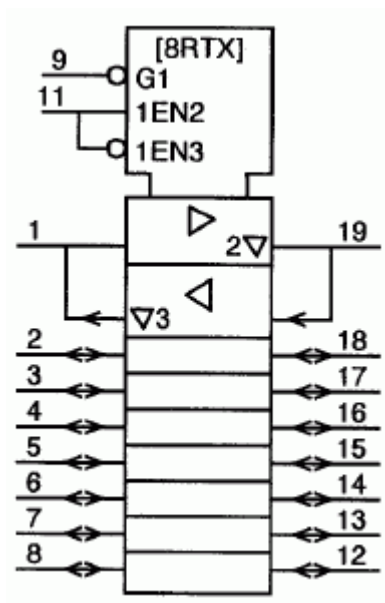


|                       |                                               |
|-----------------------|-----------------------------------------------|
| Name:                 | Line receiver                                 |
| Status level:         | Standard                                      |
| Released on:          | 2004-09-01                                    |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-29-07A               |
| Keywords:             | binary logic circuits, receivers              |
| Applies:              | S01457; S01577                                |
| Application notes:    | A00269                                        |
| Shape class:          | Characters, Equilateral triangles, Rectangles |
| Function class:       | K Processing signals or information           |
| Application class:    | Circuit diagrams, Function diagrams           |
| Remarks:              | (e.g. part of SN 75127)                       |

**S01602**

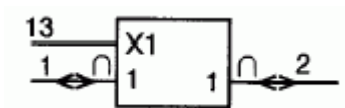
|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Line receiver, dual                                                    |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-01                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-29-07B                                        |
| Keywords:             | binary logic circuits, receivers                                       |
| Applies:              | S01457; S01464; S01468; S01469; S01492; S01497; S01567; S01748; S01764 |
| Application notes:    | A00269                                                                 |
| Shape class:          | Characters, Equilateral triangles, Rectangles, Right-angled triangle   |
| Function class:       | K Processing signals or information                                    |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | (e.g. SN 55152)                                                        |



**S01603**

|                              |                                                                  |
|------------------------------|------------------------------------------------------------------|
| <b>Name:</b>                 | Bus driver, bidirectional, 8-bit parallel                        |
| <b>Status level:</b>         | <b>Standard</b>                                                  |
| <b>Released on:</b>          | 2004-09-01                                                       |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-29-08                                   |
| <b>Keywords:</b>             | binary logic circuits, drivers                                   |
| <b>Applies:</b>              | S00099; S00101; S01457; S01466; S01498; S01547; S01562; S01810   |
| <b>Application notes:</b>    | A00269                                                           |
| <b>Shape class:</b>          | Arrows, Characters, Equilateral triangles, Right-angled triangle |
| <b>Function class:</b>       | K Processing signals or information                              |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                              |
| <b>Remarks:</b>              | (e.g. SN8286)                                                    |

## S01604



Name: Bidirectional switch

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-29-09

Keywords: binary logic circuits, static switches, switches

Applies: S01547; S01556; S01748; S01749

Application notes: A00269

Shape class: Arrows, Characters, Rectangles

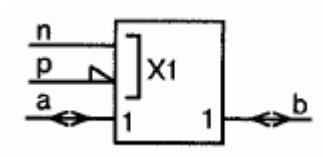
Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

Remarks: (e.g. part of CD 4016B)

The arrowheads (S01547) and/or the symbols S01748 and S01749 are optional.

## S01605



Name: CMOS transmission gate

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-29-10

Keywords: binary logic circuits, static switches, switches

Applies: S01468; S01540; S01547; S01556

Application notes: A00269, A00341

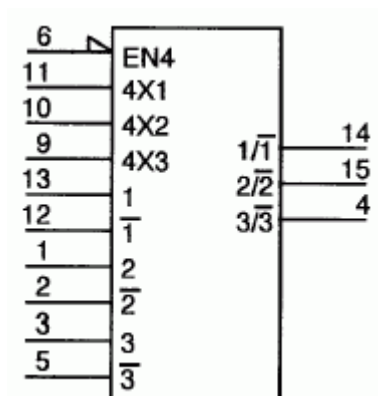
Shape class: Arrows, Characters, Lines , Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

Remarks: The arrowheads (S01547) are optional.

The symbol represents an internal transmission gate used in many integrated circuits such as CD 4013B and is equivalent to the circuit shown A00341.

**S01606**

**Name:** Bidirectional change-over switch with common enable, triple

**Status level:** Standard

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-29-11

**Keywords:** binary logic circuits, switches

**Alternative forms:** S01805

**Applies:** S01468; S01556; S01562

**Application notes:** A00269

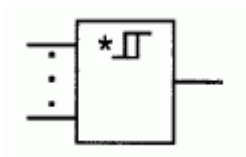
**Shape class:** Characters, Rectangles, Right-angled triangle

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

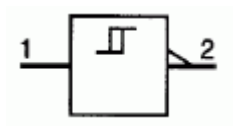
**Remarks:** (e.g. 74HC4053)

Symbol S01805 depicts the same device in another way.

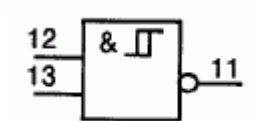
**S01607**

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Element with hysteresis, general symbol                                                                                                                                                                                                                                                                                                                                                                              |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                             |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                           |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-30-01                                                                                                                                                                                                                                                                                                                                                                                       |
| Keywords:             | binary logic elements, combinative elements, hysteresis                                                                                                                                                                                                                                                                                                                                                              |
| Applies:              | S01463; S01492; S01575                                                                                                                                                                                                                                                                                                                                                                                               |
| Application notes:    | A00269                                                                                                                                                                                                                                                                                                                                                                                                               |
| Shape class:          | Characters, Lines                                                                                                                                                                                                                                                                                                                                                                                                    |
| Function class:       | K Processing signals or information                                                                                                                                                                                                                                                                                                                                                                                  |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                                                                                                               |
| Remarks:              | When used within an element as a general qualifying symbol, the hysteresis symbol designates an element whose overall input/output characteristics include hysteresis as described by symbol S01492. The asterisk must be replaced by a general qualifying symbol designating the logic function of the element unless that qualifying symbol is the numeral 1 (of symbol S01575) in which case it shall be omitted. |

## S01608



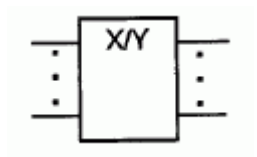
|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| Name:                 | Bi-threshold detector with inverted output              |
| Status level:         | Standard                                                |
| Released on:          | 2004-09-01                                              |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-31-01                          |
| Alternative names:    | Schmitt-trigger inverter; Inverter with hysteresis      |
| Keywords:             | binary logic circuits, detectors, hysteresis, inverters |
| Applies:              | S01469; S01492                                          |
| Application notes:    | A00269, A00354                                          |
| Shape class:          | Lines , Rectangles                                      |
| Function class:       | K Processing signals or information                     |
| Application class:    | Circuit diagrams, Function diagrams                     |
| Remarks:              | (e.g. part of SN 74LS14)                                |

**S01609**

|                       |                                             |
|-----------------------|---------------------------------------------|
| Name:                 | NAND Schmitt-trigger                        |
| Status level:         | Standard                                    |
| Released on:          | 2004-09-01                                  |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-31-02              |
| Alternative names:    | NAND with hysteresis                        |
| Keywords:             | binary logic circuits, hysteresis, triggers |
| Applies:              | S01467; S01492; S01567                      |
| Application notes:    | A00269, A00336, A00355                      |
| Shape class:          | Characters, Lines , Rectangles              |
| Function class:       | K Processing signals or information         |
| Application class:    | Circuit diagrams, Function diagrams         |
| Remarks:              | (e.g. part of SN 74132)                     |

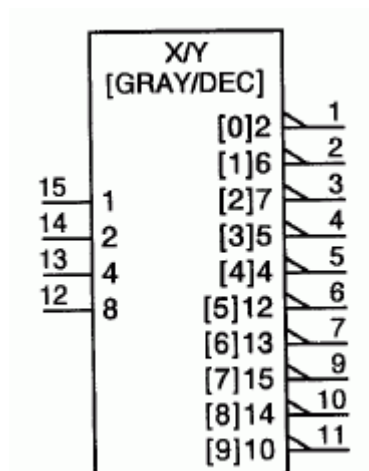
The output takes on its internal 1-state only when the external level applied to each input reaches its V1 threshold (see description of symbol S01492). The output will maintain the internal 1-state until the external level applied to one of its inputs reaches its V2 threshold.

## S01610



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Coder, general symbol                                                                                                                                                                                                                                                                                                                                                                                              |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                           |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                         |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-32-01                                                                                                                                                                                                                                                                                                                                                                                     |
| Alternative names:    | Code converter, general symbol                                                                                                                                                                                                                                                                                                                                                                                     |
| Keywords:             | binary logic elements, code converters, coders                                                                                                                                                                                                                                                                                                                                                                     |
| Applied in:           | S01619, S01621, S01614, S01615, S01613, S01727, S01611, S01620, S01616, S01617, S01612, S01632, S01618, S01622                                                                                                                                                                                                                                                                                                     |
| Applies:              | S01463                                                                                                                                                                                                                                                                                                                                                                                                             |
| Application notes:    | A00269, A00296                                                                                                                                                                                                                                                                                                                                                                                                     |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                                                                                                                                                                                             |
| Function class:       | K Processing signals or information, T Converting but maintaining kind                                                                                                                                                                                                                                                                                                                                             |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                                                                                                             |
| Remarks:              | <p>The relationship between inputs and outputs shall be shown by</p> <ul style="list-style-type: none"><li>- indications in the general qualifying symbol together with labels at the inputs and outputs,</li><li>- and/or by a referenced table.</li></ul> <p>X and Y may be replaced by appropriate indications of the code used to represent the information at the inputs and at the outputs respectively.</p> |



**S01611**

**Name:** Code converter, Gray-to-decimal

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-33-01

**Keywords:** binary logic circuits, code converters

**Applies:** S01469; S01610

**Application notes:** A00269, A00296

**Shape class:** Characters, Rectangles

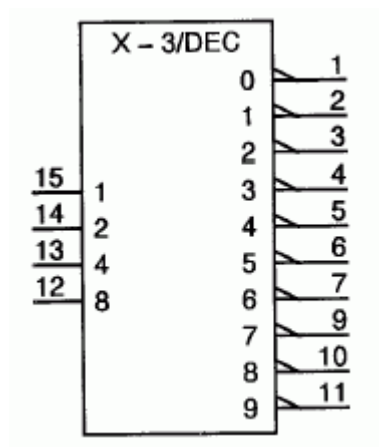
**Function class:** K Processing signals or information, T Converting but maintaining kind

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

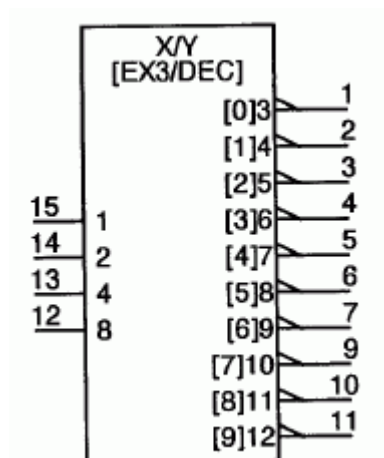
**Remarks:** (e.g. SN 7444)

Because it is not possible to label the inputs with characters referring to the Gray code, the general symbol for a coder is shown here in accordance with the first alternative in each of the second and the third paragraphs of 1.1. of A00296.

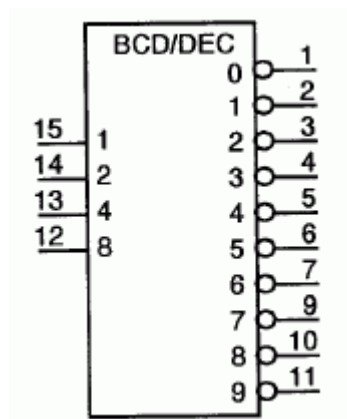
Supplementary information has been added to indicate a particular application of this device to implement a particular Gray code.

**S01612**

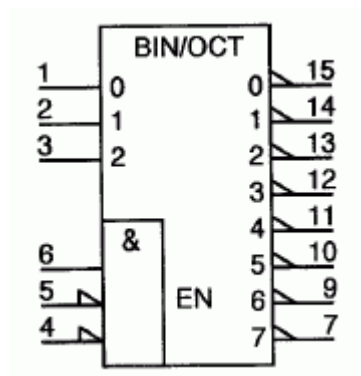
|                              |                                                                        |
|------------------------------|------------------------------------------------------------------------|
| <b>Name:</b>                 | Code converter, excess-3-to-decimal                                    |
| <b>Status level:</b>         | <b>Standard</b>                                                        |
| <b>Released on:</b>          | 2004-09-01                                                             |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-33-01A                                        |
| <b>Keywords:</b>             | binary logic circuits, code converters                                 |
| <b>Form:</b>                 | form 1                                                                 |
| <b>Alternative forms:</b>    | S01613                                                                 |
| <b>Applies:</b>              | S01469; S01610                                                         |
| <b>Application notes:</b>    | A00269                                                                 |
| <b>Shape class:</b>          | Characters, Rectangles                                                 |
| <b>Function class:</b>       | K Processing signals or information, T Converting but maintaining kind |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                    |
| <b>Remarks:</b>              | (e.g. SN 7443)                                                         |

**S01613**

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Code converter, excess-3-to-decimal                                    |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-01                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-33-01B                                        |
| Keywords:             | binary logic circuits, code converters                                 |
| Form:                 | form 2                                                                 |
| Alternative forms:    | S01612                                                                 |
| Applies:              | S01469; S01610                                                         |
| Application notes:    | A00269                                                                 |
| Shape class:          | Characters, Rectangles                                                 |
| Function class:       | K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | (e.g. SN 7443)                                                         |

**S01614**

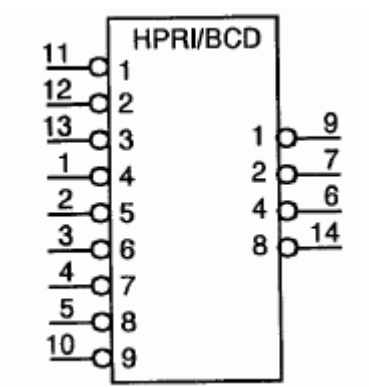
|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Code converter, BCD-to-decimal                                         |
| Status level:         | <b>Standard</b>                                                        |
| Released on:          | 2004-09-01                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-33-02                                         |
| Keywords:             | binary logic circuits, code converters                                 |
| Applies:              | S01467; S01610                                                         |
| Application notes:    | A00269                                                                 |
| Shape class:          | Characters, Rectangles                                                 |
| Function class:       | K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | (e.g. SN 7442)                                                         |

**S01615**

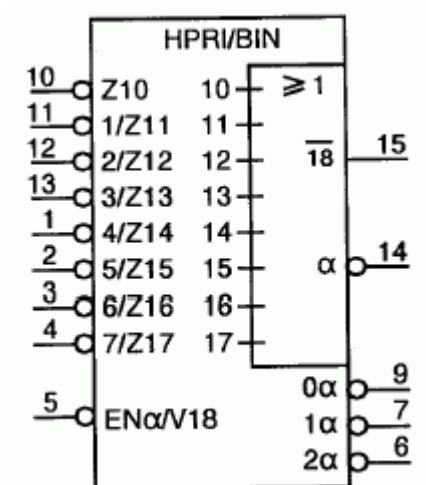
|                              |                                                                        |
|------------------------------|------------------------------------------------------------------------|
| <b>Name:</b>                 | Code converter, three-to-eight-line                                    |
| <b>Status level:</b>         | <b>Standard</b>                                                        |
| <b>Released on:</b>          | 2004-09-01                                                             |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-33-03                                         |
| <b>Keywords:</b>             | binary logic circuits, code converters                                 |
| <b>Alternative forms:</b>    | S01633                                                                 |
| <b>Applies:</b>              | S01468; S01469; S01476; S01562; S01567; S01610                         |
| <b>Application notes:</b>    | A00269                                                                 |
| <b>Shape class:</b>          | Characters, Rectangles, Right-angled triangle                          |
| <b>Function class:</b>       | K Processing signals or information, T Converting but maintaining kind |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                    |
| <b>Remarks:</b>              | (e.g. SN 74LS138)                                                      |

Symbol S01633 depicts the same device in another way.

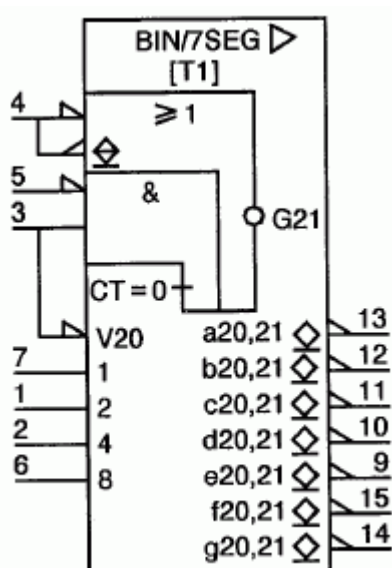
## S01616



|                              |                                                                        |
|------------------------------|------------------------------------------------------------------------|
| <b>Name:</b>                 | Highest-priority encoder, encoding 9 data lines to 4-line BCD          |
| <b>Status level:</b>         | <b>Standard</b>                                                        |
| <b>Released on:</b>          | 2004-09-01                                                             |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-33-04                                         |
| <b>Keywords:</b>             | binary logic circuits, code converters, coders                         |
| <b>Applies:</b>              | S01466; S01467; S01610                                                 |
| <b>Application notes:</b>    | A00269                                                                 |
| <b>Shape class:</b>          | Characters, Rectangles                                                 |
| <b>Function class:</b>       | K Processing signals or information, T Converting but maintaining kind |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                    |
| <b>Remarks:</b>              | (e.g. SN 74147)                                                        |

**S01617**

|                              |                                                                          |
|------------------------------|--------------------------------------------------------------------------|
| <b>Name:</b>                 | Highest-priority encoder, encoding 8 data lines to 3-line binary (octal) |
| <b>Status level:</b>         | <b>Standard</b>                                                          |
| <b>Released on:</b>          | 2004-09-01                                                               |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-33-05                                           |
| <b>Keywords:</b>             | binary logic circuits, code converters, coders                           |
| <b>Applies:</b>              | S01479; S01550; S01554; S01562; S01566; S01610                           |
| <b>Application notes:</b>    | A00269                                                                   |
| <b>Shape class:</b>          | Characters, Rectangles                                                   |
| <b>Function class:</b>       | K Processing signals or information, T Converting but maintaining kind   |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                      |
| <b>Remarks:</b>              | (e.g. SN 74148)                                                          |

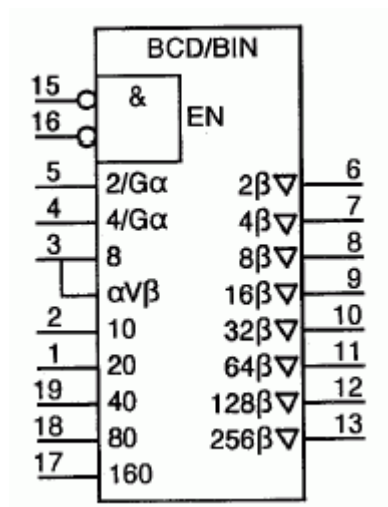
**S01618**

|                              |                                                                                                                |
|------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Decoder/driver, binary-to-seven-segment                                                                        |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                |
| <b>Released on:</b>          | 2004-09-01                                                                                                     |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-33-06                                                                                 |
| <b>Keywords:</b>             | binary logic circuits, code converters, decoders, drivers                                                      |
| <b>Applies:</b>              | S01457; S01468; S01469; S01471; S01476; S01495; S01497; S01539; S01550; S01566; S01567; S01610; S01809; S01810 |
| <b>Application notes:</b>    | A00269, A00272, A00297                                                                                         |
| <b>Shape class:</b>          | Characters, Rectangles, Right-angled triangle                                                                  |
| <b>Function class:</b>       | K Processing signals or information, T Converting but maintaining kind                                         |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                                                            |
| <b>Remarks:</b>              | (e.g. SN 74LS47)                                                                                               |

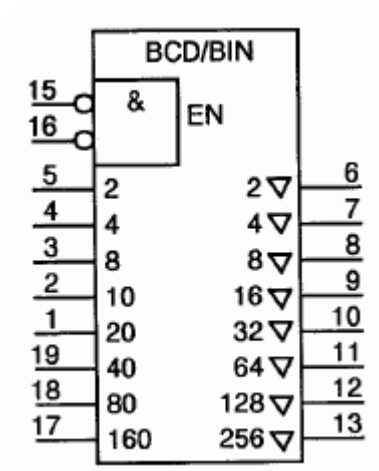
This example shows the use of the polarity indicator at external connections together with the use of the negation indicator at internal connections (see A00272).

The font table T1 is shown in A00297.



**S01619**

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Code converter, BCD-to-binary                                          |
| Status level:         | <b>Standard</b>                                                        |
| Released on:          | 2004-09-01                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-33-07                                         |
| Keywords:             | binary logic circuits, code converters                                 |
| Alternative forms:    | S01620                                                                 |
| Applied in:           | S01620                                                                 |
| Applies:              | S01466; S01476; S01498; S01503; S01567; S01610                         |
| Application notes:    | A00269                                                                 |
| Shape class:          | Characters, Rectangles                                                 |
| Function class:       | K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | (e.g. SN 74S484)                                                       |

**S01620**

**Name:** Code converter, BCD-to-binary

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-33-08

**Keywords:** binary logic circuits, code converters, coders

**Form:** simplified form

**Applied in:** S01562

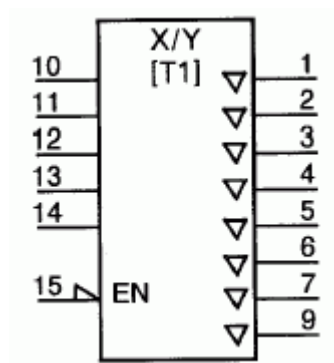
**Applies:** S01466; S01476; S01498; S01503; S01562; S01567; S01610; S01619

**Application notes:** A00269

**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information, T Converting but maintaining kind

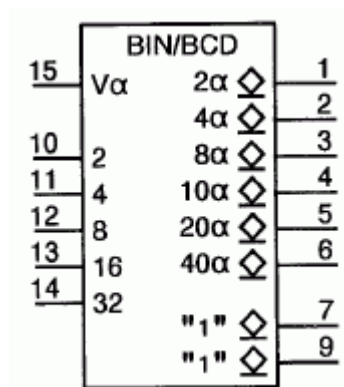
**Application class:** Circuit diagrams, Function diagrams

**S01621**

|                              |                                                                        |
|------------------------------|------------------------------------------------------------------------|
| <b>Name:</b>                 | Coder for arbitrary code                                               |
| <b>Status level:</b>         | <b>Standard</b>                                                        |
| <b>Released on:</b>          | 2004-09-01                                                             |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-33-09                                         |
| <b>Keywords:</b>             | binary logic circuits, code converters, coders                         |
| <b>Applies:</b>              | S01468; S01498; S01503; S01610                                         |
| <b>Application notes:</b>    | A00269, A00343                                                         |
| <b>Shape class:</b>          | Characters, Rectangles                                                 |
| <b>Function class:</b>       | K Processing signals or information, T Converting but maintaining kind |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                    |
| <b>Remarks:</b>              | (e.g. TBP 18S030, formerly SN 74S288)                                  |

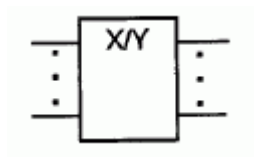
The combinative relationships between inputs and outputs are implemented in a PROM (or a ROM).

"T1" refers to a table showing the logic function of the device, for an example see A00343.

**S01622**

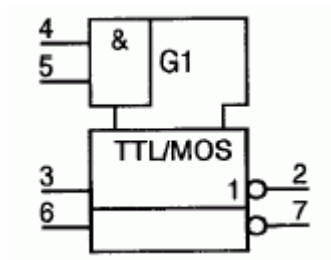
|                              |                                                                                    |
|------------------------------|------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Code converter, binary-to-BCD                                                      |
| <b>Status level:</b>         | <b>Standard</b>                                                                    |
| <b>Released on:</b>          | 2004-09-01                                                                         |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-33-10                                                     |
| <b>Keywords:</b>             | binary logic circuits, code converters                                             |
| <b>Applies:</b>              | S01495; S01543; S01550; S01610                                                     |
| <b>Application notes:</b>    | A00269                                                                             |
| <b>Shape class:</b>          | Characters, Rectangles                                                             |
| <b>Function class:</b>       | K Processing signals or information, S Converting a manual operation into a signal |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                                |
| <b>Remarks:</b>              | (e.g. SN 74185)                                                                    |

## S01623



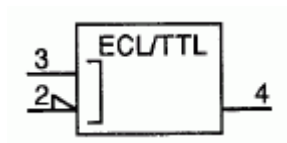
|                       |                                                                                                                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Signal-level converter, general symbol                                                                                                                                                                                                            |
| Status level:         | Standard                                                                                                                                                                                                                                          |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                        |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-34-01                                                                                                                                                                                                                    |
| Keywords:             | binary logic elements, converters                                                                                                                                                                                                                 |
| Applied in:           | S01625, S01624                                                                                                                                                                                                                                    |
| Applies:              | S01463                                                                                                                                                                                                                                            |
| Application notes:    | A00269                                                                                                                                                                                                                                            |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                            |
| Function class:       | K Processing signals or information, T Converting but maintaining kind                                                                                                                                                                            |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                            |
| Remarks:              | <p>The level references may be shown inside the symbol and shall replace X and Y if confusion with the coder is likely.</p> <p>The general qualifying symbol X/Y may be replaced by X//Y if it is necessary to indicate electrical isolation.</p> |

## S01624



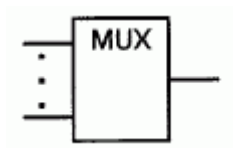
|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Level converter, TTL-to-MOS, dual                                      |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-01                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-35-01                                         |
| Keywords:             | binary logic circuits, converters, signal-level converters             |
| Applies:              | S01464; S01467; S01476; S01567; S01623; S01810                         |
| Application notes:    | A00269                                                                 |
| Shape class:          | Characters, Rectangles                                                 |
| Function class:       | K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | Exemple: part of SN75356.                                              |

## S01625



|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Level converter, ECL-to-TTL                                            |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-01                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-35-02                                         |
| Keywords:             | binary logic circuits, converters, signal-level converters             |
| Applies:              | S01468; S01540; S01623                                                 |
| Application notes:    | A00269                                                                 |
| Shape class:          | Characters, Lines , Rectangles                                         |
| Function class:       | K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | Example: part of MC 10125.                                             |

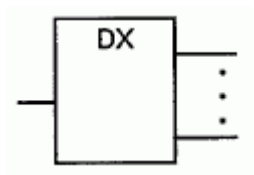
## S01626



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Multiplexer, general symbol                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-36-01                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Keywords:             | binary logic elements, demultiplexers, multiplexers                                                                                                                                                                                                                                                                                                                                                                                                             |
| Applied in:           | S01629, S01630, S01631, S01628, S01632                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Applies:              | S01463                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Application notes:    | A00269                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Function class:       | K Processing signals or information, T Converting but maintaining kind                                                                                                                                                                                                                                                                                                                                                                                          |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                                                                                                                                                          |
| Remarks:              | <p>If one input of a multiplexer is selected, the internal logic state of the output takes on the internal state of the selected input.</p> <p>If no input is selected, the output stands at its internal 0-state.</p> <p>The inputs and logic relationships that control the selecting action should also be shown, for example by showing those inputs and the associated dependency notation either within the element or within a common control block.</p> |

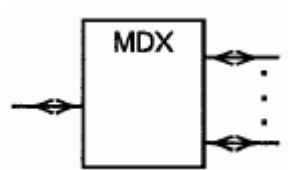


## S01627



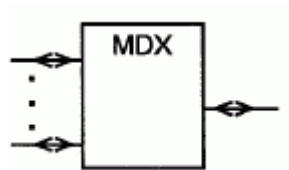
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Demultiplexer, general symbol                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-36-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Keywords:             | binary logic elements, demultiplexers                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Applied in:           | S01629, S01634, S01628, S01633                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Applies:              | S01463                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Application notes:    | A00269                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Function class:       | K Processing signals or information, T Converting but maintaining kind                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remarks:              | <p>If an output of a demultiplexer is selected, the internal logic state of that output takes on the internal logic state of the input. Otherwise, the output takes on its internal 0-state.</p> <p>If confusion is likely, DX may be replaced by DMUX.</p> <p>The inputs and logic relationships that control the selecting action should also be shown, for example by showing those inputs and the associated dependency notation either within the element or within a common control block.</p> |

## S01628

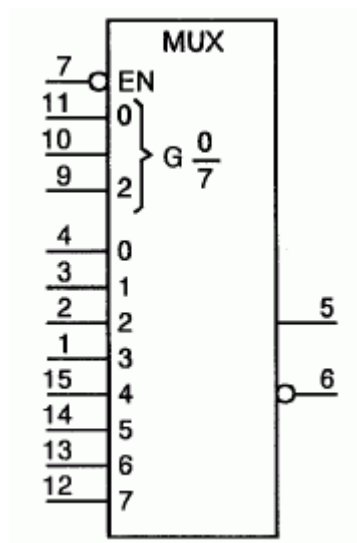


|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Bidirectional multiplexer/demultiplexer (selector), general symbol                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-36-03                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Keywords:             | binary logic elements, demultiplexers, multiplexers                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Applied in:           | S01635                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Applies:              | S00101; S01463; S01626; S01627                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Application notes:    | A00269                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Shape class:          | Arrows, Characters, Rectangles                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Function class:       | K Processing signals or information, T Converting but maintaining kind                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Application class:    | Circuit diagrams, Function diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Remarks:              | <p>This element establishes a bidirectional connection between one input-output port and another that is selected from a group of input-output ports.</p> <p>The inputs and logic relationships that control the selecting action should also be shown, for example by showing those inputs and the associated dependency notation either within the element or within a common control block.</p> <p>The arrowheads are optional.</p> <p>If confusion is likely, MDX may be replaced by MUXDX.</p> |

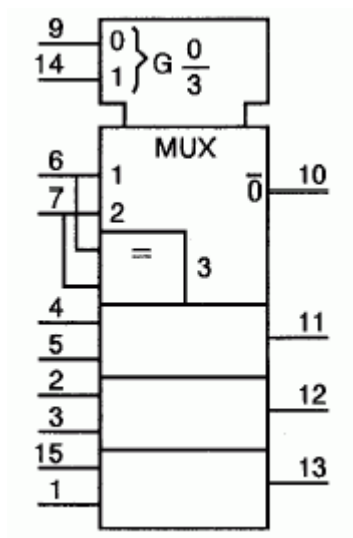
## S01629



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Bidirectional multiplexer/demultiplexer (selector), general symbol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-36-04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Keywords:             | binary logic elements, demultiplexers, multiplexers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Applies:              | S00101; S01463; S01626; S01627                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Application notes:    | A00269                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Shape class:          | Arrows, Characters, Rectangles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Function class:       | K Processing signals or information, T Converting but maintaining kind                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Application class:    | Circuit diagrams, Function diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Remarks:              | <p>This element establishes a bidirectional connection between one input-output port and another that is selected from a group of input-output ports.</p> <p>The inputs and logic relationships that control the selecting action should also be shown, for example by showing those inputs and the associated dependency notation either within the element or within a common control block.</p> <p>If confusion is likely, DX may be replaced by DMUX.</p> <p>The arrowheads are optional.</p> <p>If confusion is likely, MDX may be replaced by MUXDX.</p> |

**S01630**

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Multiplexer (one-of-eight)                                             |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-01                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-37-01                                         |
| Keywords:             | binary logic circuits, multiplexers                                    |
| Applies:              | S01466; S01467; S01503; S01516; S01626; S01810                         |
| Application notes:    | A00269                                                                 |
| Shape class:          | Rectangles                                                             |
| Function class:       | K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | E.g. SN 74151.                                                         |

**S01631**

Name: Multiplexer, quadruple

Status level: **Standard**

Released on: 2004-09-01

Earlier published in: IEC 60617-12 (ed.3.0) 12-37-02

Keywords: binary logic circuits, multiplexers

Alternative forms: S01632

Applies: S01464; S01476; S01516; S01571; S01626; S01810

Application notes: A00269

Shape class: Characters, Rectangles

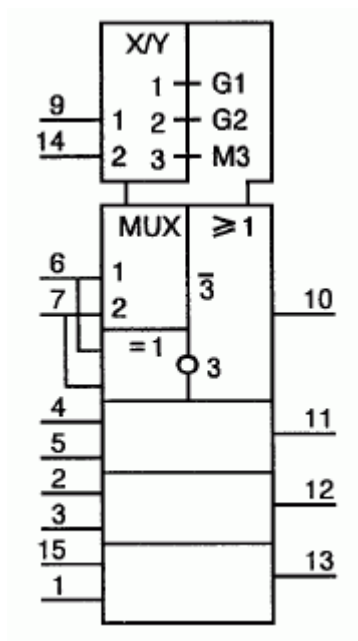
Function class: K Processing signals or information, T Converting but maintaining kind

Application class: Circuit diagrams, Function diagrams

Remarks: (e.g. MC 14519)

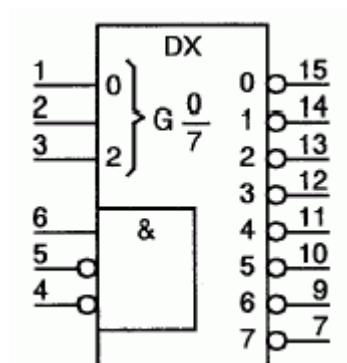
The "0 with negation bar" is optional (see description of symbol S01626).

Symbol S01632 depicts the same device in another way.

**S01632**

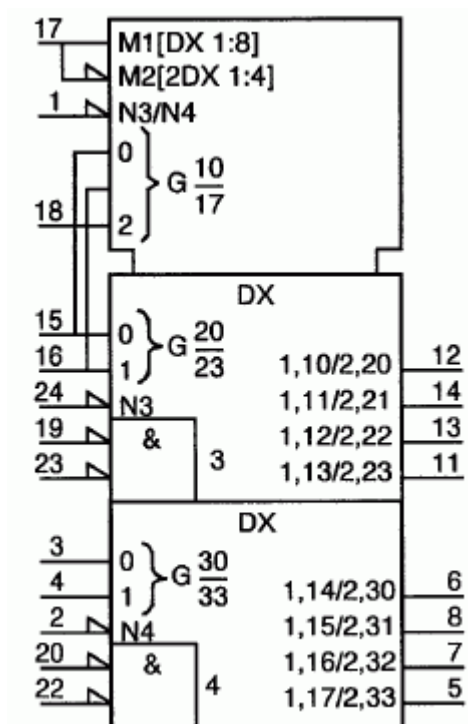
|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Exclusive NOR, quadruple                                               |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-01                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-37-03                                         |
| Keywords:             | binary logic circuits, combinative elements, multiplexers              |
| Alternative forms:    | S01631                                                                 |
| Applies:              | S01464; S01479; S01566; S01574; S01610; S01626; S01809; S01810         |
| Application notes:    | A00269                                                                 |
| Shape class:          | Characters, Rectangles                                                 |
| Function class:       | K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | (e.g. MC 14519)                                                        |

Symbol S01631 depicts the same device in another way.

**S01633**

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Demultiplexer (one-to-eight)                                           |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-01                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-37-04                                         |
| Keywords:             | binary logic circuits, demultiplexers                                  |
| Alternative forms:    | S01615                                                                 |
| Applies:              | S01466; S01467; S01516; S01567; S01627; S01810                         |
| Application notes:    | A00269                                                                 |
| Shape class:          | Characters, Rectangles                                                 |
| Function class:       | K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | (e.g. SN 74LS138)                                                      |

Symbol S01615 depicts the same device in another way.

**S01634**

**Name:** Demultiplexer/decoder, universal, dual

**Status level:** **Standard**

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-37-05

**Keywords:** binary logic circuits, coders, demultiplexers

**Applies:** S01464; S01468; S01494; S01516; S01552; S01563; S01567; S01627; S01810

**Application notes:** A00269

**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information, T Converting but maintaining kind

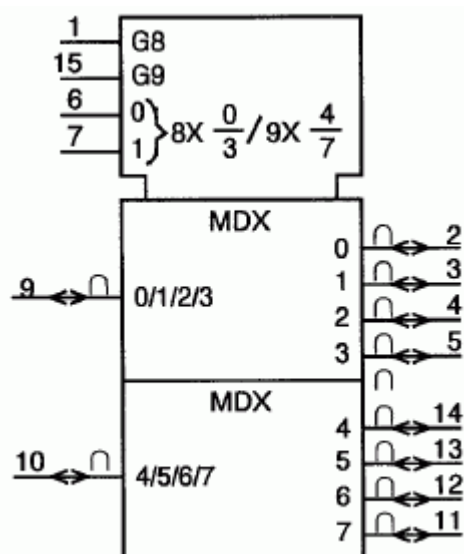
**Application class:** Circuit diagrams

**Remarks:** E.g. F 100170.

In order to perform the function DX1:8 correctly, it is necessary to make an external connection between terminals 19 and 20, and also between terminals 22 and 23.



The symbol for open-circuit output (symbol S01494) is not shown in this example because all ECL outputs of this ECL family are of the same open-circuit type.

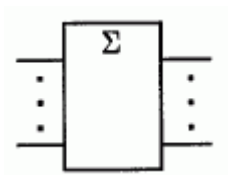
**S01635**

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Analogue data selector (multiplexer/demultiplexer), 4-channel, dual    |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-01                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-37-06                                         |
| Keywords:             | analogue circuits, binary logic circuits, demultiplexers, multiplexers |
| Applies:              | S00101; S00216; S01464; S01516; S01557; S01628; S01810                 |
| Application notes:    | A00269                                                                 |
| Shape class:          | Characters, Rectangles                                                 |
| Function class:       | K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams                                                       |
| Remarks:              | E.g. MC 14529B.                                                        |

When using the general qualifying symbol MDX, the identifying numbers of the X-dependencies, (for example, 0/1/2/3) may be omitted at the multiplexed port if no confusion is likely.

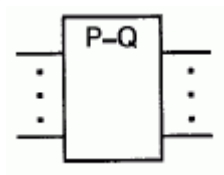
The arrowheads and the identifiers of analogue signals are optional.

## S01636



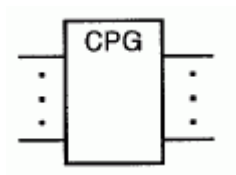
|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| Name:                 | Adder, general symbol                                                        |
| Status level:         | Standard                                                                     |
| Released on:          | 2004-09-02                                                                   |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-38-01                                               |
| Keywords:             | arithmetic elements, binary logic elements                                   |
| Applied in:           | S01642, S01643                                                               |
| Applies:              | S01463                                                                       |
| Application notes:    | A00269                                                                       |
| Shape class:          | Characters, Rectangles                                                       |
| Function class:       | K Processing signals or information                                          |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                       |
| Remarks:              | "Σ" is equivalent to UCS 03A3 of ISO/IEC 10646 "GREEK CAPITAL LETTER SIGMA". |

## S01637



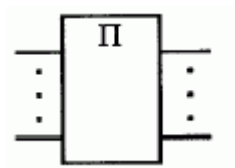
|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Subtractor, general symbol                             |
| Status level:         | Standard                                               |
| Released on:          | 2004-09-02                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-38-02                         |
| Keywords:             | arithmetic elements, binary logic elements             |
| Applied in:           | S01646                                                 |
| Applies:              | S01463                                                 |
| Application notes:    | A00269                                                 |
| Shape class:          | Characters, Rectangles                                 |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |

## S01638



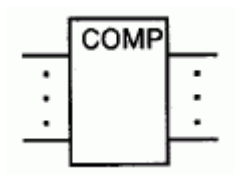
|                              |                                                                            |
|------------------------------|----------------------------------------------------------------------------|
| <b>Name:</b>                 | Look-ahead carry generator (carry, propagate and generate), general symbol |
| <b>Status level:</b>         | <b>Standard</b>                                                            |
| <b>Released on:</b>          | 2004-09-02                                                                 |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-38-03                                             |
| <b>Keywords:</b>             | arithmetic elements, binary logic elements                                 |
| <b>Applied in:</b>           | S01647                                                                     |
| <b>Applies:</b>              | S01463                                                                     |
| <b>Application notes:</b>    | A00269                                                                     |
| <b>Shape class:</b>          | Characters, Rectangles                                                     |
| <b>Function class:</b>       | K Processing signals or information                                        |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams, Overview diagrams                     |

## S01639



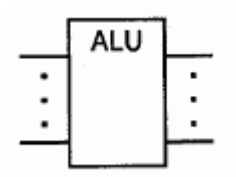
|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| Name:                 | Multiplier, general symbol                                                |
| Status level:         | Standard                                                                  |
| Released on:          | 2004-09-02                                                                |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-38-04                                            |
| Keywords:             | arithmetic elements, binary logic elements                                |
| Applied in:           | S01648, S01649                                                            |
| Applies:              | S01463                                                                    |
| Application notes:    | A00269                                                                    |
| Shape class:          | Characters, Rectangles                                                    |
| Function class:       | K Processing signals or information                                       |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                    |
| Remarks:              | "Π" is equivalent to UCS 03A0 of ISO/IEC 10646 "GREEK CAPITAL LETTER PI". |

## S01640



|                       |                                                                                                                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Magnitude comparator, general symbol                                                                                                                                                                               |
| Status level:         | Standard                                                                                                                                                                                                           |
| Released on:          | 2004-09-02                                                                                                                                                                                                         |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-38-05                                                                                                                                                                                     |
| Keywords:             | arithmetic elements, binary logic elements                                                                                                                                                                         |
| Applied in:           | S01652, S01651, S01650                                                                                                                                                                                             |
| Applies:              | S01463                                                                                                                                                                                                             |
| Application notes:    | A00269                                                                                                                                                                                                             |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                             |
| Function class:       | K Processing signals or information                                                                                                                                                                                |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                             |
| Remarks:              | A cascadable comparator is assumed to implement a portion of a comparison that proceeds from lower to higher order unless otherwise indicated, for example by "[H - L]" placed below the qualifying symbol "COMP". |

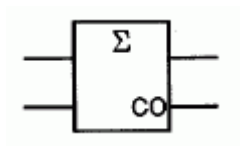
## S01641



|                       |                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Arithmetic logic unit, general symbol                                                                                                              |
| Status level:         | <b>Standard</b>                                                                                                                                    |
| Released on:          | 2004-09-02                                                                                                                                         |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-38-06                                                                                                                     |
| Keywords:             | arithmetic elements, binary logic elements                                                                                                         |
| Applied in:           | S01653, S01654                                                                                                                                     |
| Applies:              | S01463                                                                                                                                             |
| Application notes:    | A00269                                                                                                                                             |
| Shape class:          | Characters, Rectangles                                                                                                                             |
| Function class:       | K Processing signals or information                                                                                                                |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                             |
| Remarks:              | Supplementary information shall be added to the general qualifying symbol to specify the function of the element (see for example, symbol S01653). |

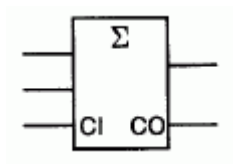


## S01642



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Half adder                                             |
| Status level:         | Standard                                               |
| Released on:          | 2004-09-02                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-38-07                         |
| Keywords:             | arithmetic elements, binary logic elements             |
| Applies:              | S01535; S01636                                         |
| Application notes:    | A00269                                                 |
| Shape class:          | Characters, Rectangles                                 |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |

## S01643



**Name:** Single-bit full adder

**Status level:** **Standard**

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-38-08

**Keywords:** arithmetic elements, binary logic elements

**Applied in:** S01645, S01644

**Applies:** S01532; S01535; S01636

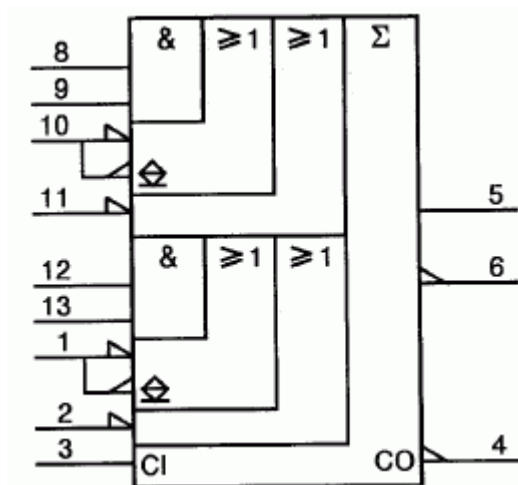
**Application notes:** A00269, A00301

**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

**Remarks:** A simple single-bit full adder may alternatively be depicted by the combination of the symbol for the ODD element (modulo 2 adder) and shown as in A00301.

**S01644**

**Name:** Single-bit full adder with complementary sum outputs and inverted carry output

**Status level:** **Standard**

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-39-01

**Keywords:** arithmetic circuits, binary logic circuits

**Applies:** S01468; S01469; S01497; S01566; S01567; S01643

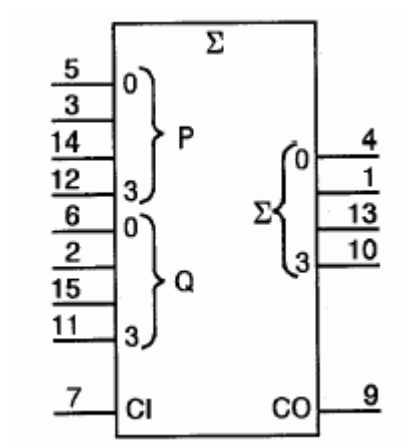
**Application notes:** A00269

**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

**Remarks:** E.g. SN 7480.

**S01645**

Name: Full adder, 4-bit

Status level: **Standard**

Released on: 2004-09-02

Earlier published in: IEC 60617-12 (ed.3.0) 12-39-02

Keywords: arithmetic circuits, binary logic circuits

Alternative forms: S01646

Applies: S01516; S01517; S01643

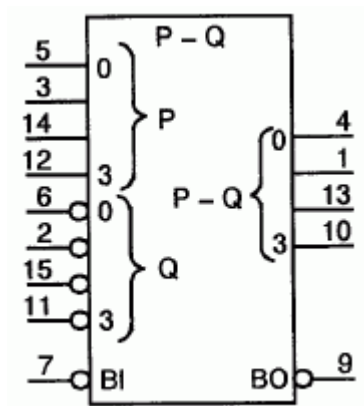
Application notes: A00269

Shape class: Characters, Rectangles

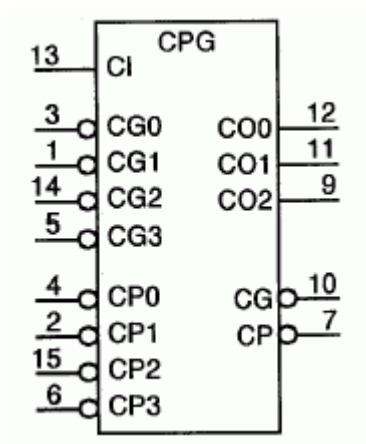
Function class: K Processing signals or information

Application class: Circuit diagrams

Remarks: E.g. SN 74283. Symbol S01646 depicts the same device in another way.

**S01646**

|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| Name:                 | Full subtractor, 4-bit                                               |
| Status level:         | Standard                                                             |
| Released on:          | 2004-09-02                                                           |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-39-03                                       |
| Keywords:             | arithmetic circuits, binary logic circuits                           |
| Alternative forms:    | S01645                                                               |
| Applies:              | S01466; S01467; S01516; S01517; S01526; S01529; S01637               |
| Application notes:    | A00269                                                               |
| Shape class:          | Characters, Rectangles                                               |
| Function class:       | K Processing signals or information                                  |
| Application class:    | Circuit diagrams                                                     |
| Remarks:              | E.g. SN 74283. Symbol S01645 depicts the same device in another way. |

**S01647**

**Name:** Look-ahead carry generator, 4-bit

**Status level:** **Standard**

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-39-04

**Keywords:** arithmetic circuits, binary logic circuits

**Applies:** S01466; S01467; S01532; S01533; S01534; S01535; S01536; S01537; S01638

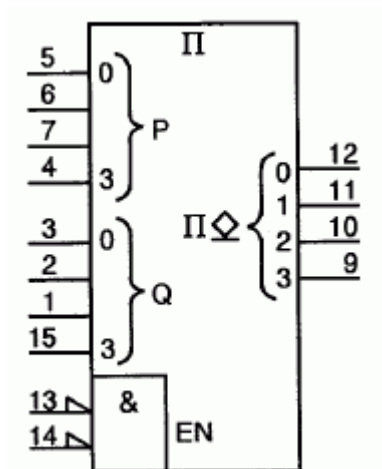
**Application notes:** A00269

**Shape class:** Characters, Rectangles

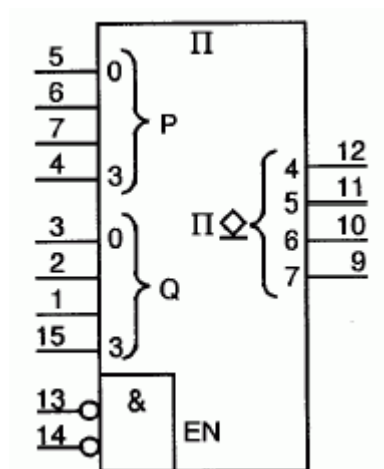
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** (e.g. SN 74182)

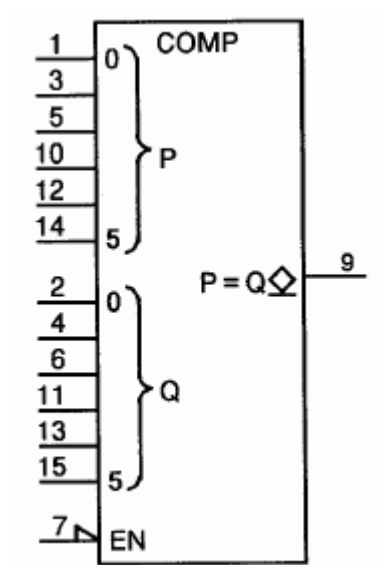
**S01648**

|                              |                                                                                       |
|------------------------------|---------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Multiplier, 4-bit parallel, generating the four least significant bits of the product |
| <b>Status level:</b>         | <b>Standard</b>                                                                       |
| <b>Released on:</b>          | 2004-09-02                                                                            |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-39-05                                                        |
| <b>Keywords:</b>             | arithmetic circuits, binary logic circuits                                            |
| <b>Applies:</b>              | S01468; S01495; S01503; S01516; S01517; S01567; S01639                                |
| <b>Application notes:</b>    | A00269                                                                                |
| <b>Shape class:</b>          | Characters, Rectangles                                                                |
| <b>Function class:</b>       | K Processing signals or information                                                   |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                                   |
| <b>Remarks:</b>              | (e.g. SN 74285)                                                                       |

**S01649**

|                              |                                                                                      |
|------------------------------|--------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Multiplier, 4-bit parallel, generating the four most significant bits of the product |
| <b>Status level:</b>         | <b>Standard</b>                                                                      |
| <b>Released on:</b>          | 2004-09-02                                                                           |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-39-06                                                       |
| <b>Keywords:</b>             | arithmetic circuits, binary logic circuits                                           |
| <b>Applies:</b>              | S01466; S01495; S01503; S01516; S01517; S01567; S01639                               |
| <b>Application notes:</b>    | A00269                                                                               |
| <b>Shape class:</b>          | Characters, Rectangles                                                               |
| <b>Function class:</b>       | K Processing signals or information                                                  |
| <b>Application class:</b>    | Circuit diagrams                                                                     |
| <b>Remarks:</b>              | E.g. SN 74284.                                                                       |



**S01650**

**Name:** Magnitude comparator with open-circuit output of the L-type, 6-bit

**Status level:** **Standard**

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-39-07

**Keywords:** arithmetic circuits, binary logic circuits

**Applies:** S01468; S01495; S01503; S01516; S01640

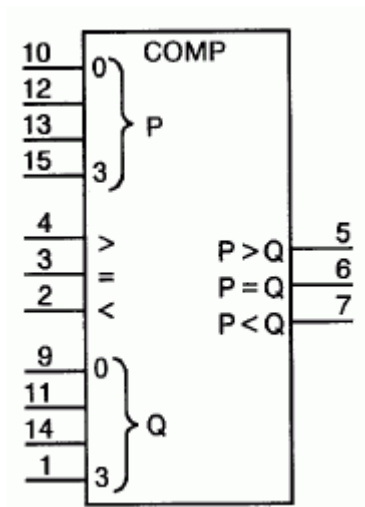
**Application notes:** A00269

**Shape class:** Characters, Rectangles

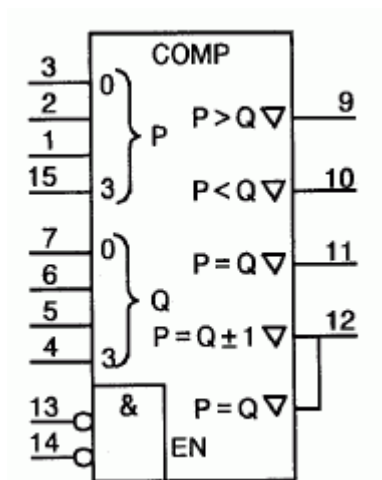
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

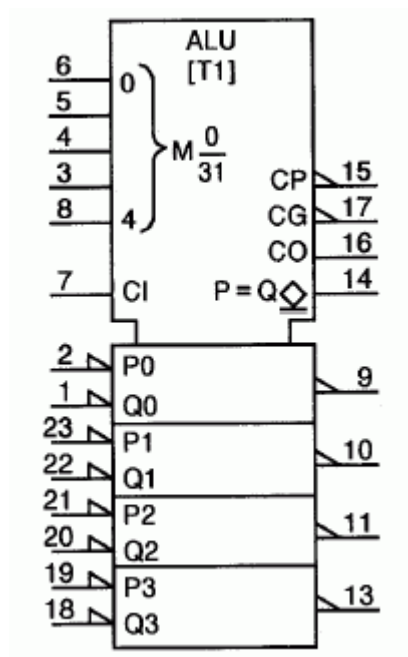
**Remarks:** (e.g. DM 7160)

**S01651**

|                              |                                                                |
|------------------------------|----------------------------------------------------------------|
| <b>Name:</b>                 | Magnitude comparator with cascading inputs, 4-bit              |
| <b>Status level:</b>         | <b>Standard</b>                                                |
| <b>Released on:</b>          | 2004-09-02                                                     |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-39-08                                 |
| <b>Keywords:</b>             | arithmetic circuits, binary logic circuits, comparators        |
| <b>Applies:</b>              | S01516; S01520; S01521; S01522; S01523; S01524; S01525; S01640 |
| <b>Application notes:</b>    | A00269                                                         |
| <b>Shape class:</b>          | Characters, Rectangles                                         |
| <b>Function class:</b>       | K Processing signals or information                            |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                            |
| <b>Remarks:</b>              | E.g. SN 7485                                                   |

**S01652**

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Magnitude comparator with 3-state outputs, 4-bit                       |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-02                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-39-09                                         |
| Keywords:             | binary logic circuits, comparators                                     |
| Applies:              | S01466; S01498; S01503; S01516; S01523; S01524; S01525; S01567; S01640 |
| Application notes:    | A00269                                                                 |
| Shape class:          | Characters, Rectangles                                                 |
| Function class:       | K Processing signals or information                                    |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | (e.g. DM 76L24)                                                        |

**S01653**

**Name:** Arithmetic logic unit, 4-bit

**Status level:** **Standard**

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-39-10

**Keywords:** arithmetic circuits, binary logic circuits

**Applies:** S01464; S01468; S01495; S01516; S01532; S01534; S01535; S01537; S01552; S01641

**Application notes:** A00269, A00285

**Shape class:** Characters, Rectangles

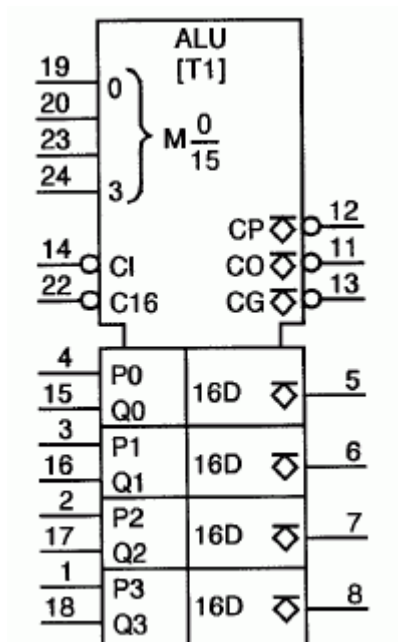
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

**Remarks:** E.g. SN 74181

[T1] refers to supplementary documentation detailing the element's function in various modes.

The Ms at the outputs have been omitted in accordance with 21.2 of application note A00285.

**S01654**

**Name:** Arithmetic logic unit with output latches, 4-bit

**Status level:** Standard

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-39-11

**Keywords:** arithmetic circuits, binary logic circuits

**Applies:** S01464; S01466; S01467; S01494; S01516; S01532; S01534; S01535; S01552; S01558; S01641

**Application notes:** A00269, A00285

**Shape class:** Characters, Rectangles

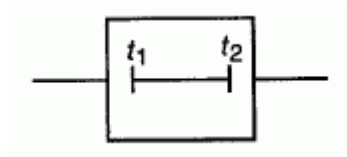
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. F 100181

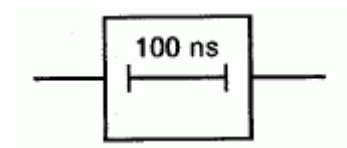
[T1] refers to supplementary documentation detailing the element's function in various modes.

The Ms at the outputs have been omitted in accordance with 21.2 of application note A00285.

**S01655**

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Delay element with specified delay times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Released on:          | 2004-09-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-40-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Keywords:             | binary logic elements, delay elements, delayed operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Applied in:           | S01656, S01658, S01657                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Applies:              | S00059; S00124                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Application notes:    | A00269, A00303                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Shape class:          | Characters, Lines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Function class:       | K Processing signals or information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Remarks:              | <p>A transition from the internal 0-state to the internal 1-state at the output occurs after a delay of <math>t_1</math> with reference to the same transition at the input. The transition from the internal 1-state to the internal 0-state at the output occurs after a delay of <math>t_2</math> with reference to the same transition at the input.</p> <p><math>t_1</math> and <math>t_2</math> may be replaced by the actual delays, expressed in seconds, word units or digit units, and may be placed inside or outside the outline. If the two delays are equal, it is sufficient to insert one value only.</p> |

## S01656



Name: Delay element (100 ns)

Status level: **Standard**

Released on: 2004-09-02

Earlier published in: IEC 60617-12 (ed.3.0) 12-40-02

Keywords: binary logic elements, delay element, delayed operation

Applies: S01655

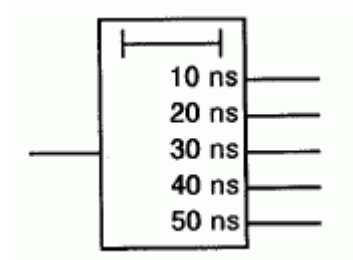
Application notes: A00269, A00303

Shape class: Lines , Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

## S01657



**Name:** Tapped delay element (in steps of 10 ns)

**Status level:** **Standard**

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-40-03

**Keywords:** binary logic elements, delay elements, delayed operation

**Applies:** S01655

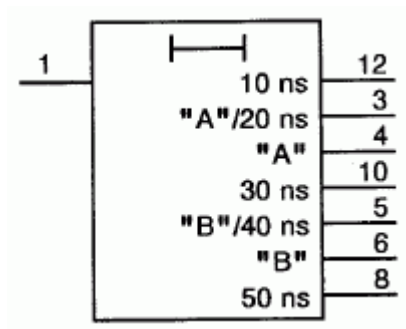
**Application notes:** A00269

**Shape class:** Characters, Lines , Rectangles

**Function class:** K Processing signals or information

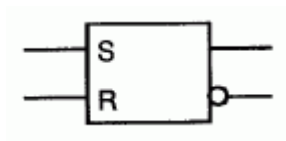
**Application class:** Circuit diagrams, Function diagrams, Overview diagrams



**S01658**

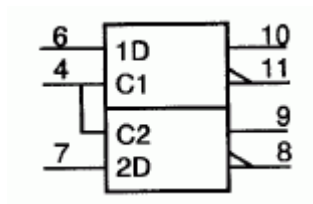
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Delay line, 5 taps                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Released on:</b>          | 2004-09-02                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-40-04                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Keywords:</b>             | binary logic circuits, delay elements, delayed operation                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Applies:</b>              | S01545; S01655                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Application notes:</b>    | A00269                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Shape class:</b>          | Characters, Lines , Rectangles                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Function class:</b>       | K Processing signals or information                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Remarks:</b>              | <p>E.g. composite representation of BEL FUSE S423-0050-02, and Fil-Mag 77Z14A050.</p> <p>This symbol is a composite representation of two devices that have identical functions but different terminal assignments. On the printed circuit board, the different "pinning" is accommodated by a common footprint with some pads connected together. To illustrate this, symbol S01545 is used. The terminal designations shown are those of the common footprint.</p> |

## S01659



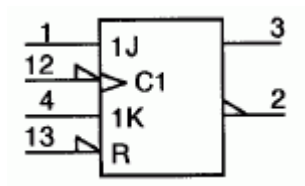
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | RS-bistable                              |
| Status level:         | <b>Standard</b>                          |
| Released on:          | 2004-09-02                               |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-42-01           |
| Alternative names:    | RS-latch                                 |
| Keywords:             | binary logic elements, bistable elements |
| Applied in:           | S01672, S01671, S01673                   |
| Applies:              | S01463; S01467; S01507; S01508           |
| Application notes:    | A00269, A00304                           |
| Shape class:          | Characters, Rectangles                   |
| Function class:       | K Processing signals or information      |
| Application class:    | Circuit diagrams, Function diagrams      |

## S01660



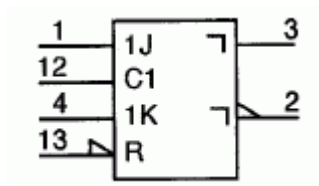
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | D-latch, dual                            |
| Status level:         | <b>Standard</b>                          |
| Released on:          | 2004-09-02                               |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-42-02           |
| Keywords:             | binary logic circuits, bistable circuits |
| Applies:              | S01463; S01469; S01504; S01558           |
| Application notes:    | A00269, A00304                           |
| Shape class:          | Characters, Rectangles                   |
| Function class:       | K Processing signals or information      |
| Application class:    | Circuit diagrams, Function diagrams      |
| Remarks:              | E.g. part of SN 7475.                    |

## S01661



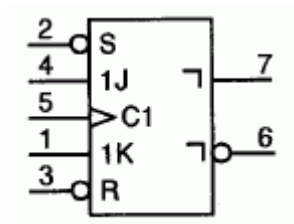
|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Edge-triggered JK-bistable                             |
| Status level:         | Standard                                               |
| Released on:          | 2004-09-02                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-42-03                         |
| Keywords:             | binary logic circuits, bistable circuits               |
| Applies:              | S01463; S01469; S01472; S01505; S01506; S01507; S01558 |
| Application notes:    | A00269, A00304                                         |
| Shape class:          | Characters, Rectangles, Right-angled triangle          |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams                    |
| Remarks:              | E.g. part of SN 74LS107.                               |

## S01662



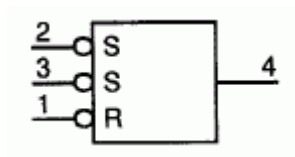
|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Pulse-triggered JK-bistable                            |
| Status level:         | Standard                                               |
| Released on:          | 2004-09-02                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-42-04                         |
| Keywords:             | binary logic circuits, bistable circuits               |
| Applies:              | S01463; S01469; S01491; S01505; S01506; S01507; S01558 |
| Application notes:    | A00269, A00304                                         |
| Shape class:          | Characters, Lines , Rectangles, Right-angled triangle  |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams                    |
| Remarks:              | E.g. part of SN 74107.                                 |

## S01663



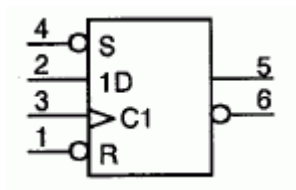
|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| Name:                 | Data-lock-out JK-bistable                                            |
| Status level:         | Standard                                                             |
| Released on:          | 2004-09-02                                                           |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-42-05                                       |
| Keywords:             | binary logic circuits, bistable circuits                             |
| Applies:              | S01463; S01472; S01491; S01505; S01506; S01507; S01508; S01558       |
| Application notes:    | A00269, A00304                                                       |
| Shape class:          | Characters, Equilateral triangles, Rectangles, Right-angled triangle |
| Function class:       | K Processing signals or information                                  |
| Application class:    | Circuit diagrams, Function diagrams                                  |
| Remarks:              | E.g. part of SN 74111.                                               |

## S01664



|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | RS-latch with negated inputs             |
| Status level:         | Standard                                 |
| Released on:          | 2004-09-02                               |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-42-06           |
| Keywords:             | binary logic circuits, bistable circuits |
| Applies:              | S01463; S01466; S01507; S01508           |
| Application notes:    | A00269, A00304                           |
| Shape class:          | Characters, Rectangles                   |
| Function class:       | K Processing signals or information      |
| Application class:    | Circuit diagrams, Function diagrams      |
| Remarks:              | E.g. part of SN 74279.                   |

## S01665



**Name:** Edge-triggered D-bistable

**Status level:** Standard

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-42-07

**Keywords:** binary logic circuits, bistable circuits

**Applies:** S01463; S01466; S01467; S01472; S01507; S01508; S01551

**Application notes:** A00269, A00283, A00304, A00305

**Shape class:** Characters, Equilateral triangles, Rectangles

**Function class:** K Processing signals or information

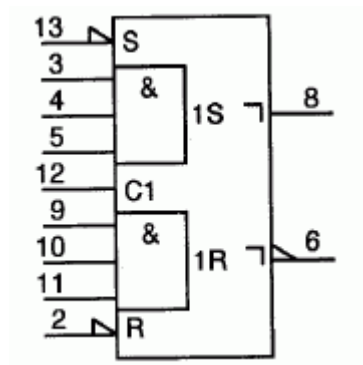
**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. part of SN 7474.

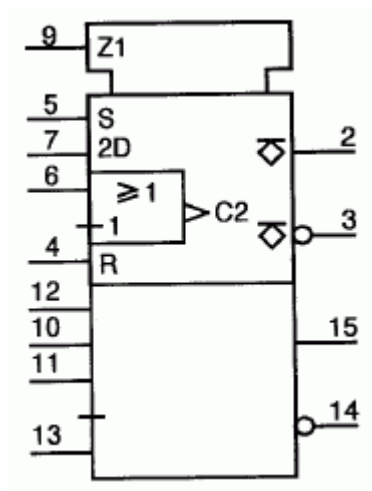
If the effect of the combination  $S=R=1$  is specified, this effect may be shown using the S- and R-dependency (A00283). For an example, see A00305.



## S01666



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Pulse-triggered RS-bistable                            |
| Status level:         | Standard                                               |
| Released on:          | 2004-09-02                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-42-08                         |
| Keywords:             | binary logic circuits, bistable circuits               |
| Applies:              | S01466; S01468; S01491; S01507; S01508; S01558; S01567 |
| Application notes:    | A00269, A00304                                         |
| Shape class:          | Characters, Rectangles                                 |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams                    |
| Remarks:              | E.g. SN 74L71.                                         |

**S01667**

Name: Edge-triggered D-bistable, dual

Status level: **Standard**

Released on: 2004-09-02

Earlier published in: IEC 60617-12 (ed.3.0) 12-42-09

Keywords: binary logic circuits, bistable circuits

Applies: S01463; S01464; S01467; S01472; S01479; S01494; S01504; S01507; S01508; S01554; S01558; S01566

Application notes: A00269, A00304

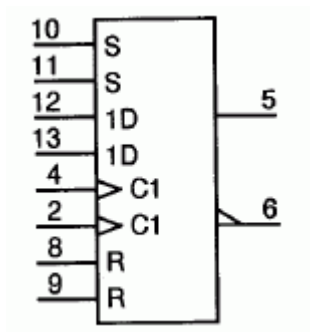
Shape class: Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

Remarks: E.g. MC 10131.

## S01668



**Name:** Edge-triggered D-bistable

**Status level:** Standard

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-42-10

**Keywords:** binary logic circuits, bistable circuits

**Applies:** S01463; S01469; S01472; S01504; S01508; S01558

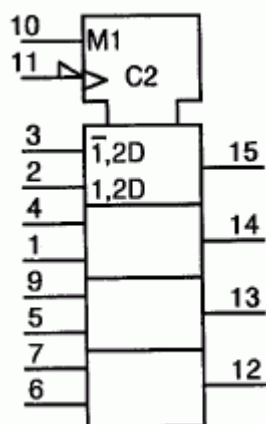
**Application notes:** A00269, A00304

**Shape class:** Characters, Equilateral triangles, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. MC 1222.

**S01669**

**Name:** Multiplexer with storage, quadruple 2-input

**Status level:** Standard

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-42-11

**Keywords:** binary logic circuits, bistable circuits, multiplexers

**Applies:** S01463; S01464; S01466; S01472; S01504; S01558

**Application notes:** A00269, A00304

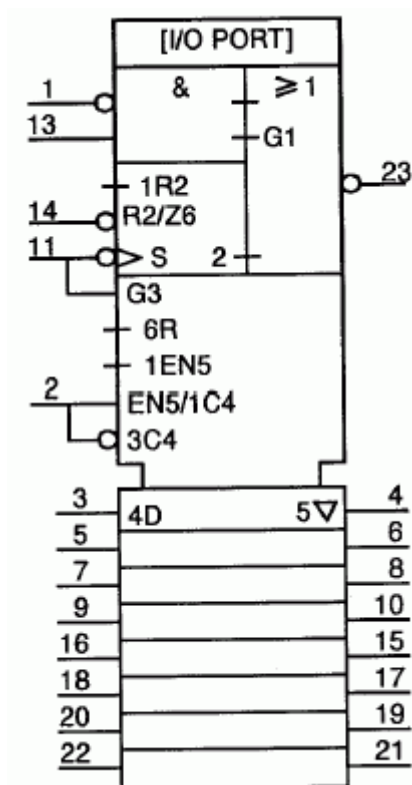
**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. SN 74298.

The "M1" at pin 10 may be replaced by "G1".

**S01670**

Name: Input/output port, 8-bit

Status level: **Standard**

Released on: 2004-09-02

Earlier published in: IEC 60617-12 (ed.3.0) 12-42-12

Keywords: binary logic circuits, bistable circuits

Applies: S01463; S01464; S01466; S01472; S01475; S01479; S01498; S01504; S01554; S01561; S01562; S01566; S01567

Application notes: A00269, A00304

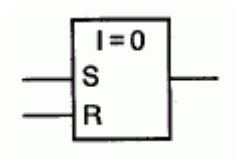
Shape class: Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

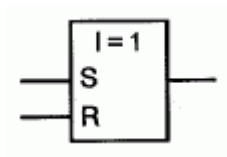
Remarks: E.g. 8212.

## S01671



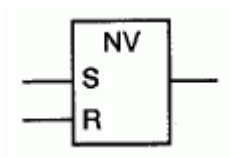
|                       |                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------|
| Name:                 | RS-bistable with initial 0-state                                                        |
| Status level:         | Standard                                                                                |
| Released on:          | 2004-09-02                                                                              |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-43-01                                                          |
| Keywords:             | binary logic elements, bistable elements                                                |
| Applies:              | S01659                                                                                  |
| Application notes:    | A00269, A00304, A00306                                                                  |
| Shape class:          | Characters, Rectangles                                                                  |
| Function class:       | K Processing signals or information                                                     |
| Application class:    | Circuit diagrams, Function diagrams                                                     |
| Remarks:              | At the moment the supply is switched on, the output will stand at its internal 0-state. |

## S01672



|                       |                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------|
| Name:                 | RS-bistable with initial 1-state                                                        |
| Status level:         | Standard                                                                                |
| Released on:          | 2004-09-02                                                                              |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-43-02                                                          |
| Keywords:             | binary logic elements, bistable elements                                                |
| Applies:              | S01659                                                                                  |
| Application notes:    | A00269, A00304, A00306                                                                  |
| Shape class:          | Characters, Rectangles                                                                  |
| Function class:       | K Processing signals or information                                                     |
| Application class:    | Circuit diagrams, Function diagrams                                                     |
| Remarks:              | At the moment the supply is switched on, the output will stand at its internal 1-state. |

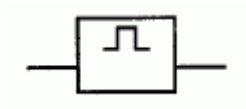
## S01673



|                       |                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | RS-bistable, non-volatile                                                                                                                    |
| Status level:         | Standard                                                                                                                                     |
| Released on:          | 2004-09-02                                                                                                                                   |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-43-03                                                                                                               |
| Keywords:             | binary logic elements, bistable elements                                                                                                     |
| Applies:              | S01659                                                                                                                                       |
| Application notes:    | A00269, A00304, A00306                                                                                                                       |
| Shape class:          | Characters, Rectangles                                                                                                                       |
| Function class:       | K Processing signals or information                                                                                                          |
| Application class:    | Circuit diagrams, Function diagrams                                                                                                          |
| Remarks:              | At the moment the supply is switched on, the internal logic state of the output will be the same as it was when the supply was switched off. |

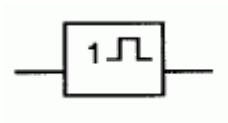


## S01674



|                              |                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Monostable, retriggerable (during the output pulse), general symbol                                                                                                                                                                                                                                                                                                                                |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Released on:</b>          | 2004-09-02                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-44-01                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Alternative names:</b>    | Single shot, general symbol                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Keywords:</b>             | binary logic elements, monostable elements                                                                                                                                                                                                                                                                                                                                                         |
| <b>Applied in:</b>           | S01676, S01806, S01721                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Applies:</b>              | S00132; S01463; S01472                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Application notes:</b>    | A00269                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Shape class:</b>          | Lines , Rectangles                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Function class:</b>       | K Processing signals or information                                                                                                                                                                                                                                                                                                                                                                |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                                                                                                                                                                                                                                                                                                                                                |
| <b>Remarks:</b>              | <p>The output changes to or remains at its 1-state each time the input changes to its 1-state. The output returns to its 0-state after a period of time that is characteristic of the particular device, beginning at the last change of the input to its 1-state.</p> <p>The use of the dynamic input symbol (symbol S01472) at the input is optional (for example of use see symbol S01676).</p> |

## S01675



**Name:** Monostable, non-retriggerable (during the output pulse), general symbol

**Status level:** Standard

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-44-02

**Keywords:** binary logic elements, monostable elements

**Applied in:** S01677

**Applies:** S00132; S01463; S01472

**Application notes:** A00269

**Shape class:** Characters, Depicting shapes, Rectangles

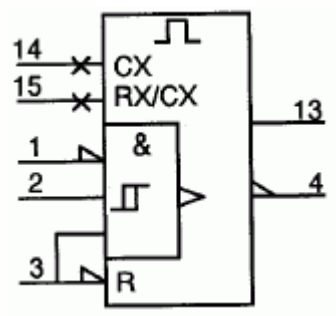
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** The output changes to its 1-state only when the input changes to its 1-state. The output returns to its 0-state after a period of time that is characteristic of the particular device, regardless of any changes of the input variable during this period.

The use of the dynamic input symbol (symbol S01472) at the input is optional (for example of use see symbol S01677).

## S01676



**Name:** Monostable, retriggerable

**Status level:** Standard

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-45-01

**Keywords:** binary logic circuits, monostable circuits

**Applies:** S01468; S01469; S01472; S01492; S01507; S01546; S01558; S01559; S01567; S01674

**Application notes:** A00269, A00308

**Shape class:** Characters, Rectangles

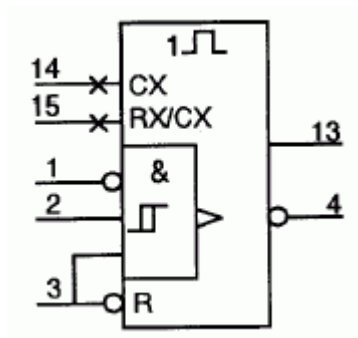
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams

**Remarks:** E.g. part of SN 74LS123.

See the application note A00308 for the function table.

## S01677



Name: Monostable, non-retriggerable

Status level: **Standard**

Released on: 2004-09-02

Earlier published in: IEC 60617-12 (ed.3.0) 12-45-02

Keywords: binary logic circuits, monostable circuits

Applies: S01466; S01467; S01472; S01507; S01546; S01558; S01559; S01675

Application notes: A00269

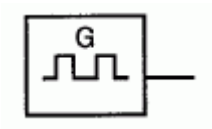
Shape class: Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams

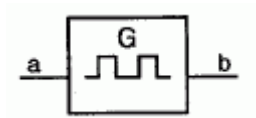
Remarks: E.g. part of SN 74221.

## S01678



|                       |                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Astable element, general symbol                                                                                                                            |
| Status level:         | Standard                                                                                                                                                   |
| Released on:          | 2004-09-02                                                                                                                                                 |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-46-01                                                                                                                             |
| Alternative names:    | Signal generator producing an alternating sequence of zeros and ones.                                                                                      |
| Keywords:             | binary logic elements, signal generators                                                                                                                   |
| Applied in:           | S01683, S01734, S01679, S01742                                                                                                                             |
| Applies:              | S01225; S01463                                                                                                                                             |
| Application notes:    | A00269                                                                                                                                                     |
| Shape class:          | Characters, Lines , Rectangles                                                                                                                             |
| Function class:       | G Initiating a flow                                                                                                                                        |
| Application class:    | Circuit diagrams, Function diagrams                                                                                                                        |
| Remarks:              | In this symbol, the letter G is the qualifying symbol for a generator. If the waveform is evident, this symbol may be shown without the associated symbol. |

## S01679



**Name:** Controlled astable element, general symbol

**Status level:** Standard

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-46-02

**Keywords:** astable elements, binary logic elements

**Applied in:** S01682, S01681

**Applies:** S01678

**Application notes:** A00269, A00309

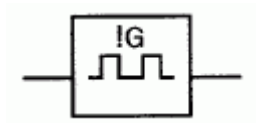
**Shape class:** Characters, Depicting shapes, Rectangles

**Function class:** G Initiating a flow

**Application class:** Circuit diagrams, Overview diagrams

**Remarks:** In this symbol, the letter G is the qualifying symbol for a generator. If the waveform is evident, this symbol may be shown without the associated symbol.

## S01680



**Name:** Astable element, synchronously starting, general symbol

**Status level:** Standard

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-46-03

**Keywords:** astable elements, binary logic elements

**Applied in:** S01684

**Application notes:** A00269, A00344

**Shape class:** Characters, Depicting shapes, Squares

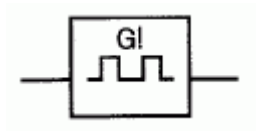
**Function class:** G Initiating a flow

**Application class:** Circuit diagrams, Overview diagrams

**Remarks:** The output starts with a complete pulse at the instant at which the input takes on its internal 1-state. See A00344.

In this symbol, the letter G is the qualifying symbol for a generator. If the waveform is evident, this symbol may be shown without the associated symbol.

## S01681



**Name:** Astable element stopping after completing the last pulse, general symbol

**Status level:** Standard

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-46-04

**Keywords:** astable elements, binary logic elements

**Applies:** S01679

**Application notes:** A00269, A00345

**Shape class:** Characters, Depicting shapes, Rectangles

**Function class:** G Initiating a flow

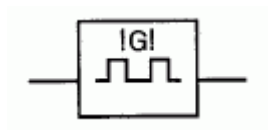
**Application class:** Circuit diagrams, Function diagrams

**Remarks:** When the input returns to its internal 0-state, the output remains at its internal 0-state or completes its final pulse. See A00345.

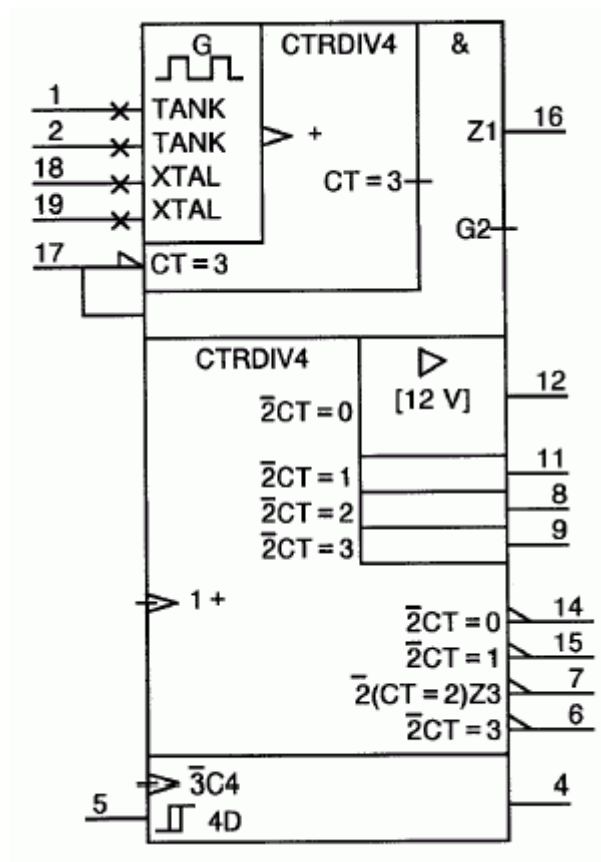
In this symbol, the letter G is the qualifying symbol for a generator. If the waveform is evident, this symbol may be shown without the associated symbol.



## S01682



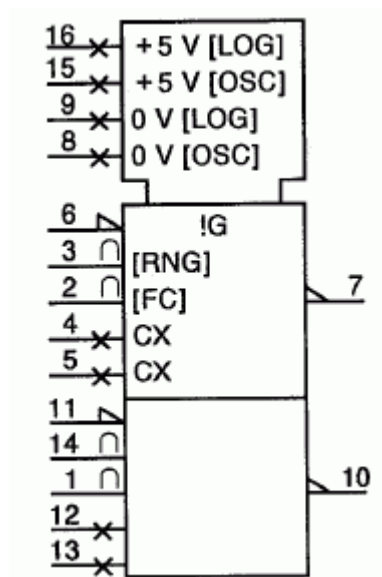
|                              |                                                                                                                                                            |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Astable element, synchronously starting, stopping after completing the last pulse, general symbol                                                          |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                            |
| <b>Released on:</b>          | 2004-09-02                                                                                                                                                 |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-46-05                                                                                                                             |
| <b>Keywords:</b>             | astable elements, binary logic elements                                                                                                                    |
| <b>Applies:</b>              | S01679                                                                                                                                                     |
| <b>Application notes:</b>    | A00269, A00346                                                                                                                                             |
| <b>Shape class:</b>          | Characters, Depicting shapes, Rectangles                                                                                                                   |
| <b>Function class:</b>       | G Initiating a flow                                                                                                                                        |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                                                                                                        |
| <b>Remarks:</b>              | In this symbol, the letter G is the qualifying symbol for a generator. If the waveform is evident, this symbol may be shown without the associated symbol. |

**S01683**

|                       |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| Name:                 | Clock generator/driver, four-phase                                                                     |
| Status level:         | Standard                                                                                               |
| Released on:          | 2004-09-02                                                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-47-01                                                                         |
| Keywords:             | binary logic circuits, clock generators, astable circuits                                              |
| Applies:              | S01240; S01468; S01469; S01472; S01475; S01483; S01492; S01546; S01555; S01567; S01678; S01687; S01811 |
| Application notes:    | A00269                                                                                                 |
| Shape class:          | Characters, Depicting shapes, Equilateral triangles, Rectangles, Right-angled triangle                 |
| Function class:       | G Initiating a flow                                                                                    |
| Application class:    | Circuit diagrams, Function diagrams                                                                    |
| Remarks:              | E.g. TIM 9904, formerly SN 74LS362.                                                                    |

For the use of CTRDIV4, see symbol S01687.

Symbol S01737 depicts the same device using the rules for complex-function elements.

**S01684**

**Name:** Voltage-controlled oscillator, dual

**Status level:** **Standard**

**Released on:** 2004-09-02

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-47-02

**Keywords:** astable circuits, binary logic circuits, oscillators

**Applies:** S00216; S01464; S01468; S01472; S01546; S01680

**Application notes:** A00269

**Shape class:** Characters, Rectangles

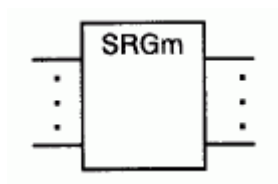
**Function class:** G Initiating a flow

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. SN 74S124.

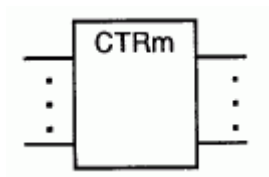
This symbol illustrates a method of showing supply terminals common to an array of elements.

## S01685



|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Shift register, general symbol                         |
| Status level:         | <b>Standard</b>                                        |
| Released on:          | 2004-09-03                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-48-01                         |
| Keywords:             | binary logic elements, registers                       |
| Applied in:           | S01690, S01688, S01689, S01691, S01695, S01692, S01694 |
| Applies:              | S01463                                                 |
| Application notes:    | A00269                                                 |
| Shape class:          | Characters, Rectangles                                 |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams |
| Remarks:              | The m shall be replaced by the number of stages.       |

## S01686



**Name:** Counter with cycle length 2 to the power m, general symbol

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-48-02

**Alternative names:** Counter modulo 2 to the power m, general symbol

**Keywords:** binary logic elements, counters

**Applied in:** S01704, S01702, S01703, S01697, S01720, S01696, S01719

**Applies:** S01463

**Application notes:** A00269

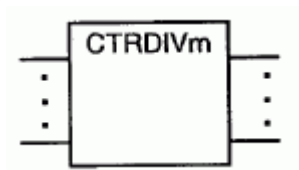
**Shape class:** Characters, Rectangles

**Function class:** C Storing, K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** m shall be replaced by the actual value.

In order to distinguish ripple counters, the prefix R may be added to the general qualifying symbol; for example: RCTRm.

**S01687**

**Name:** Counter with cycle length m, general symbol

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-48-03

**Alternative names:** Counter modulo m, general symbol

**Keywords:** binary logic elements, counters

**Applied in:** S01701, S01705, S01683, S01699, S01698, S01700

**Applies:** S01463

**Application notes:** A00269

**Shape class:** Characters, Rectangles

**Function class:** C Storing, K Processing signals or information

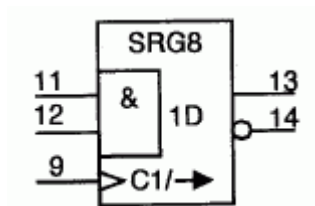
**Application class:** Circuit diagrams, Function diagrams

**Remarks:** m shall be replaced by the actual value.

In order to distinguish ripple counters, the prefix R may be added to the general qualifying symbol; for example: RCTRM.

In an array of elements having different cycle lengths, that applying to each should be indicated by DIVm in each element. In such a case, the letters CTR need only be shown in the common control block (for example of application, see symbol S01699).

## S01688



**Name:** Shift register, 8-bit, with serial input and complementary serial outputs

**Status level:** Standard

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-49-01

**Keywords:** binary logic circuits, registers

**Applies:** S01467; S01472; S01558; S01567; S01685

**Application notes:** A00269

**Shape class:** Characters, Rectangles

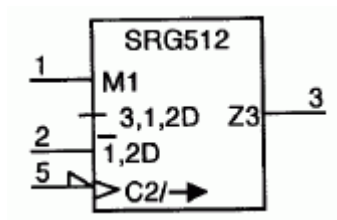
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

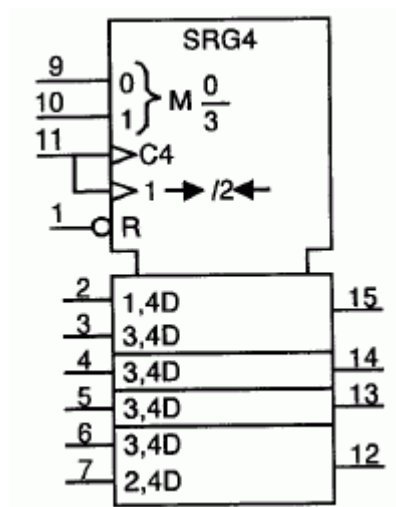
**Remarks:** E.g. part of SN 7491.



## S01689



|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Shift register, 512-bit, static                |
| Status level:         | Standard                                       |
| Released on:          | 2004-09-03                                     |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-02                 |
| Keywords:             | binary logic circuits, registers               |
| Applies:              | S01474; S01479; S01555; S01558; S01563; S01685 |
| Application notes:    | A00269                                         |
| Shape class:          | Characters, Rectangles                         |
| Function class:       | K Processing signals or information            |
| Application class:    | Circuit diagrams, Function diagrams            |
| Remarks:              | E.g. MM 4057.                                  |

**S01690**

**Name:** Shift register, 4-bit, bidirectional

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-49-03

**Keywords:** binary logic circuits, registers

**Applies:** S01464; S01466; S01472; S01558; S01561; S01563; S01685

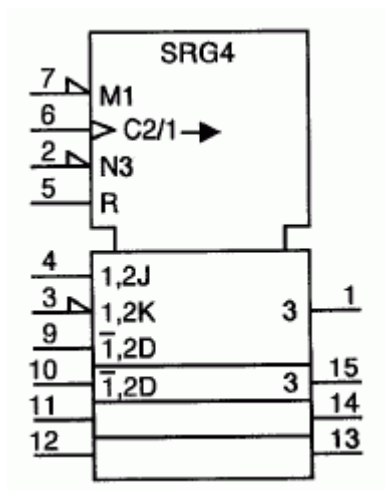
**Application notes:** A00269

**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

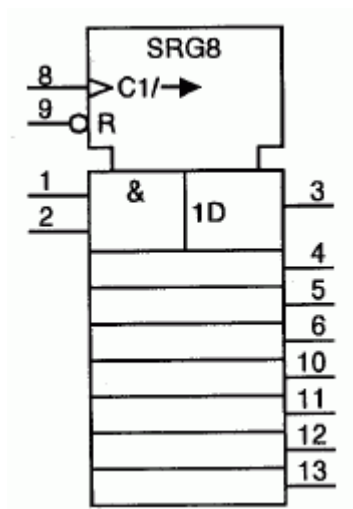
**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. SN 74LS194.

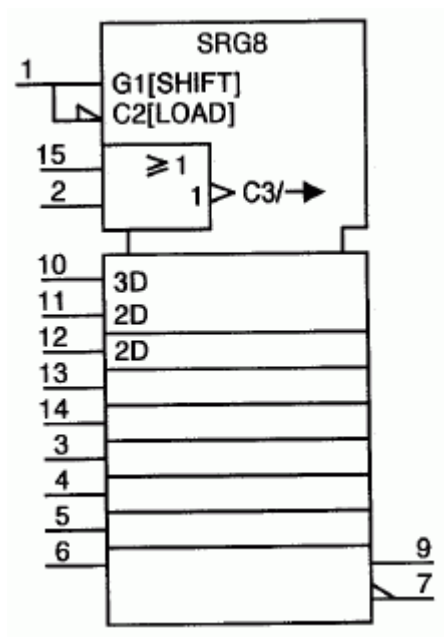
**S01691**

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| Name:                 | Shift register, 4-bit, parallel in/parallel out |
| Status level:         | <b>Standard</b>                                 |
| Released on:          | 2004-09-03                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-04                  |
| Keywords:             | binary logic circuits, registers                |
| Applies:              | S01464; S01472; S01474; S01561; S01685          |
| Application notes:    | A00269, A00312                                  |
| Shape class:          | Characters, Rectangles                          |
| Function class:       | K Processing signals or information             |
| Application class:    | Circuit diagrams, Function diagrams             |
| Remarks:              | E.g. CD 4035A.                                  |

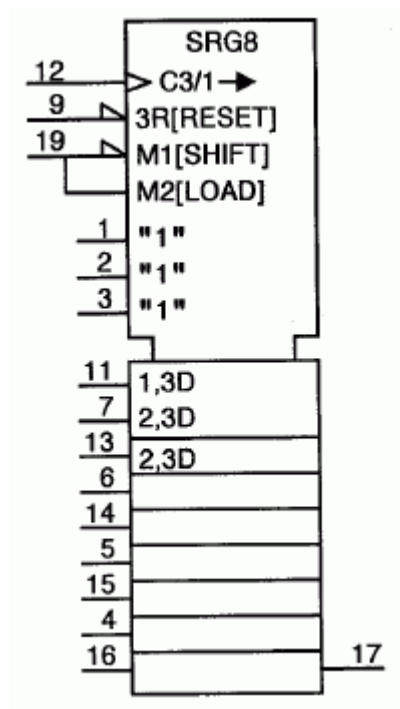
The use of the bar can be avoided as shown in A00312.

**S01692**

|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Shift register, 8-bit, with parallel outputs   |
| Status level:         | Standard                                       |
| Released on:          | 2004-09-03                                     |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-05                 |
| Keywords:             | binary logic circuits, registers               |
| Applies:              | S01464; S01472; S01558; S01561; S01567; S01685 |
| Application notes:    | A00269                                         |
| Shape class:          | Characters, Rectangles                         |
| Function class:       | K Processing signals or information            |
| Application class:    | Circuit diagrams, Function diagrams            |
| Remarks:              | E.g. SN 74164.                                 |

**S01693**

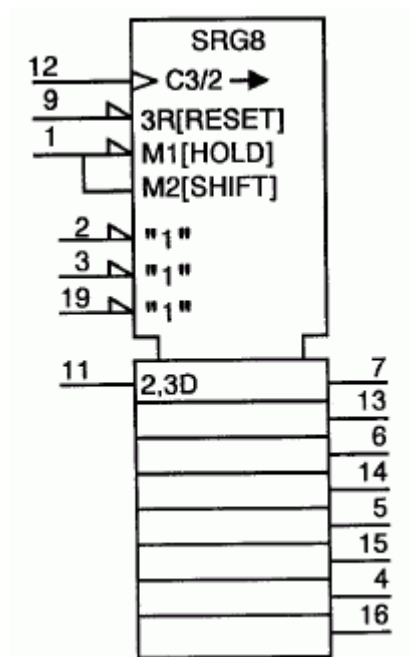
|                       |                                          |
|-----------------------|------------------------------------------|
| Name:                 | Shift register with parallel load, 8-bit |
| Status level:         | Standard                                 |
| Released on:          | 2004-09-03                               |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-06           |
| Keywords:             | binary logic circuits, registers         |
| Applies:              | S01464; S01474; S01558; S01567; S01810   |
| Application notes:    | A00269                                   |
| Shape class:          | Characters, Rectangles                   |
| Function class:       | K Processing signals or information      |
| Application class:    | Circuit diagrams, Function diagrams      |
| Remarks:              | E.g. SN 74165.                           |

**S01694**

|                              |                                                                                     |
|------------------------------|-------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Register, universal shift/storage, 8-bit                                            |
| <b>Status level:</b>         | <b>Standard</b>                                                                     |
| <b>Released on:</b>          | 2004-09-03                                                                          |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-49-07                                                      |
| <b>Keywords:</b>             | binary logic circuits, registers                                                    |
| <b>Form:</b>                 | Form 1                                                                              |
| <b>Alternative forms:</b>    | S01695                                                                              |
| <b>Applies:</b>              | S01464; S01472; S01474; S01542; S01558; S01561; S01685                              |
| <b>Application notes:</b>    | A00269                                                                              |
| <b>Shape class:</b>          | Characters, Rectangles                                                              |
| <b>Function class:</b>       | K Processing signals or information                                                 |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                                 |
| <b>Remarks:</b>              | E.g. SN 74LS323, for which only the reset, shift and parallel-load modes are shown. |

This symbol illustrates how an incompletely utilized device may be represented by a symbol suited to the application. For this purpose use is made of the fixed-mode input, symbol S01542.

Symbol S01695 depicts the same device performing another function.

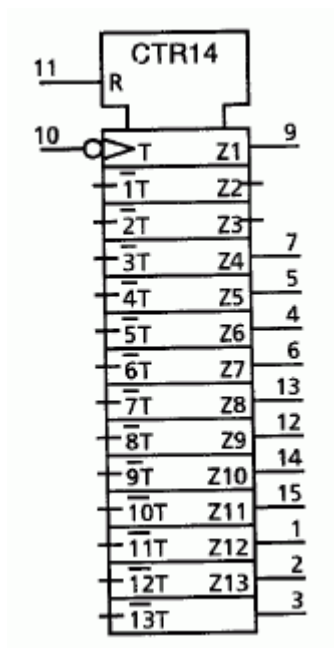
**S01695**

|                       |                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Register, universal shift/storage, 8-bit                                                                                                            |
| Status level:         | Standard                                                                                                                                            |
| Released on:          | 2004-09-03                                                                                                                                          |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-08                                                                                                                      |
| Keywords:             | binary logic circuits, registers                                                                                                                    |
| Form:                 | Form 2                                                                                                                                              |
| Alternative forms:    | S01694                                                                                                                                              |
| Applies:              | S01474; S01542; S01558; S01561; S01563; S01685                                                                                                      |
| Application notes:    | A00269                                                                                                                                              |
| Shape class:          | Characters, Rectangles                                                                                                                              |
| Function class:       | K Processing signals or information                                                                                                                 |
| Application class:    | Circuit diagrams, Function diagrams                                                                                                                 |
| Remarks:              | E.g. SN 74LS323 for which only the reset, hold and shift modes are shown.<br><br>This symbol illustrates how an incompletely utilized device may be |



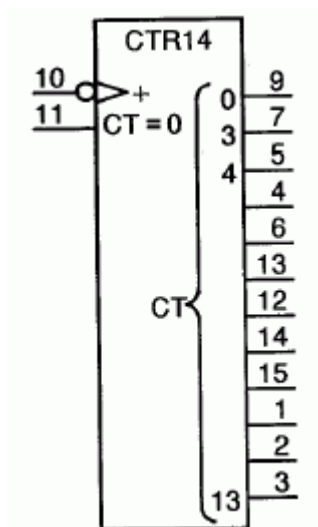
represented by a symbol suited to the application. For this purpose use is made of the fixed-mode input, symbol S01542.

Symbol S01694 depicts the same device performing another function.

**S01696**

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Binary ripple counter, 14-stage                        |
| Status level:         | Standard                                               |
| Released on:          | 2004-09-03                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-09                         |
| Keywords:             | binary logic circuits, counters                        |
| Form:                 | Form 1                                                 |
| Applies:              | S01464; S01473; S01479; S01480; S01555; S01561; S01686 |
| Application notes:    | A00269                                                 |
| Shape class:          | Characters, Rectangles                                 |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams                    |
| Remarks:              | E.g. CD 4020.                                          |

If it is not necessary to indicate the ripple effect, symbol S01697 may be used. As a simplified way of indicating the ripple effect, symbol S01697 may be used with the addition of the prefix R to the general qualifying symbol.

**S01697**

Name: Binary counter, 14-stage

Status level: **Standard**

Released on: 2004-09-03

Earlier published in: IEC 60617-12 (ed.3.0) 12-49-10

Keywords: binary logic circuits, counters

Form: Form 2

Applies: S01473; S01517; S01686

Application notes: A00269

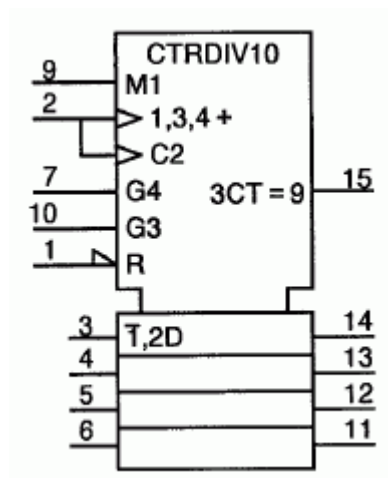
Shape class: Characters, Rectangles

Function class: K Processing signals or information

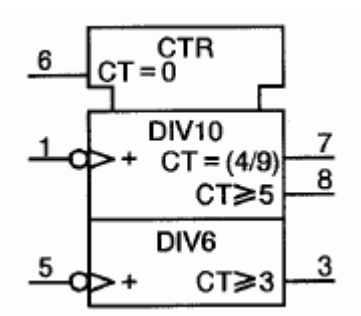
Application class: Circuit diagrams, Function diagrams

Remarks: E.g. CD 4020.

If it is necessary to indicate the ripple effect, the prefix R shall be added to the general qualifying symbol, for example RCTR14, or symbol S01696 shall be used.

**S01698**

|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| Name:                 | Counter, synchronous, decade, with parallel load               |
| Status level:         | Standard                                                       |
| Released on:          | 2004-09-03                                                     |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-11                                 |
| Keywords:             | binary logic circuits, counters                                |
| Applies:              | S01464; S01468; S01472; S01558; S01561; S01563; S01687; S01810 |
| Application notes:    | A00269                                                         |
| Shape class:          | Characters, Rectangles                                         |
| Function class:       | K Processing signals or information                            |
| Application class:    | Circuit diagrams, Function diagrams                            |
| Remarks:              | E.g. SN 74LS160.                                               |

**S01699**

**Name:** Counters, one dividing by 5 and 10 and the other by 6

**Status level:** Standard

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-49-12

**Keywords:** binary logic circuits, counters

**Applies:** S01464; S01474; S01539; S01687; S01770; S01772

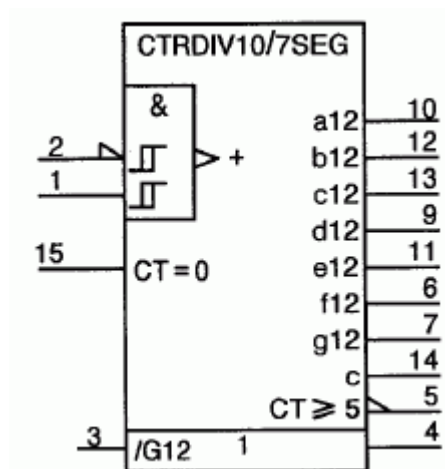
**Application notes:** A00269

**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. SN 74LS57.

**S01700**

**Name:** Decade counter/divider with decoded 7-segment-display outputs

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-49-13

**Keywords:** binary logic circuits, counters, dividers

**Applies:** S01474; S01483; S01492; S01567; S01687; S01770; S01810

**Application notes:** A00269, A00347

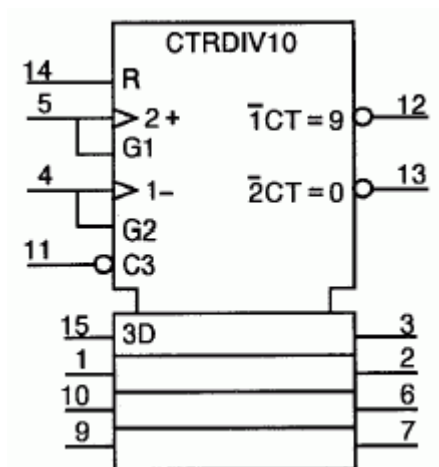
**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

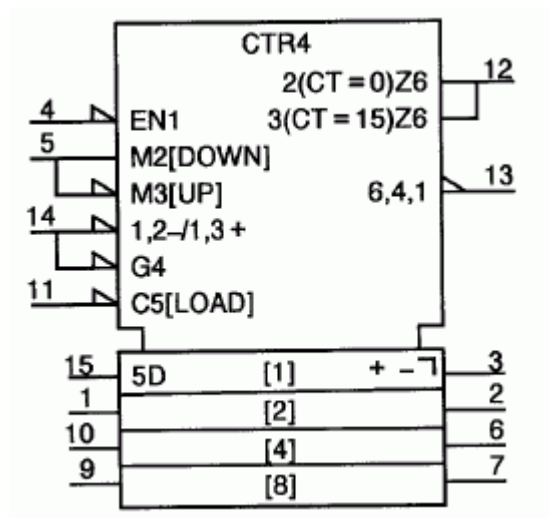
**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. CD 4026.

For the segment identification, see A00347.

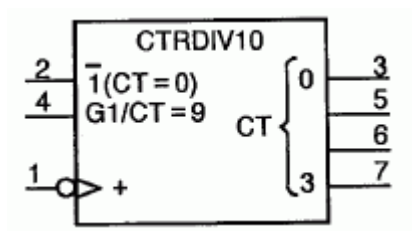
**S01701**

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Counter, decade, synchronous up/down                   |
| Status level:         | Standard                                               |
| Released on:          | 2004-09-03                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-14                         |
| Keywords:             | binary logic circuits, counters                        |
| Applies:              | S01464; S01472; S01558; S01561; S01687; S01772; S01810 |
| Application notes:    | A00269                                                 |
| Shape class:          | Characters, Rectangles                                 |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams                    |
| Remarks:              | E.g. SN 74192.                                         |

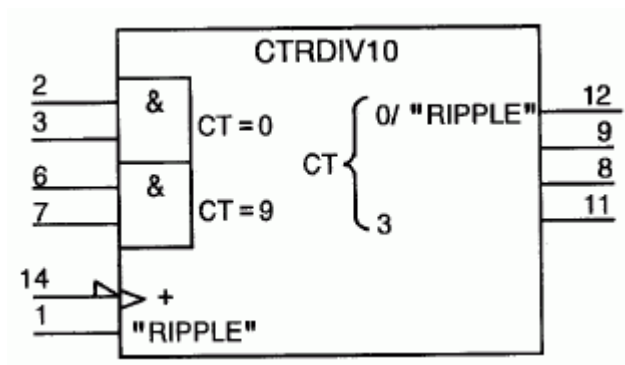
**S01702**

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| Name:                 | Binary counter, 4-bit, synchronous up/down                                      |
| Status level:         | <b>Standard</b>                                                                 |
| Released on:          | 2004-09-03                                                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-15                                                  |
| Keywords:             | binary logic circuits, counters                                                 |
| Applies:              | S01474; S01475; S01491; S01558; S01562; S01563; S01686; S01810                  |
| Application notes:    | A00269                                                                          |
| Shape class:          | Characters, Rectangles                                                          |
| Function class:       | K Processing signals or information                                             |
| Application class:    | Circuit diagrams, Function diagrams                                             |
| Remarks:              | Shown with supplementary clarifying information in the array.<br>E.g. SN 74191. |



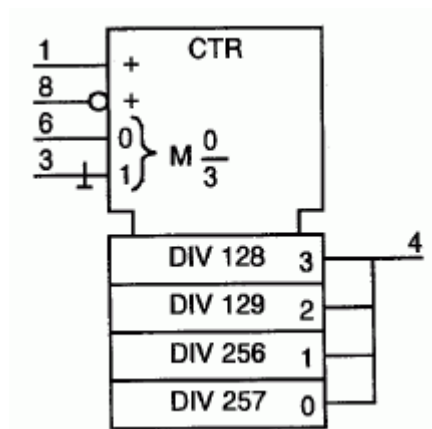
**S01703**

|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Counter, decade                                |
| Status level:         | <b>Standard</b>                                |
| Released on:          | 2004-09-03                                     |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-16                 |
| Keywords:             | binary logic circuits, counters                |
| Applies:              | S01473; S01518; S01538; S01686; S01810         |
| Application notes:    | A00269                                         |
| Shape class:          | Characters, Rectangles                         |
| Function class:       | C Storing, K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams            |
| Remarks:              | E.g. part of SN 74490.                         |

**S01704**

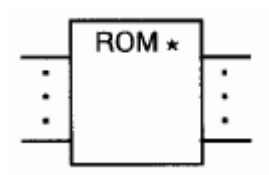
|                       |                                                |
|-----------------------|------------------------------------------------|
| Name:                 | Counter, decade                                |
| Status level:         | <b>Standard</b>                                |
| Released on:          | 2004-09-03                                     |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-49-17                 |
| Keywords:             | binary logic circuits, counters                |
| Applies:              | S01474; S01476; S01518; S01545; S01567; S01686 |
| Application notes:    | A00269                                         |
| Shape class:          | Characters, Rectangles                         |
| Function class:       | C Storing, K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams            |
| Remarks:              | E.g. SN 7490.                                  |

This symbol illustrates how a device may be represented by a symbol suited to the application. Symbol S01545 is used here to indicate that the symbol is a valid representation only if an external connection is made between terminals 1 and 12.

**S01705**

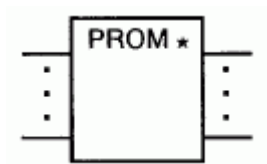
|                              |                                                |
|------------------------------|------------------------------------------------|
| <b>Name:</b>                 | Prescaler with four scaling factors            |
| <b>Status level:</b>         | <b>Standard</b>                                |
| <b>Released on:</b>          | 2004-09-03                                     |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-49-18                 |
| <b>Keywords:</b>             | binary logic circuits, counters, registers     |
| <b>Applies:</b>              | S01466; S01548; S01563; S01687                 |
| <b>Application notes:</b>    | A00269                                         |
| <b>Shape class:</b>          | Characters, Rectangles                         |
| <b>Function class:</b>       | C Storing, K Processing signals or information |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams            |
| <b>Remarks:</b>              | E.g. MB507.                                    |

## S01706



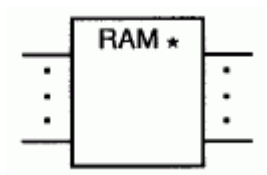
|                       |                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Read-only memory, general symbol                                                                                                                                                                                                                |
| Status level:         | Standard                                                                                                                                                                                                                                        |
| Released on:          | 2004-09-03                                                                                                                                                                                                                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-50-01                                                                                                                                                                                                                  |
| Keywords:             | binary logic elements, memories                                                                                                                                                                                                                 |
| Applied in:           | S01711, S01712                                                                                                                                                                                                                                  |
| Applies:              | S01463                                                                                                                                                                                                                                          |
| Application notes:    | A00269                                                                                                                                                                                                                                          |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                          |
| Function class:       | C Storing, K Processing signals or information                                                                                                                                                                                                  |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                          |
| Remarks:              | The asterisk shall be replaced by an appropriate indication of the number of addresses and bits. In such indications 1k stands for 1024 (= 1 Ki) and 1M for 1 048 576 (=1 Mi). That is k (Ki) and M (Mi) may be used as multiplication factors. |

## S01707



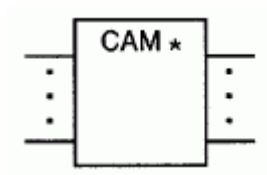
|                       |                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Programmable read-only memory, general symbol                                                                                                                                                                                                   |
| Status level:         | Standard                                                                                                                                                                                                                                        |
| Released on:          | 2004-09-03                                                                                                                                                                                                                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-50-02                                                                                                                                                                                                                  |
| Keywords:             | binary logic elements, memories                                                                                                                                                                                                                 |
| Applied in:           | S01713, S01715                                                                                                                                                                                                                                  |
| Applies:              | S01463                                                                                                                                                                                                                                          |
| Application notes:    | A00269                                                                                                                                                                                                                                          |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                          |
| Function class:       | C Storing, K Processing signals or information                                                                                                                                                                                                  |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                          |
| Remarks:              | The asterisk shall be replaced by an appropriate indication of the number of addresses and bits. In such indications 1k stands for 1024 (= 1 Ki) and 1M for 1 048 576 (=1 Mi). That is k (Ki) and M (Mi) may be used as multiplication factors. |

## S01708



|                       |                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Random-access memory, general symbol                                                                                                                                                                                                            |
| Status level:         | Standard                                                                                                                                                                                                                                        |
| Released on:          | 2004-09-03                                                                                                                                                                                                                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-50-03                                                                                                                                                                                                                  |
| Alternative names:    | Read/write memory, general symbol                                                                                                                                                                                                               |
| Keywords:             | binary logic elements, memories                                                                                                                                                                                                                 |
| Applied in:           | S01716, S01722, S01718, S01717                                                                                                                                                                                                                  |
| Applies:              | S01463                                                                                                                                                                                                                                          |
| Application notes:    | A00269                                                                                                                                                                                                                                          |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                          |
| Function class:       | C Storing, K Processing signals or information                                                                                                                                                                                                  |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                          |
| Remarks:              | The asterisk shall be replaced by an appropriate indication of the number of addresses and bits. In such indications 1k stands for 1024 (= 1 Ki) and 1M for 1 048 576 (=1 Mi). That is k (Ki) and M (Mi) may be used as multiplication factors. |

## S01709



**Name:** Content-addressable memory, general symbol

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-50-04

**Alternative names:** Associative memory, general symbol

**Keywords:** binary logic elements, memories

**Applies:** S01463

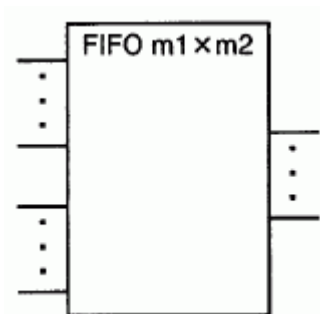
**Application notes:** A00269

**Shape class:** Characters, Rectangles

**Function class:** C Storing, K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

**Remarks:** The asterisk shall be replaced by an appropriate indication of the number of addresses and bits. In such indications 1k stands for 1024 (= 1 Ki) and 1M for 1 048 576 (=1 Mi). That is k (Ki) and M (Mi) may be used as multiplication factors.

**S01710**

**Name:** First-in first-out memory, general symbol

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-50-05

**Keywords:** binary logic elements, memories

**Applied in:** S01720, S01721, S01719

**Applies:** S01463

**Application notes:** A00269

**Shape class:** Characters, Rectangles

**Function class:** C Storing, K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

**Remarks:** The general qualifying symbol signifies that, as in all memory elements, each associated element represents a single general case of the sections of a multi-dimensional array, although ADDRESS dependency is usually not used in symbols for first-in first-out memories.

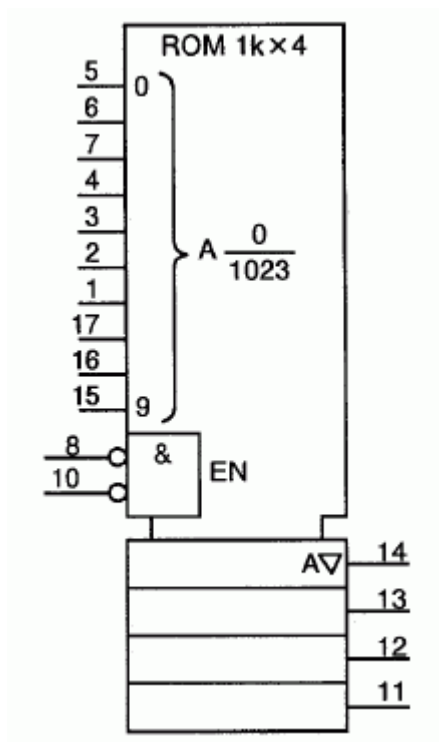
The internal logic states of the m2 data outputs correspond to the values of the bits of the word first entered of those words presently stored. As each word is clocked out, subsequently stored words become available at the outputs in the order in which they were entered. If no words are presently stored, the internal logic states of the data outputs are not specified by the general qualifying symbol.

m1 shall be replaced by the maximum number of words that can be stored. m2 shall be replaced by the number of data outputs.

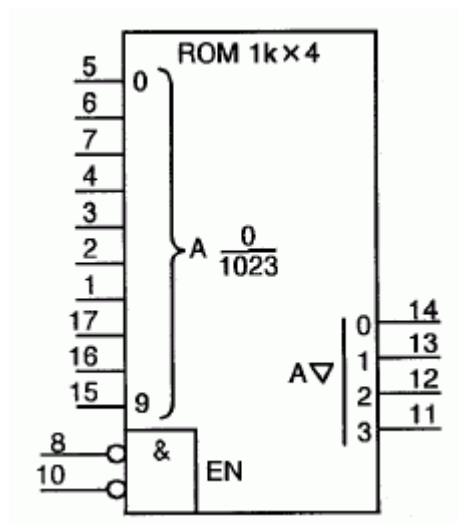
This symbol will normally require a counter to be shown as an



embedded symbol, although this may not necessarily represent the actual implementation. The content of the counter represents the number of words presently stored, that is, the number of words that have been clocked in less the number of words that have been clocked out. The indication of the cycle length of the counter is omitted from the CTR qualifying symbol because, by definition, the counter cannot be incremented beyond  $m_1$  to start a new cycle.

**S01711**

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Read-only memory (ROM) 1024x4-bit                      |
| Status level:         | <b>Standard</b>                                        |
| Released on:          | 2004-09-03                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-51-01                         |
| Keywords:             | binary logic circuits, memories                        |
| Alternative forms:    | S01712                                                 |
| Applies:              | S01464; S01466; S01498; S01516; S01565; S01567; S01706 |
| Application notes:    | A00269                                                 |
| Shape class:          | Characters                                             |
| Function class:       | C Storing                                              |
| Application class:    | Circuit diagrams, Function diagrams                    |
| Remarks:              | E.g. INTEL 3625.                                       |

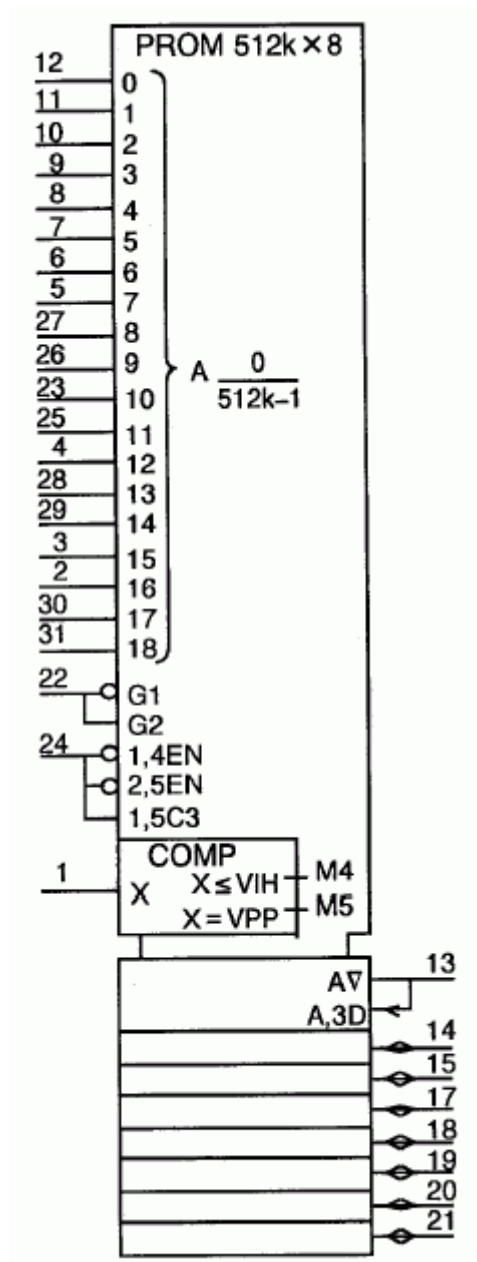
**S01712**

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Read-only memory (ROM) 1024x4-bit                      |
| Status level:         | <b>Standard</b>                                        |
| Released on:          | 2004-09-03                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-51-02                         |
| Keywords:             | binary logic circuits, memories                        |
| Form:                 | Simplified form                                        |
| Alternative forms:    | S01711                                                 |
| Applies:              | S01466; S01468; S01498; S01516; S01518; S01565; S01706 |
| Application notes:    | A00269                                                 |
| Shape class:          | Characters                                             |
| Function class:       | C Storing                                              |
| Application class:    | Circuit diagrams, Function diagrams                    |
| Remarks:              | E.g. INTEL 3625.                                       |

Because no confusion is likely concerning the correspondence between data inputs and data outputs and because each section has only one output, it is not necessary to show the array.

Simplification of the output labeling is achieved by the use of label

grouping; see symbol S01518. The relative order of the individual outputs is identified by the numbers adjacent to the connecting lines grouped by the label grouping. In this simplified form, the square brackets around these numbers have been omitted.

**S01713**

**Name:** Programmable read-only memory (PROM), 512kx8-bit

**Status level:** Standard

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-51-03

**Keywords:** binary logic circuits, memories

**Alternative forms:** S01714

**Applies:** S00099; S00101; S01464; S01468; S01475; S01498; S01516; S01558;

S01563; S01565; S01707; S01800; S01801

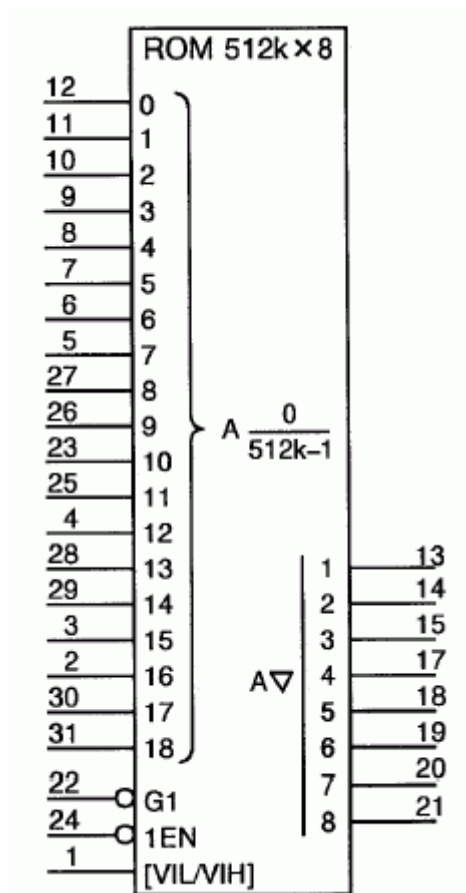
Application notes: A00269

Shape class: Characters

Function class: C Storing

Application class: Circuit diagrams, Function diagrams

Remarks: Shown with READ and WRITE function.  
E.g. M27C4001.

**S01714**

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Programmable read-only memory (PROM), 512kx8-bit       |
| Status level:         | Standard                                               |
| Released on:          | 2004-09-03                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-51-04                         |
| Keywords:             | binary logic circuits, memories                        |
| Form:                 | Simplified form                                        |
| Alternative forms:    | S01713                                                 |
| Applies:              | S01466; S01498; S01503; S01516; S01518; S01565; S01810 |
| Application notes:    | A00269                                                 |
| Shape class:          | Characters                                             |
| Function class:       | C Storing                                              |

**Application class:** Circuit diagrams, Function diagrams

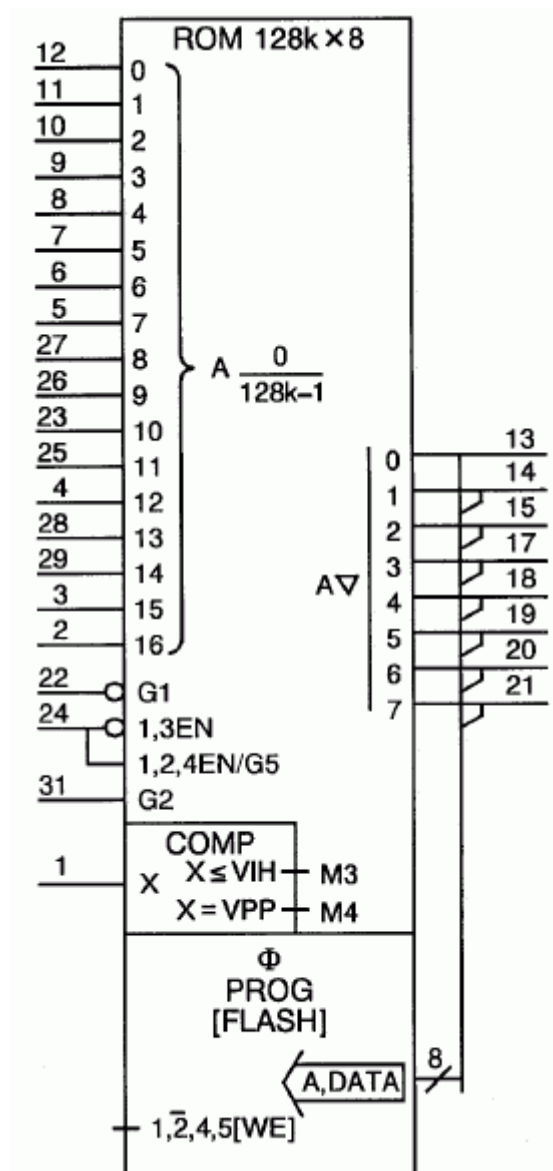
**Remarks:** The simplified form only shows the READ function.

E.g. M27C4001.

Because no confusion is likely concerning the correspondence between data inputs and data outputs and because each section has only one output, it is not necessary to show the array.

Simplification of the output labeling is achieved by the use of label grouping; see symbol S01518. The relative order of the individual outputs is identified by the numbers adjacent to the connecting lines grouped by the label grouping. In this simplified form, the square brackets around these numbers have been omitted.



**S01715**

**Name:** Programmable read-only memory, electrically alterable, 128kx8-bit

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-51-04A

**Alternative names:** Flash memory, 128kx8-bit

**Keywords:** binary logic circuits, memories

**Applies:** S01466; S01468; S01475; S01479; S01498; S01516; S01518; S01565; S01707; S01731; S01732; S01800; S01810

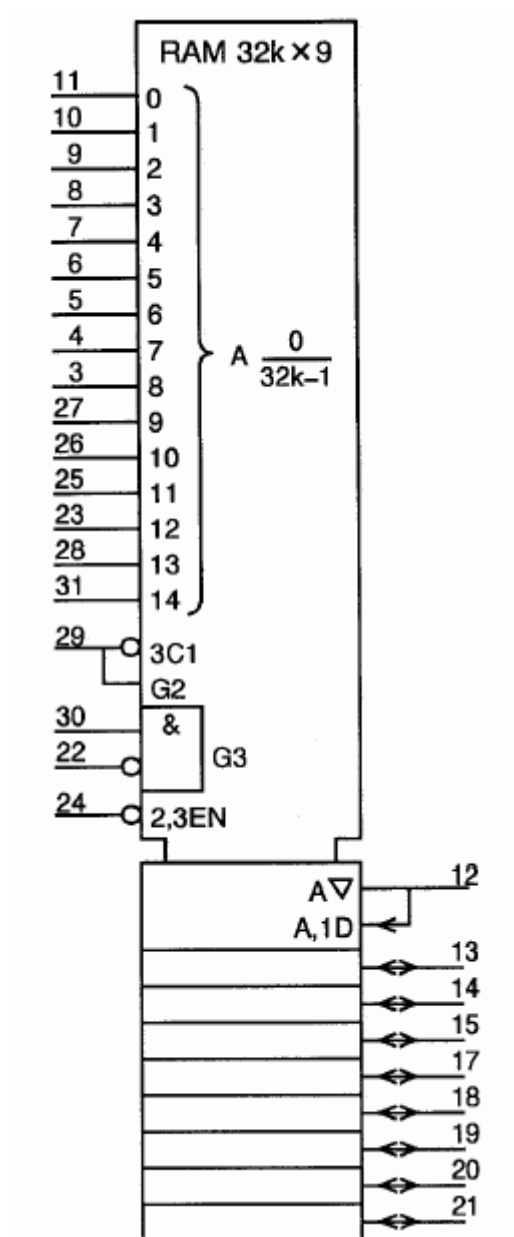
Application notes: A00269

Shape class: Characters

Function class: C Storing

Application class: Circuit diagrams, Function diagrams

Remarks: E.g. AM28F010.

**S01716**

**Name:** Random-access memory (RAM), 32kx9-bit

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-51-05

**Keywords:** binary logic circuits, memories

**Applies:** S00099; S00101; S01466; S01503; S01516; S01518; S01558; S01565; S01708; S01810

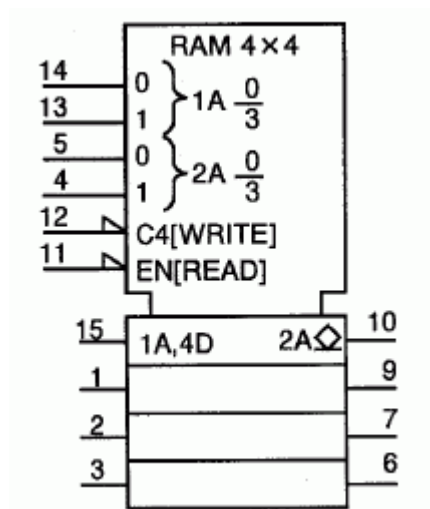
**Application notes:** A00269

Shape class: Characters, Rectangles

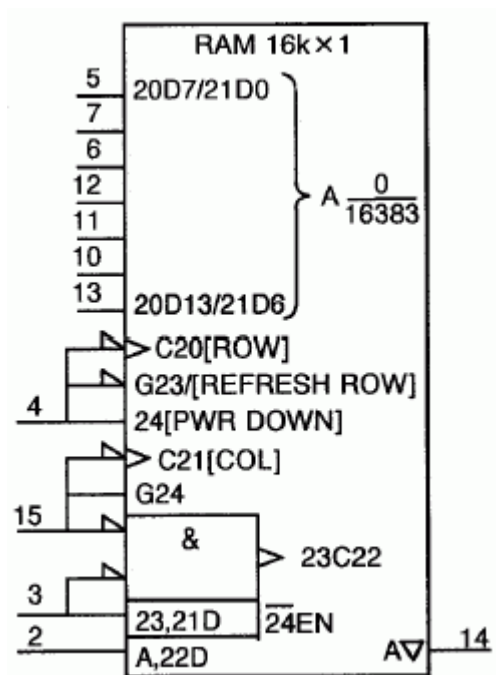
Function class: C Storing

Application class: Circuit diagrams, Function diagrams

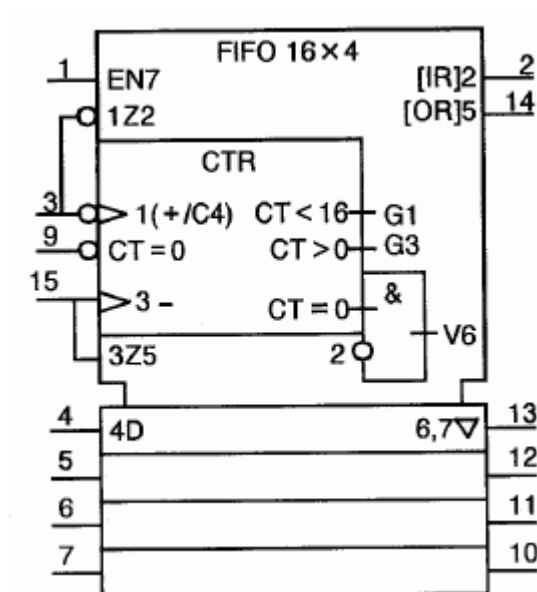
Remarks: E.g. TC55329.

**S01717**

|                              |                                                                       |
|------------------------------|-----------------------------------------------------------------------|
| <b>Name:</b>                 | Random-access memory, 4x4-bit, with separate write and read addresses |
| <b>Status level:</b>         | <b>Standard</b>                                                       |
| <b>Released on:</b>          | 2004-09-03                                                            |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-51-06                                        |
| <b>Keywords:</b>             | binary logic circuits, memories                                       |
| <b>Applies:</b>              | S01464; S01468; S01495; S01503; S01516; S01558; S01565; S01708        |
| <b>Application notes:</b>    | A00269                                                                |
| <b>Shape class:</b>          | Characters, Rectangles                                                |
| <b>Function class:</b>       | C Storing                                                             |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                   |
| <b>Remarks:</b>              | E.g. SN 74170.                                                        |

**S01718**

|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Random-access memory, dynamic, 16384x1-bit                             |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-03                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-51-07                                         |
| Keywords:             | binary logic circuits, memories                                        |
| Applies:              | S01468; S01474; S01477; S01518; S01558; S01565; S01567; S01708; S01810 |
| Application notes:    | A00269                                                                 |
| Shape class:          | Rectangles                                                             |
| Function class:       | C Storing                                                              |
| Application class:    | Circuit diagrams, Function diagrams                                    |
| Remarks:              | E.g. TMS 4116.                                                         |

**S01719**

**Name:** First-in first-out memory, counter-controlled, 16x4-bit

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-51-08

**Keywords:** binary logic circuits, memories

**Applies:** S01462; S01464; S01468; S01469; S01472; S01518; S01686; S01710; S01772; S01811

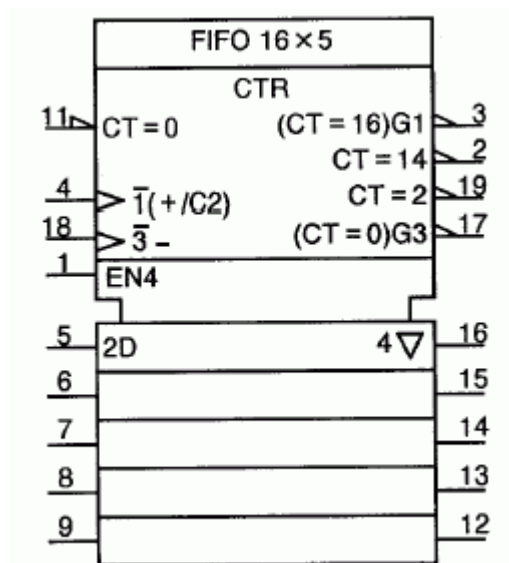
**Application notes:** A00269

**Shape class:** Characters, Rectangles

**Function class:** C Storing

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. SN 74LS224.

**S01720**

**Name:** First-in first-out memory, counter-controlled, 16x5-bit

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-51-09

**Keywords:** binary logic circuits, memories

**Applies:** S01462; S01464; S01468; S01469; S01472; S01518; S01686; S01710; S01811

**Application notes:** A00269

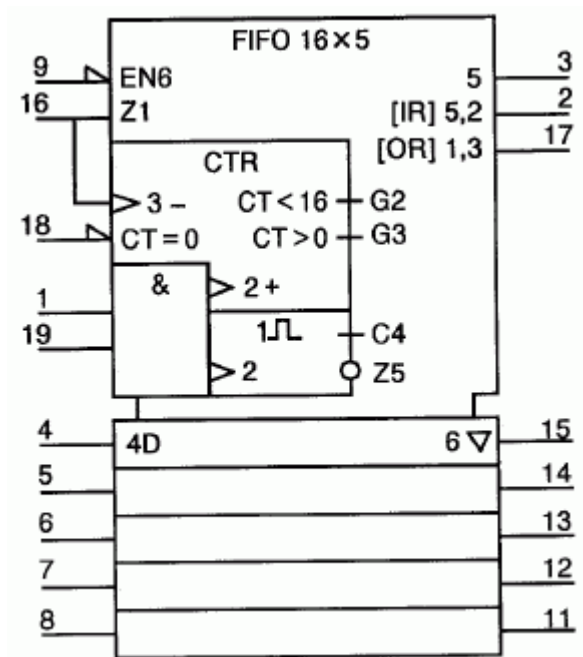
**Shape class:** Characters, Rectangles

**Function class:** C Storing

**Application class:** Circuit diagrams, Function diagrams

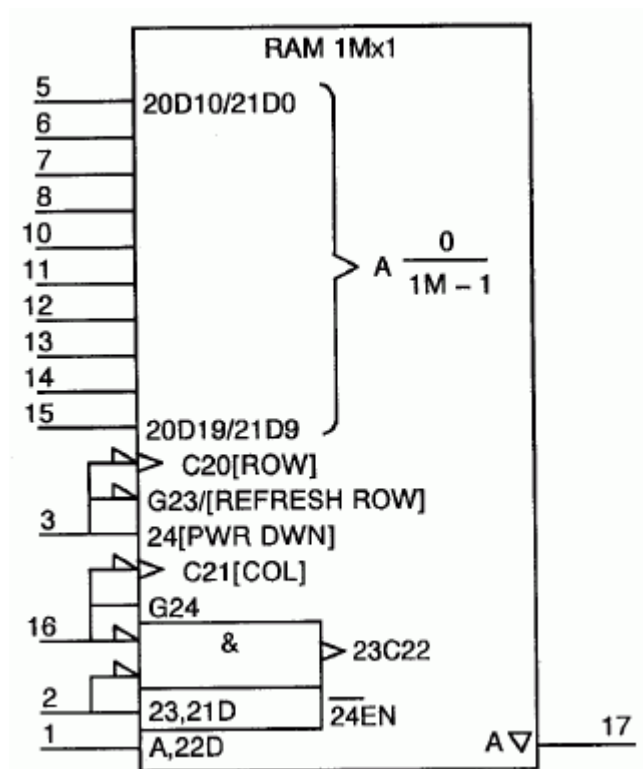
**Remarks:** E.g. SN 74ALS229.



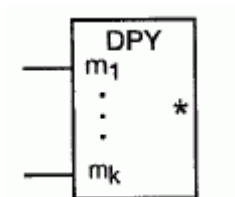
**S01721**

|                              |                                                                                                                |
|------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | First-in first-out memory, fall-through, 16x5-bit                                                              |
| <b>Status level:</b>         | Standard                                                                                                       |
| <b>Released on:</b>          | 2004-09-03                                                                                                     |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-51-10                                                                                 |
| <b>Keywords:</b>             | binary logic circuits, memories                                                                                |
| <b>Form:</b>                 | Form 1                                                                                                         |
| <b>Alternative forms:</b>    | S01744                                                                                                         |
| <b>Applies:</b>              | S01464; S01468; S01472; S01475; S01486; S01554; S01558; S01562; S01567; S01674; S01710; S01770; S01771; S01772 |
| <b>Application notes:</b>    | A00269                                                                                                         |
| <b>Shape class:</b>          | Characters, Rectangles                                                                                         |
| <b>Function class:</b>       | C Storing                                                                                                      |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                                                                            |
| <b>Remarks:</b>              | E.g. SN 74S225.                                                                                                |

Symbol S01744 depicts the same device using the techniques for complex-function elements.

**S01722**

- Name:** Random-access memory, dynamic, 1048576x1-bit
- Status level:** **Standard**
- Released on:** 2004-09-03
- Earlier published in:** IEC 60617-12 (ed.3.0) 12-51-11
- Keywords:** binary logic circuits, memories
- Applies:** S01472; S01474; S01516; S01518; S01558; S01565; S01567; S01708; S01810
- Application notes:** A00269
- Shape class:** Characters, Rectangles
- Function class:** C Storing
- Application class:** Circuit diagrams, Function diagrams
- Remarks:** E.g. TMS 4C1024.

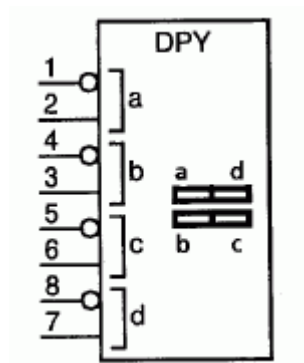
**S01723**

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Display element, general symbol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Status level:         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Released on:          | 2004-09-03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-52-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Keywords:             | binary logic elements, display elements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Applied in:           | S01726, S01725, S01727, S01745, S01724, S01746, S01730, S01729, S01728                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Applies:              | S01463                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Application notes:    | A00269, A00315                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Function class:       | K Processing signals or information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Application class:    | Circuit diagrams, Function diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Remarks:              | <p>The asterisk shall be replaced either by</p> <ul style="list-style-type: none"><li>- an appropriate indication of the display; and/or by</li><li>- a reference to a table.</li></ul> <p>The elements that make up the display shall always be shown in their correct physical positions relative to each other. Rotation of symbols to preserve the relative orientation of the display with respect to the reader is sometimes advisable.</p> <p><math>m_1 \dots m_k</math> shall each be replaced either by</p> <ul style="list-style-type: none"><li>- an appropriate indication of the visual signals controlled by those inputs; or by</li><li>- appropriate designations referring to entries in a table.</li></ul> <p>If reference is made to a table in which the terminal designations are used to identify the inputs, these designations may be omitted.</p> |

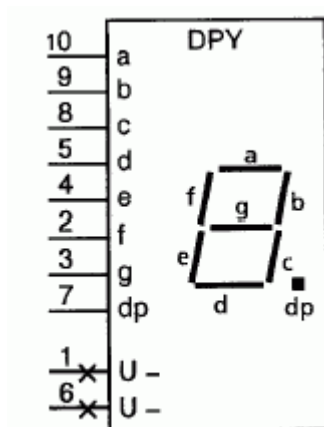
It should be recognized that the visual (optical) signals produced by display elements, for example LED or LCD, bar or dot matrices, are external outputs of those elements.

For the representation of of complex-function display elements, see symbols S01745 and S01746.

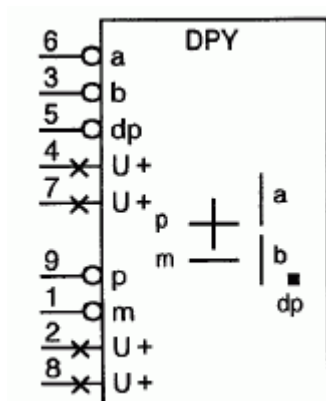
## S01724



|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | LED light bars                          |
| Status level:         | Standard                                |
| Released on:          | 2004-09-03                              |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-53-01          |
| Keywords:             | binary logic circuits, display elements |
| Applies:              | S01540; S01723                          |
| Application notes:    | A00269                                  |
| Shape class:          | Characters                              |
| Function class:       | P Presenting information                |
| Application class:    | Circuit diagrams, Function diagrams     |
| Remarks:              | E.g. HLMP 2600.                         |

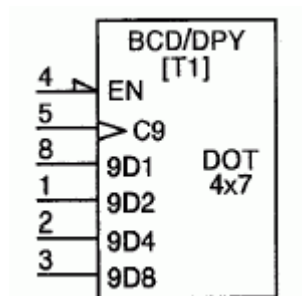
**S01725**

|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Seven-segment display                   |
| Status level:         | <b>Standard</b>                         |
| Released on:          | 2004-09-03                              |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-53-02          |
| Keywords:             | binary logic circuits, display elements |
| Applies:              | S01723; S01753                          |
| Application notes:    | A00269                                  |
| Shape class:          | Characters                              |
| Function class:       | P Presenting information                |
| Application class:    | Circuit diagrams, Function diagrams     |
| Remarks:              | E.g. HDSP 3603.                         |

**S01726**

|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Overflow display                        |
| Status level:         | <b>Standard</b>                         |
| Released on:          | 2004-09-03                              |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-53-03          |
| Keywords:             | binary logic circuits, display elements |
| Applies:              | S01466; S01723; S01753                  |
| Application notes:    | A00269                                  |
| Shape class:          | Characters                              |
| Function class:       | P Presenting information                |
| Application class:    | Circuit diagrams, Function diagrams     |
| Remarks:              | E.g. HDSP 5607.                         |



**S01727**

**Name:** Hexadecimal display

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-53-04

**Keywords:** binary logic circuits, display elements

**Applies:** S01468; S01472; S01503; S01558; S01610; S01723

**Application notes:** A00269

**Shape class:** Characters

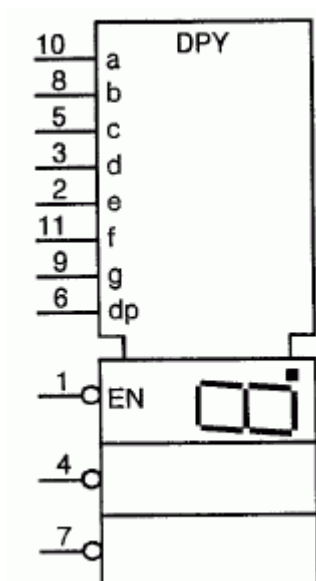
**Function class:** P Presenting information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. 5082-7340.

[T1] refers to a font table describing the decoding from BCD to a dotmatrix 4x7.

The visual signals are visible only if the EN-input stands at its internal 1-state. The latching of the data is not controlled by the EN-input.

**S01728**

**Name:** Numeric display, three 7-segment characters with decimal point

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-53-05

**Keywords:** binary logic circuits, display elements

**Applies:** S01464; S01466; S01503; S01723

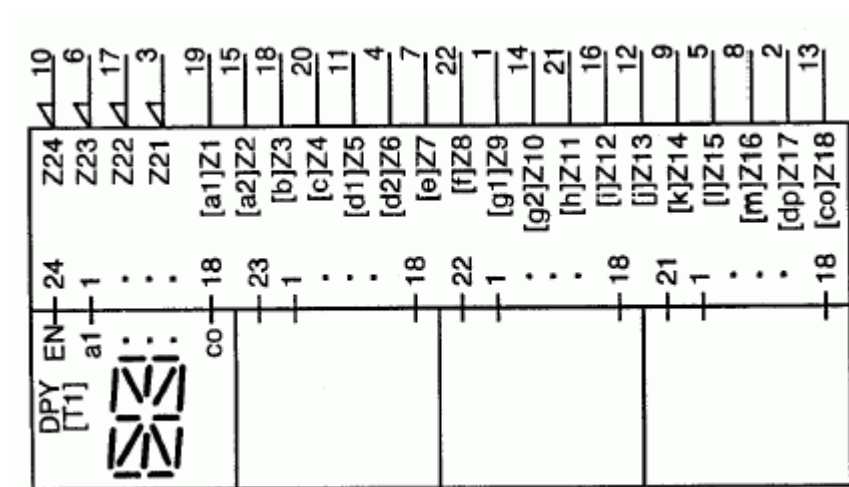
**Application notes:** A00269

**Shape class:** Characters

**Function class:** P Presenting information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. 5082-7433.

**S01729**

**Name:** Alphanumeric display, four 16-segment characters

**Status level:** **Standard**

**Released on:** 2004-09-03

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-53-06

**Keywords:** binary logic circuits, display elements

**Applies:** S01468; S01475; S01503; S01554; S01723

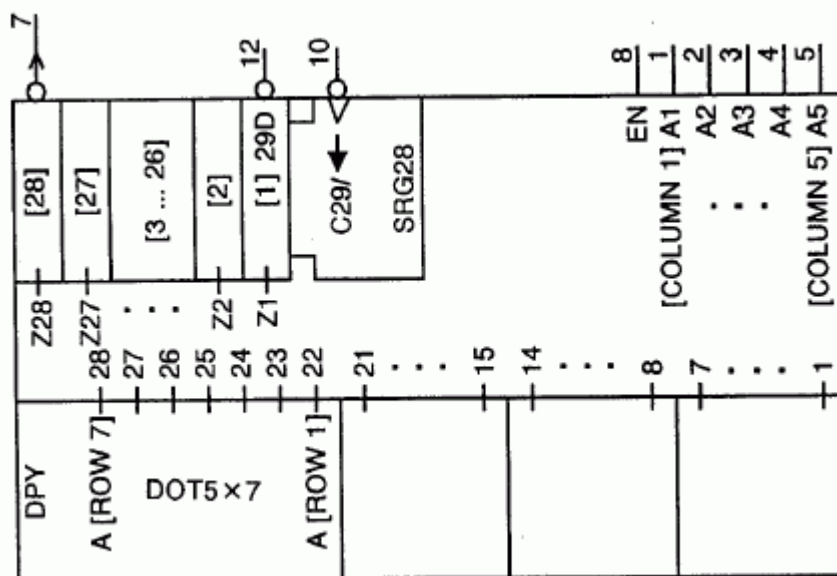
**Application notes:** A00269, A00316

**Shape class:** Characters

**Function class:** P Presenting information

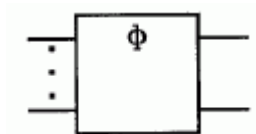
**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. HDSP 6504.

**S01730**

|                              |                                                        |
|------------------------------|--------------------------------------------------------|
| <b>Name:</b>                 | Alphanumeric display, four 5x7-dot characters          |
| <b>Status level:</b>         | <b>Standard</b>                                        |
| <b>Released on:</b>          | 2004-09-03                                             |
| <b>Earlier published in:</b> | IEC 60617-12 (ed.3.0) 12-53-07                         |
| <b>Keywords:</b>             | binary logic circuits, display elements                |
| <b>Applies:</b>              | S01464; S01466; S01467; S01475; S01503; S01565; S01723 |
| <b>Application notes:</b>    | A00269                                                 |
| <b>Shape class:</b>          | Characters                                             |
| <b>Function class:</b>       | P Presenting information                               |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams                    |
| <b>Remarks:</b>              | E.g. HDSP 2000.                                        |

## S01731



|                       |                                                                                                                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Complex-function element ("gray box"), general symbol                                                                                                                                                                                                           |
| Status level:         | Standard                                                                                                                                                                                                                                                        |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                      |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-54-01                                                                                                                                                                                                                                  |
| Keywords:             | arithmetic elements, binary logic elements, combinative elements, complex function elements                                                                                                                                                                     |
| Applied in:           | S01738, S01740, S01735, S01737, S01803, S01745, S01736, S01734, S01741, S01746, S01742, S01739, S01743, S01744, S01747, S01715                                                                                                                                  |
| Applies:              | S01463; S01808                                                                                                                                                                                                                                                  |
| Application notes:    | A00269, A00317                                                                                                                                                                                                                                                  |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                                          |
| Function class:       | K Processing signals or information                                                                                                                                                                                                                             |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                          |
| Remarks:              | The letter $\Phi$ shall be supported by an indication, preferably short, of the function. In addition, a reference to supporting documentation (for example a type number or reference designation) shall be included within or adjacent to the symbol outline. |

## S01732

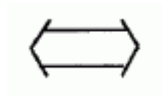


|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Bus indicator, unidirectional                                          |
| Status level:         | Standard                                                               |
| Released on:          | 2004-09-03                                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-55-01                                         |
| Keywords:             | binary logic elements, bus indicators, complex function elements       |
| Applied in:           | S01740, S01745, S01736, S01734, S01741, S01743, S01744, S01747, S01715 |
| Application notes:    | A00269, A00318                                                         |
| Shape class:          | Arrows                                                                 |
| Function class:       | - Functional elements or attributes                                    |
| Application class:    | Conceptual elements or qualifiers                                      |
| Remarks:              | Symbol shown for signal flow from left to right                        |

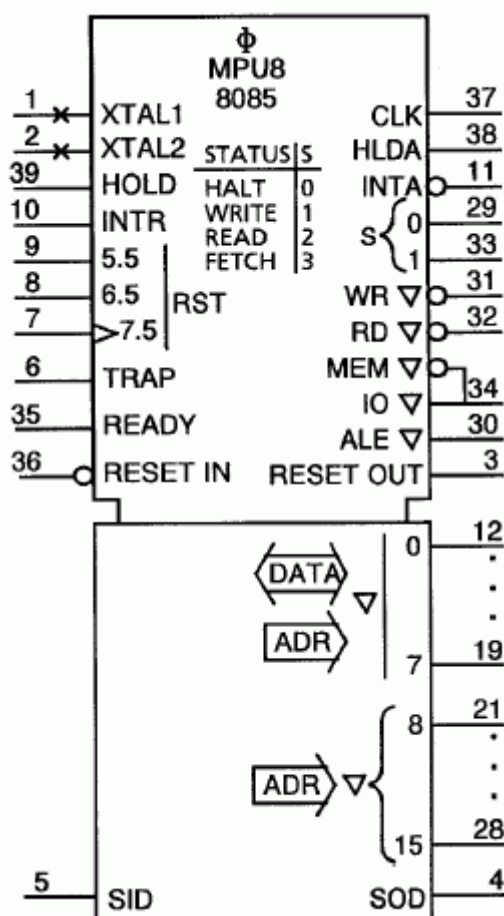
If associated with terminals, a bit-grouping symbol (symbol S01516 or symbol S01517) or a label-grouping symbol (see symbol S01518), as appropriate, shall be shown between the bus indicator and the symbol outline. Then the connecting lines grouped together need no arrowheads to indicate the direction of signal flow.

If a bus name or a common portion of the labels for the associated terminals is shown, that name or common portion should be placed inside the bus indicator.

## S01733



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Bus indicator, bidirectional                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Released on:          | 2004-09-03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-55-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Keywords:             | binary logic elements, bus indicators, complex function elements                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Applied in:           | S01735, S01736, S01734, S01742, S01898, S01747                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Application notes:    | A00269, A00318                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Shape class:          | Arrows                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Application class:    | Circuit diagrams, Function diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Remarks:              | <p>If associated with terminals, a bit-grouping symbol (symbol S01516 or symbol S01517) or a label-grouping symbol (see symbol S01518), as appropriate, shall be shown between the bus indicator and the symbol outline. Then the connecting lines grouped together need no arrowheads to indicate the direction of signal flow.</p> <p>If a bus name or a common portion of the labels for the associated terminals is shown, that name or common portion should be placed inside the bus indicator.</p> |

**S01734**

Name: Microprocessor, 8-bit

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-12 (ed.3.0) 12-56-01

Keywords: binary logic circuits, complex function circuits, microprocessors

Applies: S01463; S01464; S01466; S01467; S01472; S01498; S01518; S01678; S01731; S01732; S01733

Application notes: A00269, A00317, A00356

Shape class: Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

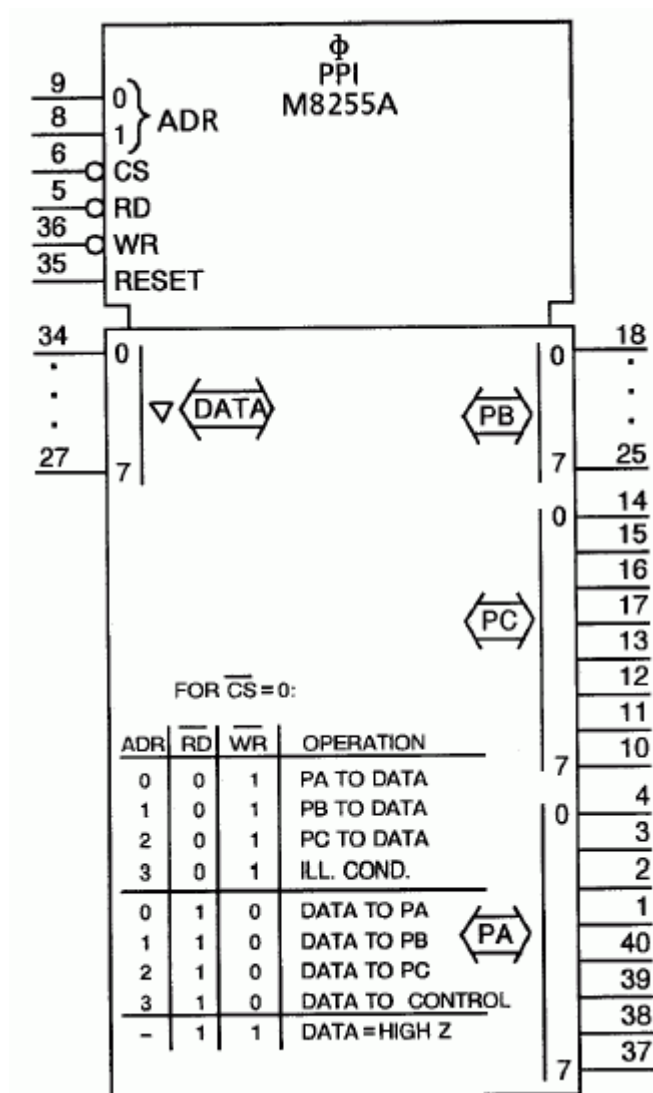


Remarks: E.g. INTEL 8085.

In accordance with 2 of A00317:

- ADR replaces A,
- ADR and DATA replace AD, and
- MEM replaces M.

The table is shown for the assistance of the reader but may be omitted.

**S01735**

**Name:** Programmable peripheral interface

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-56-02

**Keywords:** binary logic circuits, complex function circuits, interfaces, microprocessors

**Applies:** S01466; S01498; S01517; S01518; S01731; S01733

**Application notes:** A00269, A00305, A00317, A00356

**Shape class:** Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

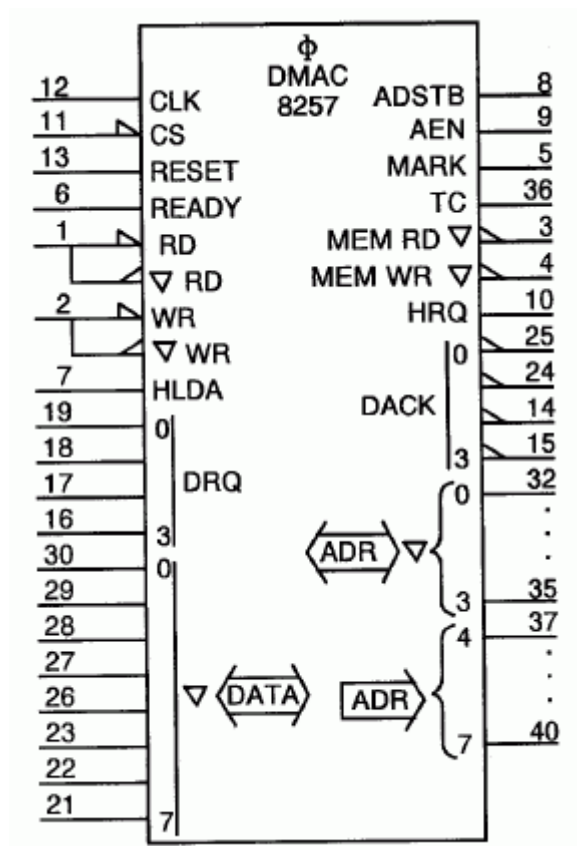
Remarks: E.g. INTEL M8255A.

The table is shown for the assistance of the reader but may be omitted.

In accordance with 54.2 of A00317:

- ADR replaces A, and

- DATA replaces D.

**S01736**

Name: Programmable DMA controller

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-12 (ed.3.0) 12-56-03

Keywords: binary logic circuits, complex function circuits, microprocessors

Applies: S01468; S01469; S01471; S01498; S01518; S01731; S01732; S01733

Application notes: A00269, A00317, A00356

Shape class: Characters, Rectangles

Function class: K Processing signals or information

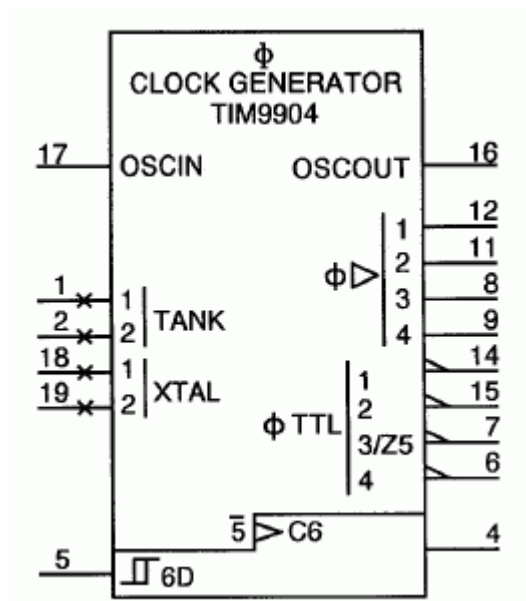
Application class: Circuit diagrams, Function diagrams

Remarks: E.g. INTEL 8257.

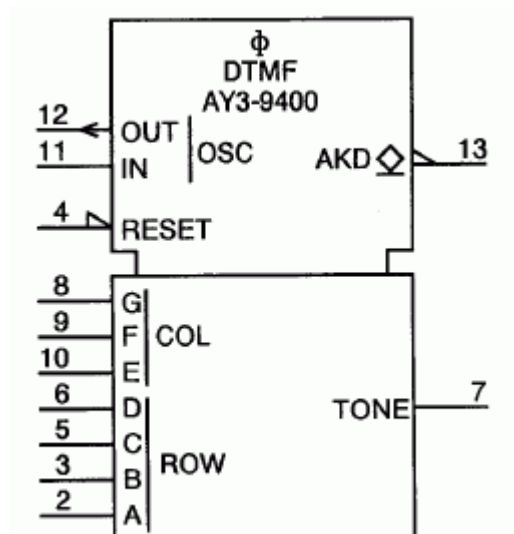
In accordance with 54.2 of A00317:

- ADR replaces A, and

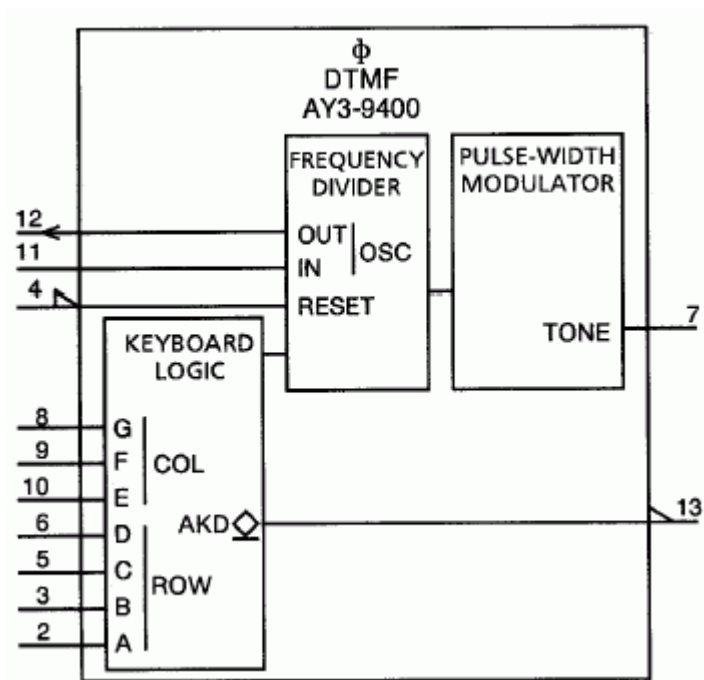
- DATA replaces D.

**S01737**

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Clock generator/driver, four-phase                                                                 |
| Status level:         | Standard                                                                                           |
| Released on:          | 2004-09-13                                                                                         |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-56-04                                                                     |
| Keywords:             | binary logic circuits, clock generators, complex function circuits, signal generators              |
| Applies:              | S01457; S01469; S01477; S01492; S01518; S01559; S01731; S01752                                     |
| Application notes:    | A00269, A00305, A00317, A00356                                                                     |
| Shape class:          | Characters, Rectangles                                                                             |
| Function class:       | G Initiating a flow                                                                                |
| Application class:    | Circuit diagrams, Function diagrams                                                                |
| Remarks:              | E.g. Texas Instruments TIM9904, formerly SN 74LS362.<br>The symbol S01683 depicts the same device. |

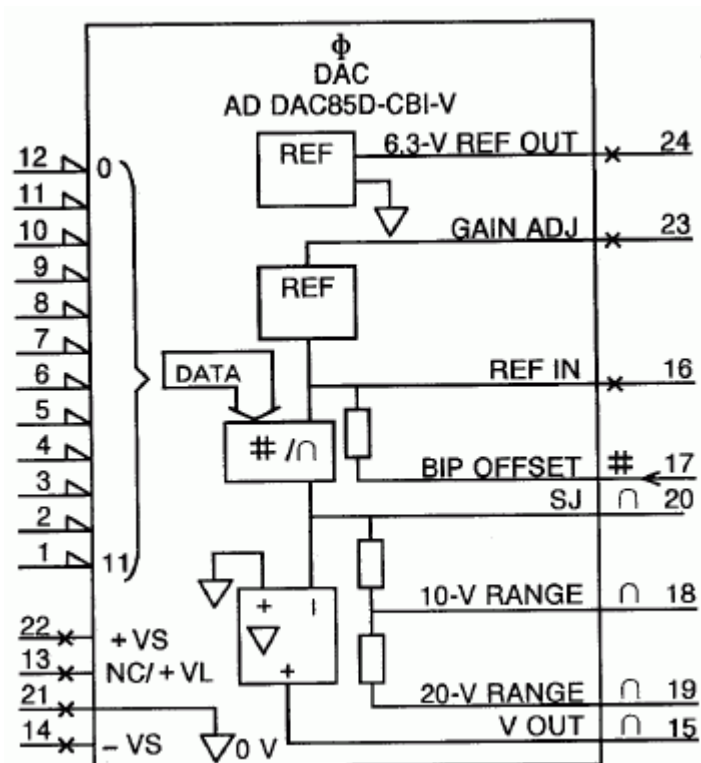
**S01738**

|                       |                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------|
| Name:                 | Dual-tone multi-frequency generator (generates 12 tone-pairs)                         |
| Status level:         | Standard                                                                              |
| Released on:          | 2004-09-13                                                                            |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-56-05                                                        |
| Keywords:             | binary logic circuits, clock generators, complex function circuits, signal generators |
| Alternative forms:    | S01739                                                                                |
| Applies:              | S00099; S01464; S01468; S01495; S01518; S01731                                        |
| Application notes:    | A00269, A00317, A00356                                                                |
| Shape class:          | Characters, Rectangles                                                                |
| Function class:       | G Initiating a flow                                                                   |
| Application class:    | Circuit diagrams, Function diagrams                                                   |
| Remarks:              | E.g. General Instruments AY3-9400.<br>See also symbol S01739.                         |

**S01739**

- Name:** Dual-tone multi-frequency generator (generates 12 tone-pairs)
- Status level:** **Standard**
- Released on:** 2004-09-13
- Earlier published in:** IEC 60617-12 (ed.3.0) 12-56-06
- Keywords:** binary logic circuits, clock generators, complex function circuits, signal generators
- Alternative forms:** S01738
- Applies:** S00099; S01468; S01495; S01518; S01731
- Application notes:** A00269, A00317, A00356
- Shape class:** Characters, Rectangles
- Function class:** G Initiating a flow
- Application class:** Circuit diagrams, Function diagrams
- Remarks:** E.g. General Instruments AY3-9400.  
See also symbol S01738.



**S01740**

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Digital-to-analogue converter, 12-bit                                                              |
| Status level:         | <b>Standard</b>                                                                                    |
| Released on:          | 2004-09-13                                                                                         |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-56-07                                                                     |
| Keywords:             | analogue circuits, binary logic circuits, complex function circuits, converters, signal converters |
| Alternative forms:    | S01741                                                                                             |
| Applies:              | S00555; S01231; S01468; S01516; S01731; S01732; S01749; S01750; S01752; S01753; S01782             |
| Application notes:    | A00269, A00317, A00356                                                                             |
| Shape class:          | Characters, Rectangles                                                                             |
| Function class:       | K Processing signals or information                                                                |
| Application class:    | Circuit diagrams, Function diagrams                                                                |
| Remarks:              | E.g. Analog Devices AD DAC85D-CBI-V.                                                               |

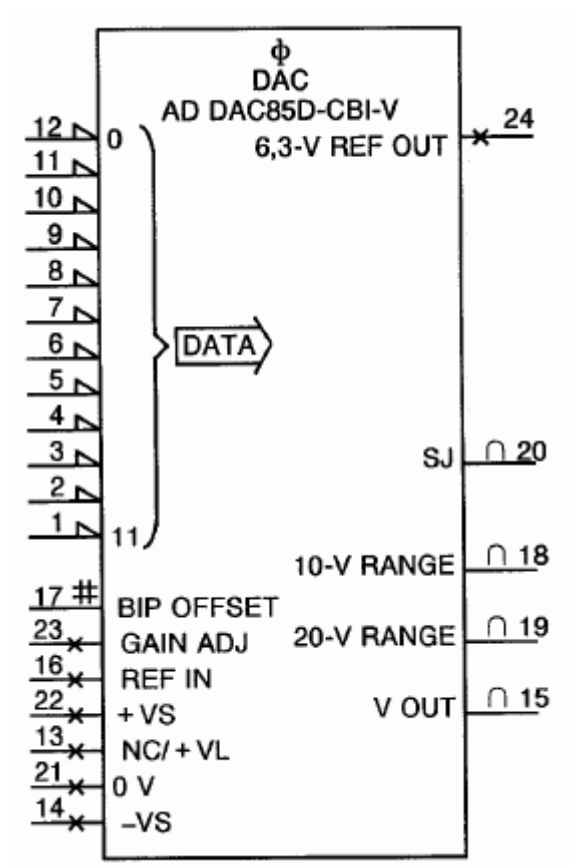
See also symbol S0741.

Because the logic inputs produce a number, use has been made of the bit-grouping symbol. Consequently the labelling of these inputs differs from that of the manufacturer.

If no confusion is likely,  $\cap$  at the inputs and outputs may be omitted.

Arrowheads may be used on terminals 18, 19, and 20, depending on the application.

See also S01791, S01792 and S01793 for other methods of representing digital-to-analogue converters and analogue-to-digital converters.

**S01741**

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Digital-to-analogue converter, 12-bit                                                              |
| Status level:         | <b>Standard</b>                                                                                    |
| Released on:          | 2004-09-13                                                                                         |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-56-08                                                                     |
| Keywords:             | analogue circuits, binary logic circuits, complex function circuits, converters, signal converters |
| Form:                 | Simplified form                                                                                    |
| Alternative forms:    | S01740                                                                                             |
| Applies:              | S01468; S01516; S01731; S01732; S01749; S01752; S01753; S01757                                     |
| Application notes:    | A00269, A00317, A00356                                                                             |
| Shape class:          | Characters, Rectangles                                                                             |
| Function class:       | K Processing signals or information                                                                |

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. Analog Devices AD DAC85D-CBI-V.

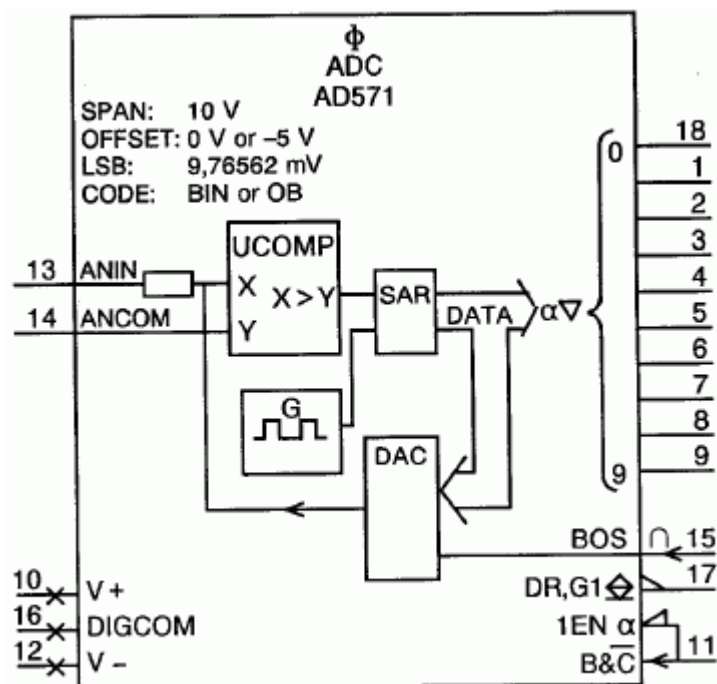
See also symbol S01740.

Because the logic inputs produce a number, use has been made of the bit-grouping symbol. Consequently the labelling of these inputs differs from that of the manufacturer.

If no confusion is likely,  $\cap$  at the inputs and outputs may be omitted.

Arrowheads may be used on terminals 18, 19, and 20, depending on the application.

See also S01791, S01792 and S01793 for other methods of representing digital-to-analogue converters and analogue-to-digital converters.

**S01742**

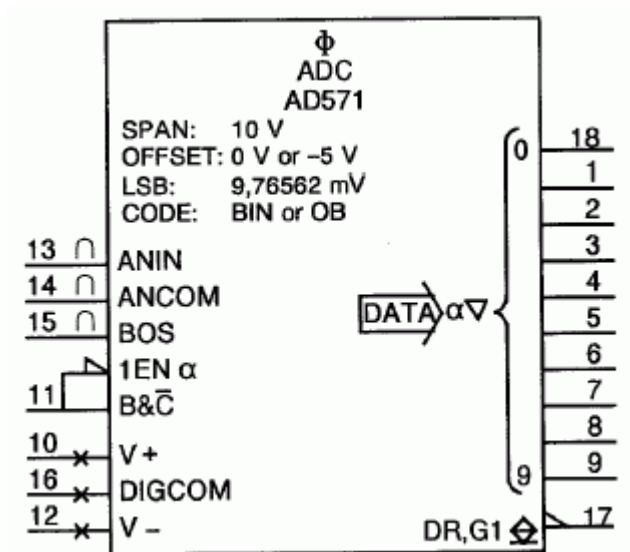
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | Analog-to-digital converter, 10-bit                                                                |
| Status level:         | Standard                                                                                           |
| Released on:          | 2004-09-13                                                                                         |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-56-09                                                                     |
| Keywords:             | analogue circuits, binary logic circuits, complex function circuits, converters, signal converters |
| Alternative forms:    | S01743                                                                                             |
| Applies:              | S01469; S01497; S01498; S01517; S01678; S01731; S01733; S01752; S01753; S01801                     |
| Application notes:    | A00269, A00317, A00356                                                                             |
| Shape class:          | Characters, Rectangles                                                                             |
| Function class:       | K Processing signals or information                                                                |
| Application class:    | Circuit diagrams, Function diagrams                                                                |
| Remarks:              | E.g. Analog Devices AD571.<br>See also symbol S01743.                                              |

In symbol S01742, the layout of the internal diagram has been chosen such that the feedback function of the internal digital-to-analogue converter is emphasized.

Because the logic outputs represent a number, use has been made of the bit grouping symbol. Consequently, the labelling of these outputs differs from that of the manufacturer.

If no confusion is likely,  $\cap$  at the inputs and outputs may be omitted.

See also S01791, S01792 and S01793 for other methods of representing digital-to-analogue converters and analogue-to-digital converters.

**S01743**

|                       |                                                                                                                               |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Analog-to-digital converter, 10-bit                                                                                           |
| Status level:         | Standard                                                                                                                      |
| Released on:          | 2004-09-13                                                                                                                    |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-56-10                                                                                                |
| Keywords:             | analogue circuits, binary logic circuits, complex function circuits, converters, signal converters                            |
| Form:                 | Simplified form                                                                                                               |
| Alternative forms:    | S01742                                                                                                                        |
| Applies:              | S01468; S01498; S01517; S01731; S01732; S01749; S01750; S01752; S01753                                                        |
| Application notes:    | A00269, A00317, A00356                                                                                                        |
| Shape class:          | Characters, Rectangles                                                                                                        |
| Function class:       | K Processing signals or information                                                                                           |
| Application class:    | Circuit diagrams, Function diagrams                                                                                           |
| Remarks:              | E.g. Analog Devices AD571.<br>See also symbol S01742.<br>In symbol S01742, the layout of the internal diagram has been chosen |

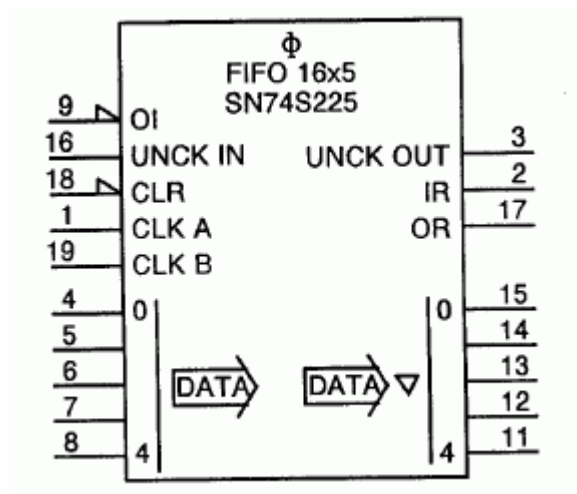
such that the feedback function of the internal digital-to-analogue converter is emphasized.

Because the logic outputs represent a number, use has been made of the bit grouping symbol. Consequently, the labelling of these outputs differs from that of the manufacturer.

If no confusion is likely,  $\cap$  at the inputs and outputs may be omitted.

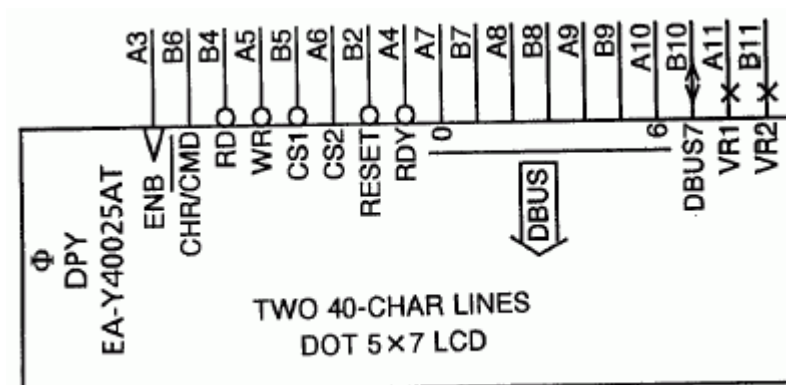
See also S01791, S01792 and S01793 for other methods of representing digital-to-analogue converters and analogue-to-digital converters.



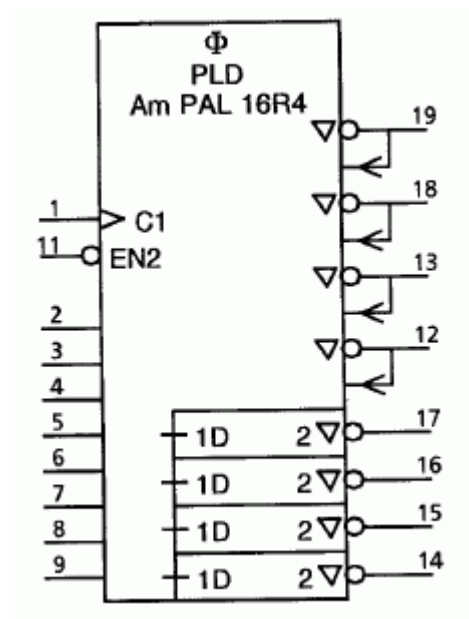
**S01744**

|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| Name:                 | First-in first-out memory, fall-through, 16x5-bit          |
| Status level:         | <b>Standard</b>                                            |
| Released on:          | 2004-09-13                                                 |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-56-11                             |
| Keywords:             | binary logic circuits, complex function circuits, memories |
| Form:                 | Form 2                                                     |
| Alternative forms:    | S01721                                                     |
| Applies:              | S01468; S01498; S01518; S01731; S01732                     |
| Application notes:    | A00269, A00317, A00356                                     |
| Shape class:          | Characters, Rectangles                                     |
| Function class:       | C Storing                                                  |
| Application class:    | Circuit diagrams, Function diagrams                        |
| Remarks:              | E.g. Texas Instruments SN 74S225.                          |

Symbol S01721 depicts the same device.

**S01745**

- Name:** Display element, dot matrix, alphanumeric, with two 40-character lines
- Status level:** **Standard**
- Released on:** 2004-09-13
- Earlier published in:** IEC 60617-12 (ed.3.0) 12-56-12
- Keywords:** binary logic circuits, complex function circuits, display elements
- Applies:** S01466; S01472; S01498; S01723; S01731; S01732
- Application notes:** A00269, A00356
- Shape class:** Characters, Rectangles
- Function class:** P Presenting information
- Application class:** Circuit diagrams, Function diagrams
- Remarks:** E.g. EPSON EA-Y40025AT.

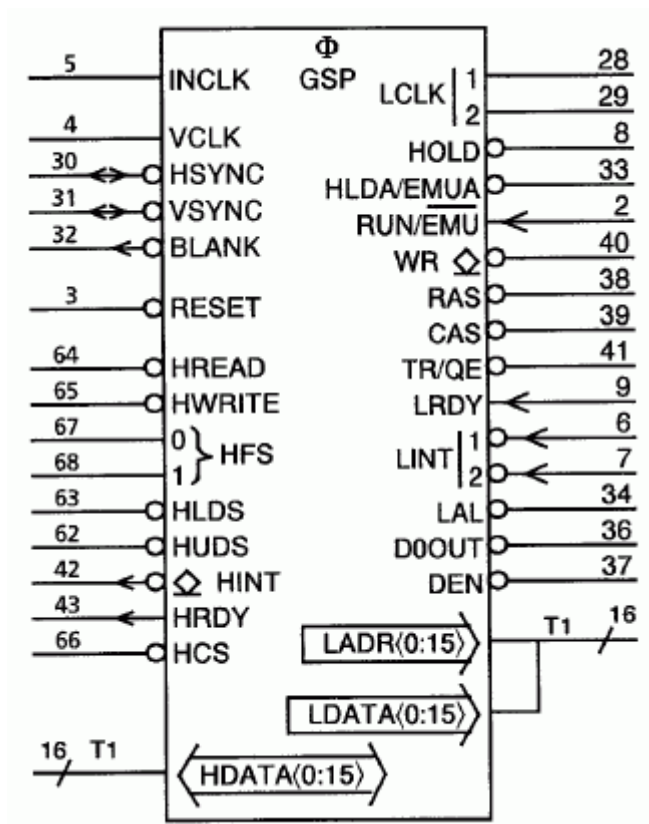
**S01746**

|                       |                                                        |
|-----------------------|--------------------------------------------------------|
| Name:                 | Programmable logic device (PLD)                        |
| Status level:         | <b>Standard</b>                                        |
| Released on:          | 2004-09-13                                             |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-56-13                         |
| Keywords:             | binary logic circuits, complex function circuits       |
| Applies:              | S00099; S01466; S01467; S01472; S01562; S01723; S01731 |
| Application notes:    | A00269, A00356                                         |
| Shape class:          | Characters, Rectangles                                 |
| Function class:       | K Processing signals or information                    |
| Application class:    | Circuit diagrams, Function diagrams                    |
| Remarks:              | E.g. Advanced Micro Devices Am PAL 16R4.               |

There are 16 array inputs. Eight of them are directly accessible unidirectional inputs, four of them are connected to bidirectional input/outputs, and four are internal feedbacks from the latches. The latter four are not shown in this symbol.

Since no labels other than pin numbers appear on the circuit data sheet of the manufacturer, no terminal names are shown besides the ones required by the use of dependency notation.

The symbol shows the unprogrammed device. If the symbol is to be used to show the device after programming, the labels and/or the functional indication may be changed to correspond to the supporting documentation for the programmed device.

**S01747**

Name: Graphics system processor

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-12 (ed.3.0) 12-56-14

Keywords: binary logic circuits, complex function circuits, graphics processors, microprocessors

Applies: S01495; S01517; S01518; S01731; S01732; S01733

Application notes: A00269, A00319, A00356

Shape class: Arrows, Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

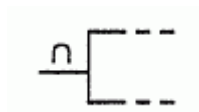
Remarks: E.g. Texas Instruments TMS34010.

The table T1 is considered to be part of the symbol and shall be shown

on the circuit diagram or in a supporting document. See A00319.

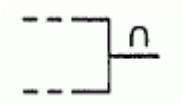
Use has been made of the technique described in IEC 61082-1, subclause 7.4.7, to simplify the two 16-bit-wide busses.

## S01748



|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| Name:                 | Analogue input                                                                       |
| Status level:         | Standard                                                                             |
| Released on:          | 2004-09-13                                                                           |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-04-01                                                       |
| Keywords:             | analogue, analogue elements, arithmetic elements, binary logic elements, connections |
| Applied in:           | S01604, S01792, S01602, S01793                                                       |
| Applies:              | S00216                                                                               |
| Application notes:    | A00321, A00352                                                                       |
| Shape class:          | Characters                                                                           |
| Function class:       | - Functional elements or attributes                                                  |
| Application class:    | Conceptual elements or qualifiers                                                    |
| Remarks:              | The symbol $\cap$ is equivalent to UCS 2229 of ISO/IEC 10646 "INTERSECTION".         |

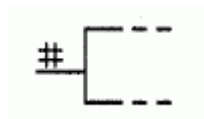
## S01749



|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| Name:                 | Analogue output                                                                      |
| Status level:         | Standard                                                                             |
| Released on:          | 2004-09-13                                                                           |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-04-02                                                       |
| Keywords:             | analogue, analogue elements, arithmetic elements, binary logic elements, connections |
| Applied in:           | S01740, S01604, S01803, S01741, S01743                                               |
| Applies:              | S00216                                                                               |
| Application notes:    | A00321, A00352                                                                       |
| Shape class:          | Characters                                                                           |
| Function class:       | - Functional elements or attributes                                                  |
| Application class:    | Conceptual elements or qualifiers                                                    |
| Remarks:              | The symbol $\cap$ is equivalent to UCS 2229 of ISO/IEC 10646 "INTERSECTION".         |



## S01750



Name: Digital input

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-04-03

Keywords: analogue elements, arithmetic elements, binary, binary logic elements, connections, digital

Applied in: S01740, S01790, S01743

Applies: S00217

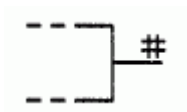
Application notes: A00321, A00352

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S01751



Name: Digital output

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-04-04

Keywords: analogue elements, arithmetic elements, binary, binary logic elements, connections, digital

Applies: S00217

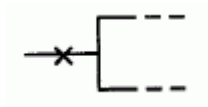
Application notes: A00321, A00352

Shape class: Characters

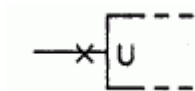
Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

## S01752

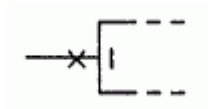


|                       |                                                                                                                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Subsidiary connection                                                                                                                                                                                                                   |
| Status level:         | Standard                                                                                                                                                                                                                                |
| Released on:          | 2004-09-13                                                                                                                                                                                                                              |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-04-05                                                                                                                                                                                                          |
| Keywords:             | analogue elements, arithmetic elements, binary logic elements, connections                                                                                                                                                              |
| Applied in:           | S01740, S01737, S01754, S01763, S01741, S01762, S01742, S01753, S01743                                                                                                                                                                  |
| Applies:              | S01546                                                                                                                                                                                                                                  |
| Application notes:    | A00321, A00352                                                                                                                                                                                                                          |
| Shape class:          | Characters                                                                                                                                                                                                                              |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                     |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                       |
| Remarks:              | An input supplying power to the device or a connection the knowledge of whose level is not important to understand the function of the element and the circuit (e.g., a connection to an external supplementary resistor or capacitor). |

**S01753**

|                              |                                                                                                                                                                                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Supply-voltage terminal                                                                                                                                                                                                                                                |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                                                                                                        |
| <b>Released on:</b>          | 2004-09-13                                                                                                                                                                                                                                                             |
| <b>Earlier published in:</b> | IEC 60617-13 (ed.2.0) 13-05-01                                                                                                                                                                                                                                         |
| <b>Keywords:</b>             | analogue circuits, arithmetic circuits, binary logic circuits, connections, terminals                                                                                                                                                                                  |
| <b>Alternative forms:</b>    | S01754                                                                                                                                                                                                                                                                 |
| <b>Applied in:</b>           | S01740, S01726, S01725, S01779, S01780, S01794, S01803, S01806, S01790, S01741, S01792, S01742, S01743, S01793, S01795                                                                                                                                                 |
| <b>Applies:</b>              | S01752                                                                                                                                                                                                                                                                 |
| <b>Application notes:</b>    | A00322, A00352                                                                                                                                                                                                                                                         |
| <b>Shape class:</b>          | Characters                                                                                                                                                                                                                                                             |
| <b>Function class:</b>       | - Functional elements or attributes                                                                                                                                                                                                                                    |
| <b>Application class:</b>    | Conceptual elements or qualifiers                                                                                                                                                                                                                                      |
| <b>Remarks:</b>              | Symbol shown on the left-hand side.<br><br>U may be followed by the polarity sign or may be replaced by<br><br>- the nominal signed value (e.g., +5 V) or by<br><br>- a suitable mnemonic (e.g., VCC, GND).<br><br>Supply terminals are not always shown in a diagram. |

## S01754



**Name:** Supply-current terminal

**Status level:** Standard

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-02

**Keywords:** analogue circuits, arithmetic circuits, binary logic circuits, connections, terminals

**Alternative forms:** S01753

**Applies:** S01752

**Application notes:** A00322, A00352

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** Symbol shown on the left-hand side.

I may be followed by the polarity sign or may be replaced by

- the nominal signed value (e.g., 10 mA) or by

- a suitable mnemonic (e.g., VCC, GND).

Supply terminals are not always shown in a diagram.

## S01755



**Name:** Supply-voltage output

**Status level:** Standard

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-03

**Keywords:** analogue circuits, arithmetic circuits, binary logic circuits, supply circuits

**Application notes:** A00322, A00352

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

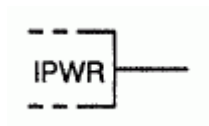
**Remarks:** An output that is a source of power.

U [I] may be followed by the polarity sign or may be replaced by

- the nominal signed value (e.g., resulting in +5 V PWR, 1 A PWR), or by
- a suitable mnemonic (e.g., resulting in VCCPWR, GNDPWR).

If it is not necessary to emphasize the fact that it is a power output, use symbol S01760.

## S01756



**Name:** Supply-current output

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-04

**Keywords:** analogue circuits, arithmetic circuits, binary logic circuits, supply circuits

**Application notes:** A00322, A00352

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** An output that is a source of power.

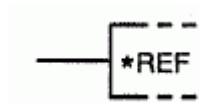
I [U] may be followed by the polarity sign or may be replaced by

- the nominal signed value (e.g., resulting in +5 V PWR, 1 A PWR), or by

- a suitable mnemonic (e.g., resulting in VCCPWR, GNDPWR).

If it is not necessary to emphasize the fact that it is a power output, use symbol S01760.

## S01757



Name: Reference input

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-05

Keywords: analogue circuits, analogue elements, arithmetic circuits, arithmetic elements, binary logic circuits, binary logic elements

Applied in: S01741

Application notes: A00322, A00352

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: An input to be connected to a reference source.

The asterisk shall be replaced by the symbol for the reference quantity (e.g., U, I, f,  $\varphi$ ).

The quantity symbol may be followed by the polarity sign or may be replaced by

- the nominal signed value (e.g., resulting in + 5 V REF, 10 mA REF), or by

- a suitable mnemonic (e.g., resulting in VCCREF, GNDREF).

If it is not necessary to emphasize the fact that it is a reference input use symbol S01759.



## S01758



Name: Reference output

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-06

Keywords: analogue circuits, analogue elements, arithmetic circuits, arithmetic elements, binary logic circuits, binary logic elements

Application notes: A00352

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: An output that is a reference source.

The asterisk shall be replaced by the symbol for the reference quantity (e.g., U, I, f,  $\phi$ ).

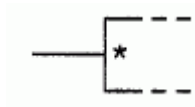
The quantity symbol may be followed by the polarity sign or may be replaced by

- the nominal signed value (e.g., resulting in + 5 V REF, 10 mA REF), or by

- a suitable mnemonic (e.g., resulting in VCCREF, GNDREF).

If it is not necessary to emphasize the fact that it is a reference output use symbol S01760.

## S01759



**Name:** Quantity-sensing input

**Status level:** Standard

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-07

**Keywords:** analogue circuits, analogue elements, arithmetic circuits, arithmetic elements, binary logic circuits, binary logic elements

**Application notes:** A00322, A00352

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** Input for which the indicated quantity represents the information.

The asterisk shall be replaced by the symbol for the quantity representing the information (e.g., U, I, f,  $\varphi$ ).

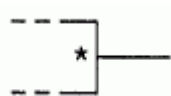
The quantity symbol may be followed by the polarity sign or may be replaced by one of the following indications of the range or fixed value:

- a nominal signed value or values (e.g., +5 V, 0 mA...20 mA, 440 Hz) or
- a suitable mnemonic (e.g., VCC, GND, A#).

If the polarity sign is not shown, U should be omitted unless confusion is likely.

If this symbol is combined with other symbols (e.g., S01761) it should follow those other symbols, enclosed, if necessary, in square brackets.

## S01760



Name: Quantity output

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-08

Keywords: analogue circuits, analogue elements, arithmetic circuits, arithmetic elements, binary logic circuits, binary logic elements

Application notes: A00322, A00352

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: Output for which the indicated quantity represents the information.

The asterisk shall be replaced by the symbol for the quantity representing the information (e.g., U, I, f,  $\varphi$ ).

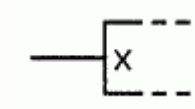
The quantity symbol may be followed by the polarity sign or may be replaced by one of the following indications of the range or fixed value:

- a nominal signed value or values (e.g., +5 V, 0 mA...20 mA, 440 Hz) or
- a suitable mnemonic (e.g., VCC, GND, A#).

If the polarity sign is not shown, U should be omitted unless confusion is likely.

If this symbol is combined with other symbols (e.g., S01761) it should follow those other symbols, enclosed, if necessary, in square brackets.

## S01761



**Name:** Analogue operand input

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-09

**Keywords:** analogue circuits, analogue elements

**Applied in:** S01779, S01780

**Application notes:** A00322, A00352

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** X-input shown.

This input represents an operand on which one or more analogue functions are performed.

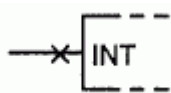
For analogue operands, the letters X and Y should be used. If more than two operands are involved, other characters may be used or suffixes may be added, providing no confusion is likely.

## S01762



|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Terminal to be externally connected to a subsidiary circuit or circuit element                                                                                                                                                                                                                                                                                                                                                        |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Released on:</b>          | 2004-09-13                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Earlier published in:</b> | IEC 60617-13 (ed.2.0) 13-05-10                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Keywords:</b>             | analogue circuits, analogue elements, arithmetic circuits, arithmetic elements, binary logic circuits, binary logic elements                                                                                                                                                                                                                                                                                                          |
| <b>Applies:</b>              | S01752                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Application notes:</b>    | A00322, A00352                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Shape class:</b>          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Function class:</b>       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Application class:</b>    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Remarks:</b>              | <p>Shown on the left-hand side.</p> <p>EXT should be replaced by another designation, e.g.,</p> <p>RX resistance</p> <p>CX capacitance</p> <p>RCX resistance and capacitance</p> <p>XTAL crystal</p> <p>This symbol may be shown without the symbol for subsidiary connection (symbol S01752) if no confusion is likely.</p> <p>If an indication of the polarity is necessary, a + or a - may be added as a suffix to the symbol.</p> |

## S01763



**Name:** Terminal of a subsidiary internal circuit or circuit component

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-11

**Keywords:** analogue circuits, analogue elements, arithmetic circuits, arithmetic elements, binary logic circuits, binary logic elements

**Applies:** S01752

**Application notes:** A00322, A00352

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** Shown on the left-hand side.

INT should be replaced by another designation, e.g.,

RINT resistance

CINT capacitance

RCINT resistance and capacitance

XTALINT crystal

This symbol may be shown without the symbol for subsidiary connection (symbol S01752) if no confusion is likely.

If an indication of the polarity is necessary, a + or a - may be added as a suffix to the symbol.

## S01764



|                       |                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Adjustment terminal                                                                                                          |
| Status level:         | Standard                                                                                                                     |
| Released on:          | 2004-09-13                                                                                                                   |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-05-12                                                                                               |
| Keywords:             | analogue circuits, analogue elements, arithmetic circuits, arithmetic elements, binary logic circuits, binary logic elements |
| Applied in:           | S01787, S01785, S01799, S01779, S01784, S01780, S01794, S01783, S01788, S01786, S01602                                       |
| Application notes:    | A00322, A00352                                                                                                               |
| Shape class:          | Characters                                                                                                                   |
| Function class:       | - Functional elements or attributes                                                                                          |
| Application class:    | Conceptual elements or qualifiers                                                                                            |
| Remarks:              | Shown on the left-hand side.                                                                                                 |

The A\* shall be replaced by ADJ, or only the asterisk shall be replaced by an indication of the property or quantity to be adjusted.

The following indications should be used for the properties or quantities listed:

B - bias

CL - current limit

f - frequency

H - hysteresis

m - amplification

OFS - offset

P - power

SR - slew rate

SYM - symmetry

T - temperature

U or V - voltage

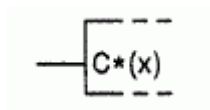
WF - waveform

Z - impedance

$\varphi$  or  $\Phi$ - phase



## S01765



**Name:** Compensation terminal

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-13

**Keywords:** analogue circuits, analogue elements, arithmetic circuits, arithmetic elements, binary logic circuits, binary logic elements

**Applied in:** S01787, S01784, S01794, S01803, S01790, S01786

**Application notes:** A00322, A00352

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** Shown on the left-hand side.

The C\* shall be replaced by CPN, or only the asterisk shall be replaced by an indication of the property or quantity to be adjusted.

The x shall be replaced by an indication of the property or quantity that causes the adjustment or compensation to be necessary.

The following indications should be used in replacing the asterisk and/or the X:

B - bias;

CL - current limit;

f - frequency;

H - hysteresis;

m - amplification;

OFS - offset;

P - power;

SR - slew rate;

SYM - symmetry;

T - temperature;

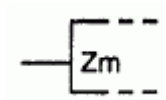
U or V - voltage;

WF - waveform;

Z - impedance;

$\varphi$  or  $\Phi$  - phase.

## S01766



Name: Zm-input (analogue)

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-14

Keywords: analogue elements, dependency notation, INTERCONNECTION  
dependency

Applies: S01554

Application notes: A00276, A00289, A00322, A00352

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

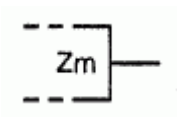
Remarks: Affecting analogue Zm-inputs or Zm-outputs impose their signal levels on the analogue inputs and outputs affected by them.

These symbols imply the application of dependency notation including the replacement of "m" by the relevant identifying number.

For an explanation of the techniques involved, see A00276 and A00289.

For affecting digital Zm-inputs and Zm-outputs, see S01554.

## S01767



Name: Zm-output (analogue)

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-15

Keywords: analogue elements, dependency notation, INTERCONNECTION  
dependency

Applies: S01555

Application notes: A00276, A00289, A00322, A00352

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

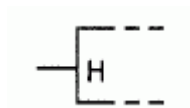
Remarks: Affecting analogue Zm-inputs or Zm-outputs impose their signal levels on the analogue inputs and outputs affected by them.

These symbols imply the application of dependency notation including the replacement of "m" by the relevant identifying number.

For an explanation of the techniques involved, see A00276 and S00289.

For affecting digital Zm-inputs and Zm-outputs, see S01555.

## S01768



Name: Hold input

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-16

Keywords: analogue circuits, analogue elements, arithmetic circuits, arithmetic elements

Applied in: S01787, S01789

Application notes: A00321, A00322, A00352, A00353

Shape class: Characters

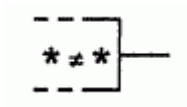
Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: When this input takes on its internal 1-state, the analogue outputs hold their values.

When this input is in its internal 0-state, it has no effect on the element.

## S01769



**Name:** Not-equal output of a comparator

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-17

**Keywords:** analogue elements

**Application notes:** A00321, A00322, A00352, A00353

**Shape class:** Characters

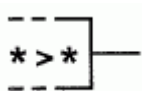
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The asterisks shall be replaced by designations of the quantities or operands whose values are compared.

The symbol ≠ is equivalent to UCS 2260 of ISO/IEC 10646 "NOT EQUAL TO".

## S01770



**Name:** Greater-than output of a comparator

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-18

**Keywords:** analogue elements

**Applied in:** S01802, S01801, S01699, S01721, S01700

**Applies:** S01523

**Application notes:** A00321, A00322, A00352, A00353

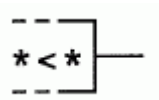
**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The asterisks shall be replaced by designations of the quantities or operands whose values are compared.

## S01771



**Name:** Less-than output of a comparator

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-19

**Keywords:** analogue elements

**Applied in:** S01721

**Applies:** S01524

**Application notes:** A00321, A00322, A00352, A00353

**Shape class:** Characters

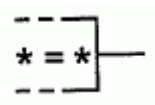
**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The asterisks shall be replaced by designations of the quantities or operands whose values are compared.



## S01772



**Name:** Equal output of a comparator

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-05-20

**Keywords:** analogue elements

**Applied in:** S01701, S01699, S01721, S01719

**Applies:** S01525

**Application notes:** A00321, A00322, A00352, A00353

**Shape class:** Characters

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** The asterisks shall be replaced by designations of the quantities or operands whose values are compared.

## S01773



Name: Mm-input

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-21

Keywords: analogue elements, dependency notation, MODE dependency

Applied in: S01775, S01790

Application notes: A00276, A00289, A00321, A00352, A00353

Shape class: Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams, Overview diagrams

Remarks: This symbol imply the application of dependency notation including the replacement of "m" by the relevant identifying number.

For an explanation of the techniques involved, see A00276 and A00289.

If an Mm-input [Mm-output] stands at its internal 1-state, any input affected by this Mm-input [Mm-output] has its normally defined effect on the function of the element, and any output affected by this Mm-input [Mm-output] stands at its normally defined internal logic state or analogue signal level. That is, the inputs and outputs are enabled.

If an Mm-input [Mm-output] stands at its internal 0-state, its effect on inputs and outputs is as follows:

- Any input affected by this Mm-input [Mm-output] has no effect on the function of the element.

- If an affected input has several sets of labels separated by solidi, any set containing the identifying number of the Mm-input [Mm-output] has no effect and is to be ignored. This represents disabling some of the functions of a multi-function input.

- At each output affected by this Mm-input [Mm-output], any set of labels containing the identifying number of that Mm-input [Mm-output] has no

effect and is to be ignored.

- If an output has several sets of labels separated by solidi (see A00289), any set containing the identifying number of this Mm-input [Mm-output] is to be ignored. This represents disabling or selecting some of the functions of a multi-function output, or modifying some of the characteristics or dependent relationships of the output.

## S01774



Name: Mm-output

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-22

Keywords: analogue elements, dependency notation, MODE dependency

Application notes: A00276, A00289, A00321, A00352, A00353

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: This symbol imply the application of dependency notation including the replacement of "m" by the relevant identifying number.

For an explanation of the techniques involved, see A00276 and A00289.

If an Mm-input [Mm-output] stands at its internal 1-state, any input affected by this Mm-input [Mm-output] has its normally defined effect on the function of the element, and any output affected by this Mm-input [Mm-output] stands at its normally defined internal logic state or analogue signal level. That is, the inputs and outputs are enabled.

If an Mm-input [Mm-output] stands at its internal 0-state, its effect on inputs and outputs is as follows:

- Any input affected by this Mm-input [Mm-output] has no effect on the function of the element.

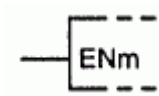
- If an affected input has several sets of labels separated by solidi, any set containing the identifying number of the Mm-input [Mm-output] has no effect and is to be ignored. This represents disabling some of the functions of a multi-function input.

- At each output affected by this Mm-input [Mm-output], any set of labels containing the identifying number of that Mm-input [Mm-output] has no effect and is to be ignored.

- If an output has several sets of labels separated by solidi (see IEC

617-12, Section 25), any set containing the identifying number of this Mm-input [Mm-output] is to be ignored. This represents disabling or selecting some of the functions of a multi-function output, or modifying some of the characteristics or dependent relationships of the output.

## S01775



Name: ENm-input

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-23

Keywords: analogue elements, dependency notation, ENABLE dependency

Applies: S01503; S01773

Application notes: A00276, A00289, A00321, A00352, A00353

Shape class: Characters

Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: The effect of this input on its affected inputs is the same as that of an Mm-input (see symbol S01773).

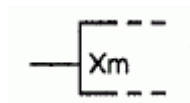
The effect of this input on its affected digital outputs is the same as that of an EN-input (see symbol S01503).

For any affected analogue output, if the ENm-input stands at its internal 1-state, the output has its normally defined function and analogue signal level. Otherwise, neither the function nor the level is specified by the symbol.

If the ENm-input affects all outputs as defined in the note to symbol S01503, and no inputs, the identifying numbers (m) may be omitted.

This symbol implies the application of dependency notation including the replacement of "m" by the relevant identifying number. For an explanation of the techniques involved, see A00276 and A00289.

## S01776



Name: Xm-input

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-24

Keywords: analogue elements, dependency notation, TRANSMISSION dependency

Applied in: S01804

Applies: S01556

Application notes: A00321, A00352, A00353

Shape class: Characters

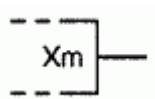
Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: See also symbol S01556 and application note A00281.

This symbol implies the application of dependency notation including the replacement of "m" by the relevant identifying number. For an explanation of the techniques involved, see A00276 and A00289.

## S01777



Name: Xm-output

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-05-25

Keywords: dependency notation

Applies: S01557

Application notes: A00276, A00281, A00289, A00321, A00352, A00353

Shape class: Characters

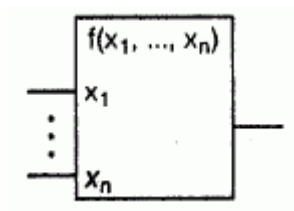
Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

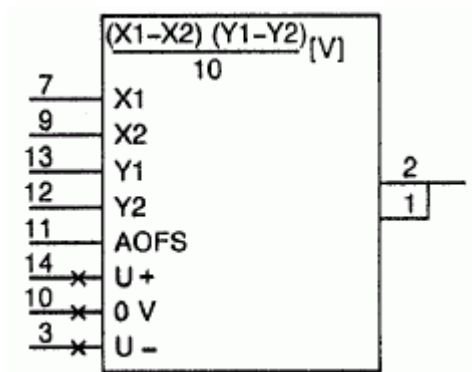
Remarks: See also symbol S01557 and application note A00281.

This symbol implies the application of dependency notation including the replacement of "m" by the relevant identifying number. For an explanation of the techniques involved, see A00276 and A00289.



**S01778**

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Function-computing element, general symbol                                                                                                                                                                                                                                                                                                                                                                                        |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Released on:          | 2004-09-13                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-06-01                                                                                                                                                                                                                                                                                                                                                                                                    |
| Keywords:             | analogue elements, arithmetic elements                                                                                                                                                                                                                                                                                                                                                                                            |
| Applied in:           | S01779, S01780, S01792                                                                                                                                                                                                                                                                                                                                                                                                            |
| Applies:              | S01463                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Application notes:    | A00323, A00352                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                                                                                                                                                                                                            |
| Function class:       | K Processing signals or information                                                                                                                                                                                                                                                                                                                                                                                               |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                                                                                                                            |
| Remarks:              | <p><math>f(x_1, \dots, x_n)</math> shall be replaced by an appropriate indication (a symbol or a graph) of, or reference to, the function (see e.g., IEC 27-1).</p> <p><math>x_1, \dots, x_n</math> shall be replaced by appropriate indications of the arguments of the function.</p> <p>To avoid ambiguity with the symbols for level converter and the code converter, the solidus shall not be used to indicate division.</p> |

**S01779**

Name: Multiplier

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-07-01

Keywords: analogue circuits, mathematical function circuits

Alternative forms: S01780

Applies: S01753; S01761; S01764; S01778

Application notes: A00352

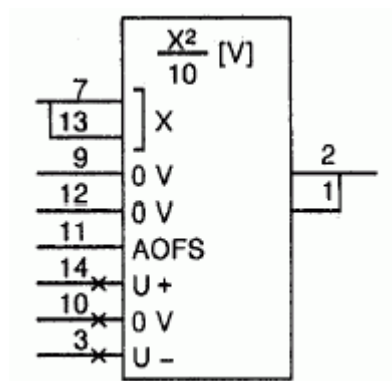
Shape class: Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams

Remarks: E.g. AD532D.

Symbol S01780 depicts the same device performing another function.

**S01780**

Name: Squarer

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-07-02

Keywords: analogue circuits, mathematical function circuits

Alternative forms: S01779

Applies: S01753; S01761; S01764; S01778

Application notes: A00352

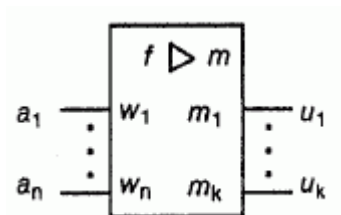
Shape class: Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams

Remarks: E.g. AD532D.

Symbol S01779 depicts the same device performing another function.

**S01781**

|                       |                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------|
| Name:                 | Amplifier, general symbol                                                                                  |
| Status level:         | <b>Standard</b>                                                                                            |
| Released on:          | 2004-09-13                                                                                                 |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-08-01                                                                             |
| Keywords:             | amplifiers, analogue elements                                                                              |
| Form:                 | form 3                                                                                                     |
| Alternative forms:    | S01239; S01240                                                                                             |
| Applied in:           | S01787, S01785, S01782, S01784, S01789, S01783, S01790, S01788, S01786                                     |
| Applies:              | S01457; S01463                                                                                             |
| Application notes:    | A00325, A00352                                                                                             |
| Shape class:          | Characters, Rectangles                                                                                     |
| Function class:       | K Processing signals or information                                                                        |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                     |
| Remarks:              | $u_i = m \cdot m_i \cdot f(w_1 \cdot a_1, w_2 \cdot a_2, \dots, w_n \cdot a_n)$ where $i = 1, 2, \dots, k$ |

If an element performs a specific function in addition to amplification, "f" may be replaced by an appropriate qualifying symbol. Otherwise "f" shall be omitted. The following qualifying symbols should be used for the functions listed:

$\Sigma$  - summing;  
 $\int$  - integration;  
d/dt - differentiating with respect to time;  
exp - exponentiation;  
log - logarithmic (base 10);

SH - sample-and-hold.

$m \cdot m_i$  equals the amplification for output  $i$ .

$m$  represents the common factor of the amplification.

If the common factor is fixed and is to be shown, the " $m$ " shall be replaced by a number or expression giving the absolute value of the common factor or the range within which it is fixed.

If the common factor is variable and that fact is to be shown, " $m$ " shall be shown and the way to determine the value of  $m$  shall be shown either inside the symbol or in supporting documentation. Otherwise the " $m$ " shall be omitted.

The following indications should be used for indicating a fixed common factor:

$\infty$  - if the common factor is large;

1 - if the common factor is 1;

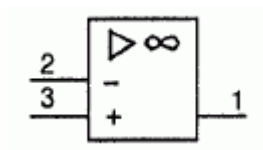
a number - if the common factor is to be shown explicitly;

\*1 ... \*2 - if the common factor is fixed within the range \*1 ... \*2.

\*1 and \*2 shall be replaced by the smallest and by the largest factors in the range, respectively.

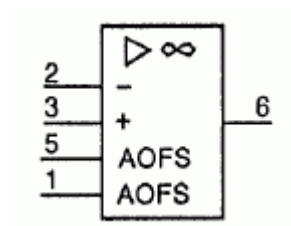
$m_1 \dots m_k$  represe

## S01782



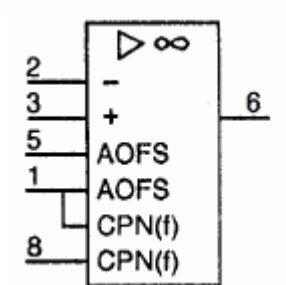
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Operational amplifier               |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2004-09-13                          |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-09-01      |
| Keywords:             | amplifiers, analogue circuits       |
| Applied in:           | S01740                              |
| Applies:              | S01781                              |
| Application notes:    | A00352                              |
| Shape class:          | Equilateral triangles, Rectangles   |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |
| Remarks:              | E.g. part of LM324.                 |

## S01783



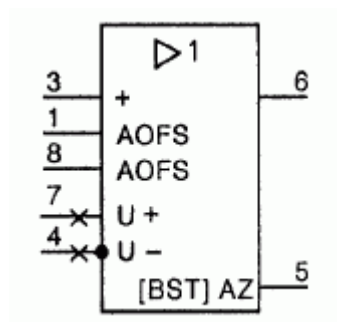
|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Operational amplifier               |
| Status level:         | Standard                            |
| Released on:          | 2004-09-13                          |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-09-02      |
| Keywords:             | amplifiers, analogue circuits       |
| Applies:              | S01764; S01781                      |
| Shape class:          | Equilateral triangles, Rectangles   |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |
| Remarks:              | E.g. LM741.                         |

## S01784



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Operational amplifier               |
| Status level:         | Standard                            |
| Released on:          | 2004-09-13                          |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-09-03      |
| Keywords:             | amplifiers, analogue circuits       |
| Applies:              | S01764; S01765; S01781              |
| Shape class:          | Equilateral triangles, Rectangles   |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |
| Remarks:              | E.g. LM301A.                        |



**S01785**

**Name:** Voltage follower

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-09-04

**Keywords:** amplifiers, analogue circuits

**Applies:** S00016; S01546; S01764; S01781

**Application notes:** A00352

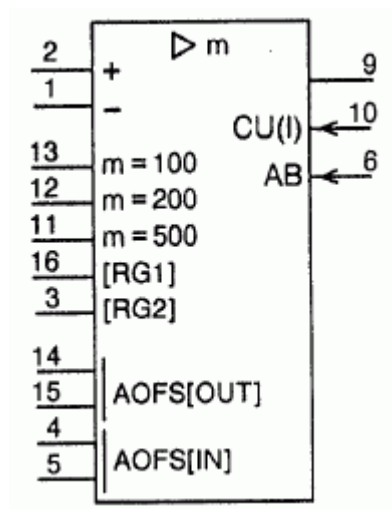
**Shape class:** Characters, Equilateral triangles, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g., LM310, metal-can package.

This use of symbol S00016 (the dot) represents the connection of the case (envelope) to a terminal.

**S01786**

**Name:** Amplifier with selectable amplification

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-09-05

**Keywords:** amplifiers, analogue circuits

**Applies:** S01518; S01764; S01765; S01781

**Application notes:** A00352

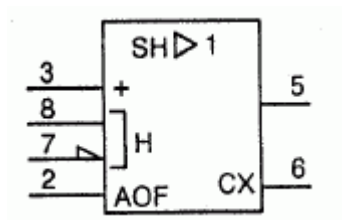
**Shape class:** Equilateral triangles, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. AD624.

## S01787



**Name:** Sample-and-hold amplifier with an amplification factor of one

**Status level:** Standard

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-09-06

**Keywords:** amplifiers, analogue circuits

**Applies:** S01468; S01540; S01764; S01765; S01768; S01781

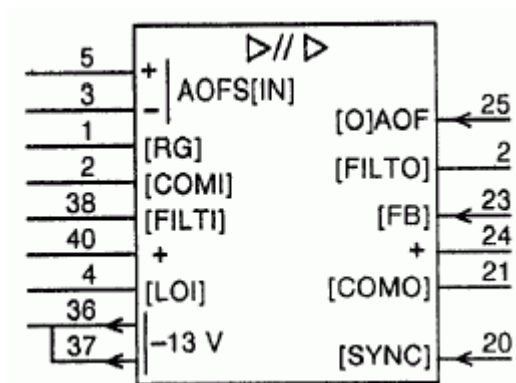
**Application notes:** A00352

**Shape class:** Characters, Equilateral triangles, Rectangles

**Function class:** K Processing signals or information

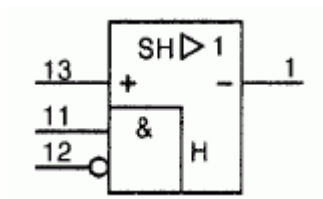
**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. LF398.

**S01788**

|                       |                                               |
|-----------------------|-----------------------------------------------|
| Name:                 | Amplifier, isolating                          |
| Status level:         | <b>Standard</b>                               |
| Released on:          | 2004-09-13                                    |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-09-07                |
| Keywords:             | amplifiers, analogue circuits                 |
| Applies:              | S01407; S01518; S01764; S01781                |
| Application notes:    | A00352                                        |
| Shape class:          | Characters, Equilateral triangles, Rectangles |
| Function class:       | K Processing signals or information           |
| Application class:    | Circuit diagrams, Function diagrams           |
| Remarks:              | E.g. AD293.                                   |

## S01789



**Name:** Sample-and-hold amplifier with an amplification factor of one

**Status level:** Standard

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-09-08

**Keywords:** amplifiers, analogue circuits

**Applies:** S01466; S01476; S01567; S01768; S01781

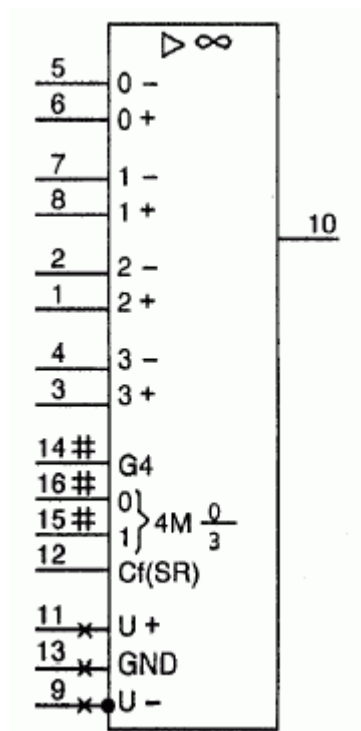
**Application notes:** A00352

**Shape class:** Characters, Equilateral triangles, Rectangles

**Function class:** K Processing signals or information

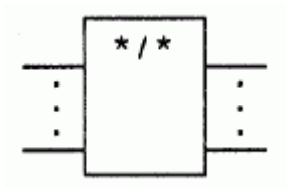
**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. 4860

**S01790**

|                       |                                                             |
|-----------------------|-------------------------------------------------------------|
| Name:                 | Operational amplifier with multiplexed inputs (one of four) |
| Status level:         | Standard                                                    |
| Released on:          | 2004-09-13                                                  |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-09-09                              |
| Keywords:             | amplifiers, analogue circuits                               |
| Applies:              | S00016; S01750; S01753; S01765; S01773; S01781; S01810      |
| Application notes:    | A00352                                                      |
| Shape class:          | Characters, Equilateral triangles, Rectangles               |
| Function class:       | K Processing signals or information                         |
| Application class:    | Circuit diagrams, Function diagrams                         |
| Remarks:              | E.g. HA-2400.                                               |

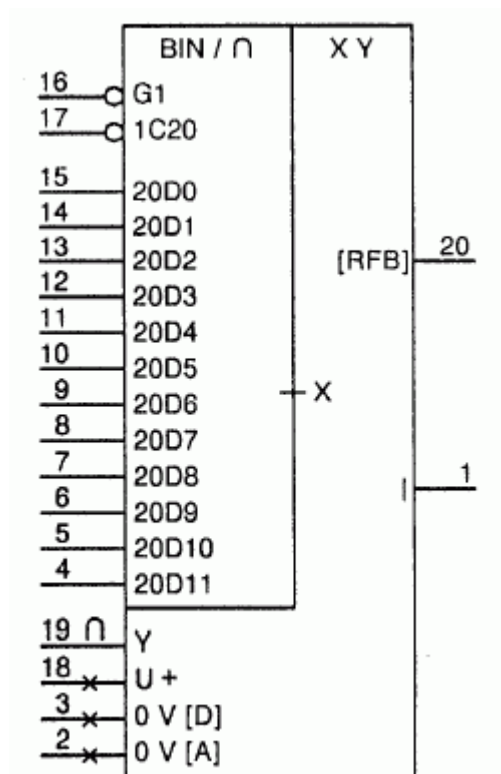
This use of symbol S00016 (the dot) represents the connection of the case (envelope) to a terminal.

**S01791**

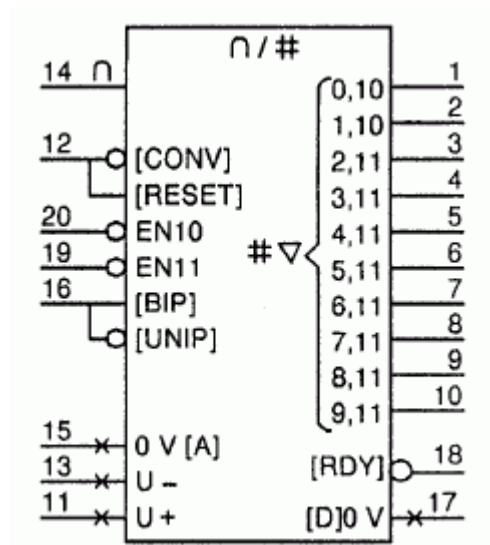
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Converter, general symbol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Status level:</b>         | <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Released on:</b>          | 2004-09-13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Earlier published in:</b> | IEC 60617-13 (ed.2.0) 13-10-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Keywords:</b>             | analogue elements, converters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Applied in:</b>           | S01794, S01792, S01793, S01795                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Applies:</b>              | S00214; S01407; S01463                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Application notes:</b>    | A00296, A00327, A00352                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Shape class:</b>          | Characters, Rectangles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Function class:</b>       | K Processing signals or information, T Converting but maintaining kind                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Application class:</b>    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Remarks:</b>              | <p>The general qualifying symbol * / * may be replaced by * // * if it is necessary to indicate electrical isolation.</p> <p>The asterisks shall be replaced by appropriate indications of the quantities or qualities concerned.</p> <p>The left asterisk refers to the input; the right asterisk refers to the output.</p> <p>The following indications should be used for the items listed:</p> <p># - digital, code unspecified;<br/> <math>\cap</math> - analogue, function unspecified;<br/> U or V - voltage;<br/> f - frequency;<br/> <math>\varphi</math> or <math>\Phi</math> - phase;<br/> I - current;<br/> T - temperature.</p> <p>The general qualifying symbols #/<math>\cap</math> and <math>\cap</math>/# may be replaced by DAC and ADC rsp.</p> |

In the general qualifying symbols  $\#/ \cap$  and  $\cap / \#$ ,  $\#$  may be replaced by an appropriate indication of the code used at the digital inputs [outputs] to determine [represent] the internal value, In this case, the digital inputs [outputs] shall be labelled with characters that refer to this code. See 1.1 of A00296 for further information on this method.

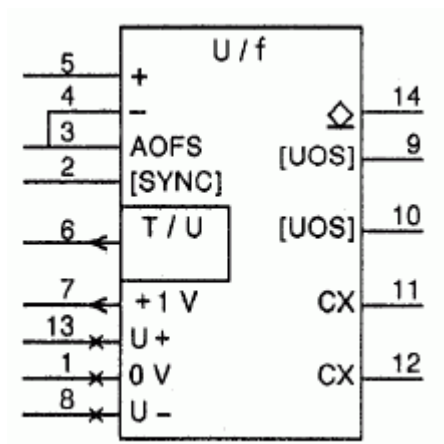


**S01792**

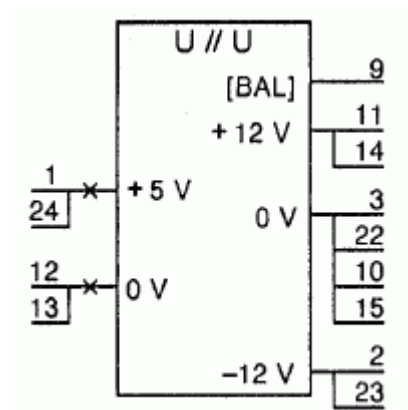
- Name:** Converter, digital to analogue (DAC), multiplying
- Status level:** Standard
- Released on:** 2004-09-13
- Earlier published in:** IEC 60617-13 (ed.2.0) 13-11-01
- Keywords:** analogue circuits, arithmetic circuits, converters, mathematical function circuits
- Applies:** S01466; S01475; S01546; S01558; S01748; S01753; S01778; S01791; S01810
- Application notes:** A00352
- Shape class:** Characters, Rectangles
- Function class:** K Processing signals or information
- Application class:** Circuit diagrams, Function diagrams
- Remarks:** E.g. AD7545.

**S01793**

|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| Name:                 | Converter, analogue to digital (ADC)                                                              |
| Status level:         | <b>Standard</b>                                                                                   |
| Released on:          | 2004-09-13                                                                                        |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-11-02                                                                    |
| Keywords:             | analogue circuits, arithmetic circuits, converters, mathematical function circuits                |
| Applies:              | S01466; S01467; S01498; S01562; S01748; S01753; S01791                                            |
| Application notes:    | A00352                                                                                            |
| Shape class:          | Characters, Lines , Rectangles                                                                    |
| Function class:       | K Processing signals or information, T Converting but maintaining kind                            |
| Application class:    | Circuit diagrams, Function diagrams                                                               |
| Remarks:              | E.g. AD573.<br><br>The general qualifying symbols #/∩ and ∩/# may be replaced by DAC and ADC rsp. |

**S01794**

|                       |                                        |
|-----------------------|----------------------------------------|
| Name:                 | Converter, voltage to frequency        |
| Status level:         | Standard                               |
| Released on:          | 2004-09-13                             |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-11-03         |
| Keywords:             | analogue circuits, converters          |
| Applies:              | S01495; S01753; S01764; S01765; S01791 |
| Application notes:    | A00352                                 |
| Shape class:          | Characters, Rectangles                 |
| Function class:       | K Processing signals or information    |
| Application class:    | Circuit diagrams, Function diagrams    |
| Remarks:              | E.g. AD537.                            |

**S01795**

**Name:** Converter, d.c.-to-d.c., isolating

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-11-04

**Keywords:** analogue circuits, converters, supply circuits

**Applies:** S01753; S01791

**Application notes:** A00328, A00352

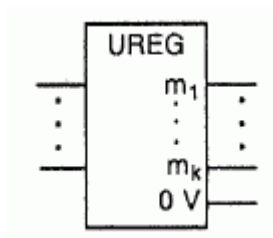
**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

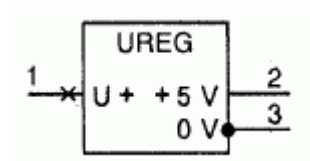
**Remarks:** E.g. PM671P.

Internal branches are shown, e.g., between terminals 2 and 23. If it is not important to emphasize this fact, label-grouping symbols may be used, see A00328.

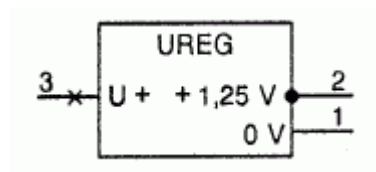
**S01796**

|                       |                                                                                                                                                                                                                                                                                                                          |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Voltage regulator, general symbol                                                                                                                                                                                                                                                                                        |
| Status level:         | <b>Standard</b>                                                                                                                                                                                                                                                                                                          |
| Released on:          | 2004-09-13                                                                                                                                                                                                                                                                                                               |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-12-01                                                                                                                                                                                                                                                                                           |
| Keywords:             | analogue elements, regulators, stabilizers, supply circuits                                                                                                                                                                                                                                                              |
| Applied in:           | S01799, S01797, S01798                                                                                                                                                                                                                                                                                                   |
| Applies:              | S01463                                                                                                                                                                                                                                                                                                                   |
| Application notes:    | A00352                                                                                                                                                                                                                                                                                                                   |
| Shape class:          | Characters, Rectangles                                                                                                                                                                                                                                                                                                   |
| Function class:       | G Initiating a flow                                                                                                                                                                                                                                                                                                      |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                                                                                                                                                   |
| Remarks:              | <p>m1 ... mk represent the regulated (stabilized) voltages with respect to the common (0 V) terminal.</p> <p>m1 ... mk shall be replaced by:</p> <ul style="list-style-type: none"><li>- U1 ... Uk, each followed by the polarity sign, or by</li><li>- the actual values or ranges of the regulated voltages.</li></ul> |

## S01797



|                       |                                                                                                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Voltage regulator, positive, fixed                                                                                      |
| Status level:         | Standard                                                                                                                |
| Released on:          | 2004-09-13                                                                                                              |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-13-01                                                                                          |
| Keywords:             | analogue circuits, supply circuits, voltage regulators, voltage stabilizers                                             |
| Applies:              | S00016; S01796                                                                                                          |
| Application notes:    | A00352                                                                                                                  |
| Shape class:          | Characters, Rectangles                                                                                                  |
| Function class:       | G Initiating a flow                                                                                                     |
| Application class:    | Circuit diagrams, Function diagrams                                                                                     |
| Remarks:              | E.g. LM309H.<br><br>This use of symbol S00016 (the dot) represents the connection of the case (envelope) to a terminal. |

**S01798**

**Name:** Voltage regulator, positive, adjustable

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-13-02

**Keywords:** analogue circuits, supply circuits, voltage regulators

**Applies:** S00016; S01546; S01796

**Application notes:** A00330, A00352

**Shape class:** Characters, Rectangles

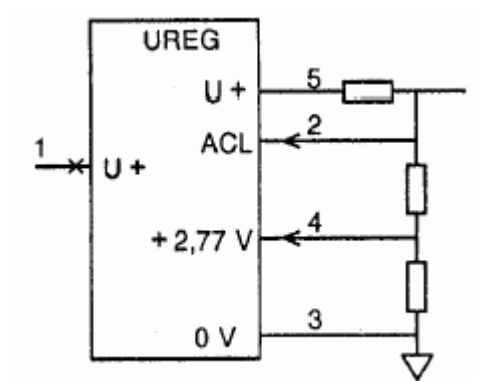
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. LM317T.

This use of symbol S00016 (the dot) represents the connection of the case (envelope) to a terminal.

Although the voltage between terminals 2 and 1 is fixed, an external network can be used to obtain a different regulated voltage between terminal 2 and another point in the network, see A00330.

**S01799**

**Name:** Voltage regulator, positive, adjustable, with current limiting

**Status level:** Standard

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-13-03

**Keywords:** analogue circuits, supply circuits, voltage regulators

**Applies:** S00204; S00555; S01546; S01764; S01796

**Application notes:** A00352

**Shape class:** Characters, Rectangles

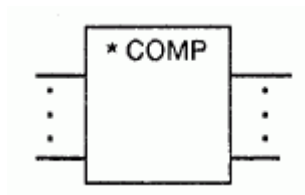
**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. L200CV.

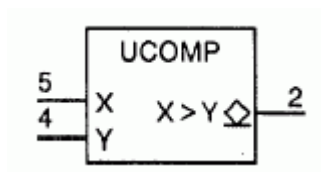


## S01800

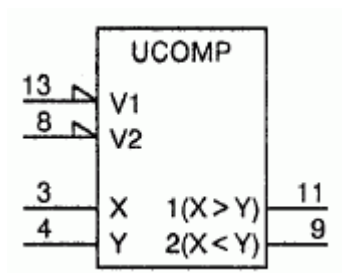


|                       |                                                                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Comparator, general symbol                                                                                                                                                                  |
| Status level:         | Standard                                                                                                                                                                                    |
| Released on:          | 2004-09-13                                                                                                                                                                                  |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-14-01                                                                                                                                                              |
| Keywords:             | analogue elements, comparators                                                                                                                                                              |
| Applied in:           | S01806, S01802, S01801, S01713, S01715                                                                                                                                                      |
| Applies:              | S01463                                                                                                                                                                                      |
| Application notes:    | A00352                                                                                                                                                                                      |
| Shape class:          | Characters, Rectangles                                                                                                                                                                      |
| Function class:       | K Processing signals or information                                                                                                                                                         |
| Application class:    | Circuit diagrams, Function diagrams, Overview diagrams                                                                                                                                      |
| Remarks:              | The asterisk shall be replaced by the appropriate letter symbol for the quantity or operands whose values are to be compared. If no confusion is likely, this letter symbol may be omitted. |

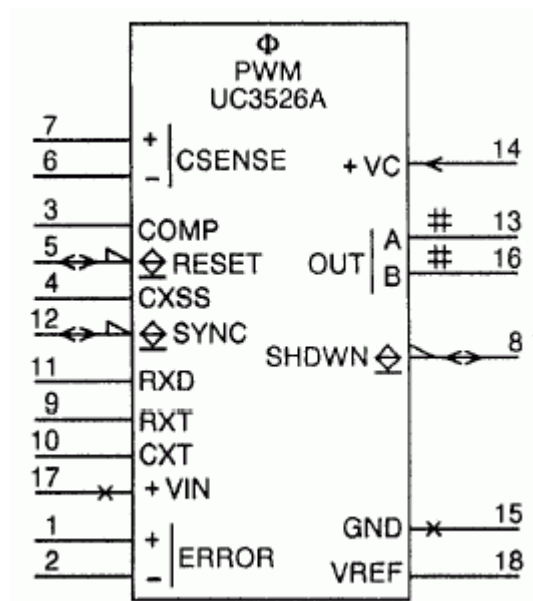
## S01801



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Voltage comparator                  |
| Status level:         | Standard                            |
| Released on:          | 2004-09-13                          |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-15-01      |
| Keywords:             | analogue circuits, comparators      |
| Applied in:           | S01713, S01742                      |
| Applies:              | S01495; S01770; S01800              |
| Application notes:    | A00352                              |
| Shape class:          | Characters, Rectangles              |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |
| Remarks:              | E.g. part of LM339.                 |

**S01802**

|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Voltage comparator                  |
| Status level:         | Standard                            |
| Released on:          | 2004-09-13                          |
| Earlier published in: | IEC 60617-13 (ed.2.0) 13-15-02      |
| Keywords:             | analogue circuits, comparators      |
| Applies:              | S01468; S01550; S01770; S01800      |
| Application notes:    | A00352                              |
| Shape class:          | Characters, Rectangles              |
| Function class:       | K Processing signals or information |
| Application class:    | Circuit diagrams, Function diagrams |
| Remarks:              | E.g. LM361.                         |

**S01803**

Name: Pulse-width modulator

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-16-01

Keywords: analogue circuits, complex function circuits, modulators

Applies: S00100; S01468; S01497; S01518; S01561; S01731; S01749; S01753; S01765

Application notes: A00352

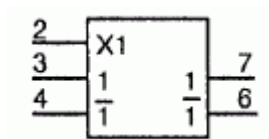
Shape class: Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

Remarks: (e.g., Unitrode UC3526 A)

## S01804



Name: Analogue switch

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-17-01

Keywords: analogue circuits, switches

Applies: S01776

Application notes: A00281, A00352

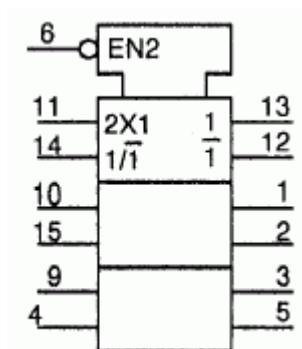
Shape class: Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

Remarks: E.g. TL604.

In electronic switches, the connections between inputs and outputs shall be shown by TRANSMISSION (Xm) dependency as described in A00281.

**S01805**

**Name:** Analogue multiplexer/demultiplexer, triple

**Status level:** **Standard**

**Released on:** 2004-09-13

**Earlier published in:** IEC 60617-13 (ed.2.0) 13-17-02

**Keywords:** analogue circuits, demultiplexers, multiplexers

**Alternative forms:** S01606

**Applies:** S01466; S01556; S01562

**Application notes:** A00281, A00352

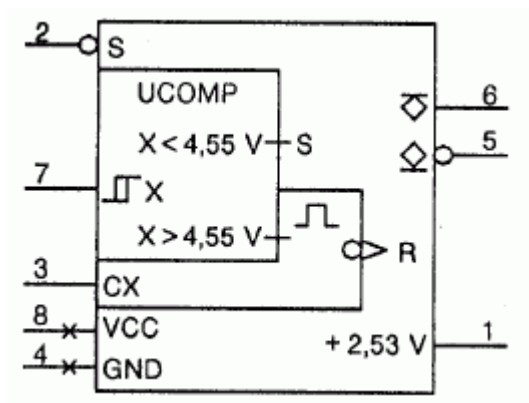
**Shape class:** Characters, Rectangles

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Function diagrams

**Remarks:** E.g. 74HC4053.

Symbol S01606 depicts the same device in another way.

**S01806**

Name: Voltage supervisor

Status level: **Standard**

Released on: 2004-09-13

Earlier published in: IEC 60617-13 (ed.2.0) 13-18-01

Keywords: analogue circuits, supervisors, supply circuits

Applies: S01466; S01475; S01477; S01492; S01494; S01495; S01558; S01560; S01674; S01753; S01800

Application notes: A00352

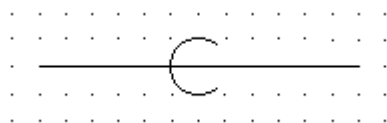
Shape class: Characters, Rectangles

Function class: K Processing signals or information

Application class: Circuit diagrams, Function diagrams

Remarks: E.g. TL7705 A.

## S01807



**Name:** Concentric conductor

**Status level:** Standard

**Released on:** 2004-03-27

**Earlier published in:** Not applicable

**Keywords:** conductors

**Applies:** S00001

**Shape class:** Circle segments

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams

**Symbol restrictions:** Not to be used for an screen or a coaxial pair.



## S01808



Name: Complex function

Status level: **Standard**

Released on: 2003-07-20

Earlier published in: Not applicable

Keywords: complex functions

Applied in: S01454, S01731

Shape class: Characters

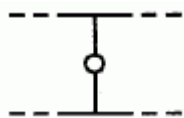
Function class: - Functional elements or attributes

Application class: Conceptual elements or qualifiers

Remarks: The letter  $\Phi$  shall be supported by an indication, preferably short, of the function.

" $\Phi$ " is equivalent to UCS 03A6 of ISO/IEC 10646 "GREEK CAPITAL LETTER PHI".

## S01809



**Name:** Internal connection with negation

**Status level:** Standard

**Released on:** 2004-09-01

**Earlier published in:** IEC 60617-12 (ed.3.0) 12-08-02

**Keywords:** binary logic elements, combinative elements, internal connections

**Alternative forms:** S01486

**Applied in:** S01486, S01632, S01618, S01592

**Applies:** S01466; S01476

**Application notes:** A00269, A00273

**Shape class:** Circles

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Symbol restrictions:** This symbol may be used for a signal flow from right to left only if the direction of the signal flow is obvious. Otherwise, symbol S01486 shall be used.

**Remarks:** The internal 1-state [0-state] of the input of the element on the right corresponds to the internal 0-state [1-state] of the output of the element on the left.

The vertical line may extend through the circle.

## S01810



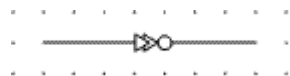
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Gm-input                                                                                                                                                                                                                                                                                                                                                                                                            |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                            |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                          |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-14-01                                                                                                                                                                                                                                                                                                                                                                                      |
| Keywords:             | AND dependency, binary logic elements, dependency notation                                                                                                                                                                                                                                                                                                                                                          |
| Applied in:           | S01716, S01701, S01702, S01703, S01603, S01634, S01630, S01722, S01598, S01593, S01631, S01693, S01718, S01790, S01600, S01624, S01635, S01792, S01698, S01714, S01715, S01700, S01632, S01618, S01633                                                                                                                                                                                                              |
| Application notes:    | A00269, A00276, A00277, A00288, A00289                                                                                                                                                                                                                                                                                                                                                                              |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                                                                                          |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                 |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                   |
| Remarks:              | <p>If a Gm-input stands at its internal 1-state, all inputs and outputs affected by this Gm-input stand at their normally defined internal logic states.</p> <p>If a Gm-input stands at its internal 0-state, all inputs and outputs affected by this Gm-input stand at their internal 0-states.</p> <p>m shall be replaced by the relevant identifying number.</p> <p>The note with table I of A00276 applies.</p> |

## S01811



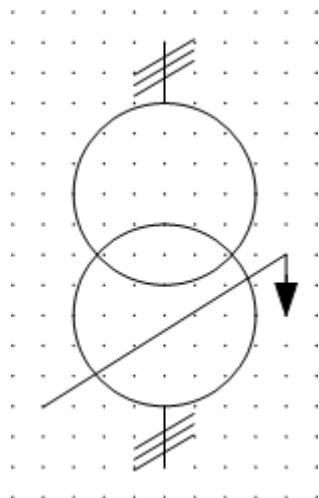
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Gm-output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Status level:         | Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Released on:          | 2004-09-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Earlier published in: | IEC 60617-12 (ed.3.0) 12-14-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Keywords:             | AND dependency, binary logic elements, dependency notation                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Applied in:           | S01720, S01683, S01719                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Application notes:    | A00269, A00276, A00277, A00288, A00289                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Shape class:          | Characters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Function class:       | - Functional elements or attributes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Application class:    | Conceptual elements or qualifiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Remarks:              | <p>Each output affected by a Gm-output stands in an AND relationship with this Gm-output.</p> <p>If a Gm-output stands at its internal 1-state, all inputs and outputs affected by this Gm-output stand at their normally defined internal logic states.</p> <p>If a Gm-output stands at its internal 0-state, all inputs and outputs affected by this Gm-output stand at their internal 0-states.</p> <p>m shall be replaced by the relevant identifying number.</p> <p>The note with table I of A00276 applies.</p> |

## S01836



|                       |                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------|
| Name:                 | Live connection terminal                                                                              |
| Status level:         | Standard                                                                                              |
| Released on:          | 2009-01-19                                                                                            |
| Earlier published in: | Not applicable                                                                                        |
| Keywords:             | connection devices, live connectable, terminals                                                       |
| Applies:              | S00017; S01849                                                                                        |
| Shape class:          | Arrows, Dots (points), Equilateral triangles, Lines                                                   |
| Function class:       | X Connecting                                                                                          |
| Application class:    | Circuit diagrams, Connection diagrams                                                                 |
| Symbol restrictions:  | The symbol indicates a terminal that shall only be opened or closed under no-load current conditions. |

## S01837



Name: Phase-shifting transformer, three-phase

Status level: **Standard**

Released on: 2005-11-15

Earlier published in: Not applicable

Keywords: phase-shifting, transformers

Form: Form 1

Alternative forms: S01838

Applies: S00002; S00841; S01846

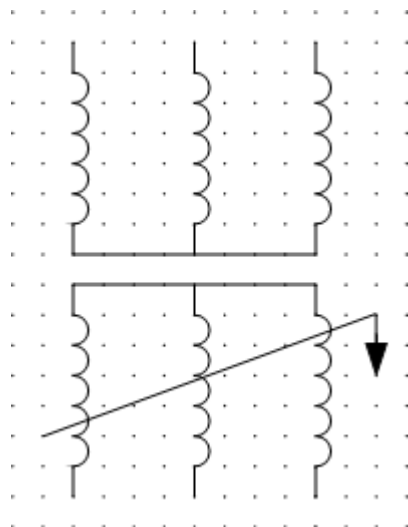
Application notes: A00128

Shape class: Arrows, Circles, Lines

Function class: T Converting but maintaining kind

Application class: Circuit diagrams, Connection diagrams

## S01838



Name: Phase-shifting transformer, three-phase

Status level: **Standard**

Released on: 2005-11-15

Earlier published in: Not applicable

Keywords: phase-shifting, transformers

Form: Form 2

Alternative forms: S01837

Applies: S00842; S01846

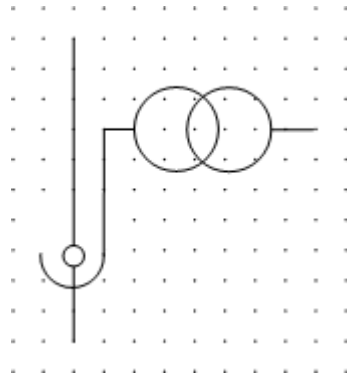
Application notes: A00128

Shape class: Arrows, Half-circles, Lines

Function class: T Converting but maintaining kind

Application class: Circuit diagrams, Connection diagrams

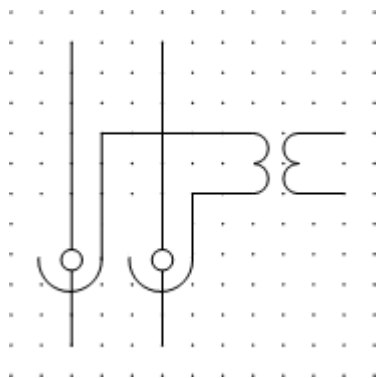
## S01839



|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| Name:                 | Bushing type voltage transformer                           |
| Status level:         | Standard                                                   |
| Released on:          | 2005-11-15                                                 |
| Earlier published in: | Not applicable                                             |
| Keywords:             | measuring transformers, transformers, voltage transformers |
| Form:                 | Form 1                                                     |
| Alternative forms:    | S01840                                                     |
| Applies:              | S00017; S00878                                             |
| Shape class:          | Circles, Half-circles, Lines                               |
| Function class:       | B Converting variable to signal                            |
| Application class:    | Circuit diagrams, Connection diagrams                      |

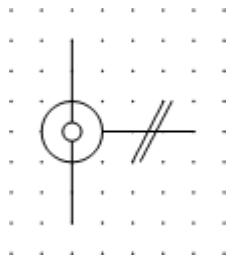


## S01840



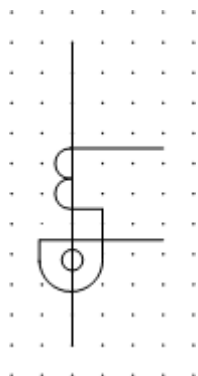
|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| Name:                 | Bushing type voltage transformer                           |
| Status level:         | Standard                                                   |
| Released on:          | 2005-11-15                                                 |
| Earlier published in: | Not applicable                                             |
| Keywords:             | measuring transformers, transformers, voltage transformers |
| Form:                 | Form 2                                                     |
| Alternative forms:    | S01839                                                     |
| Applies:              | S00017; S00878                                             |
| Application notes:    | A00128                                                     |
| Shape class:          | Half-circles                                               |
| Function class:       | B Converting variable to signal                            |
| Application class:    | Circuit diagrams, Connection diagrams                      |

## S01841



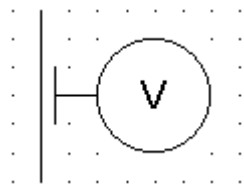
|                       |                                       |
|-----------------------|---------------------------------------|
| Name:                 | Bushing type current transformer      |
| Status level:         | Standard                              |
| Released on:          | 2005-11-15                            |
| Earlier published in: | Not applicable                        |
| Keywords:             | current transformers, transformers    |
| Form:                 | Form 1                                |
| Alternative forms:    | S01842                                |
| Applies:              | S00017; S00850                        |
| Application notes:    | A00128                                |
| Shape class:          | Circles, Lines                        |
| Function class:       | B Converting variable to signal       |
| Application class:    | Circuit diagrams, Connection diagrams |

## S01842



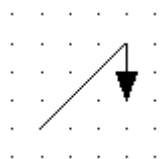
|                       |                                              |
|-----------------------|----------------------------------------------|
| Name:                 | Bushing type current transformer             |
| Status level:         | Standard                                     |
| Released on:          | 2005-11-15                                   |
| Earlier published in: | Not applicable                               |
| Keywords:             | current transformers, measuring transformers |
| Form:                 | Form 2                                       |
| Alternative forms:    | S01841                                       |
| Applies:              | S00017; S00851                               |
| Application notes:    | A00128                                       |
| Shape class:          | Half-circles, Lines                          |
| Function class:       | B Converting variable to signal              |
| Application class:    | Circuit diagrams, Connection diagrams        |

## S01843



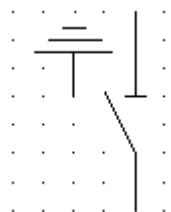
|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Simplicity voltage detector                                            |
| Status level:         | Standard                                                               |
| Released on:          | 2005-11-15                                                             |
| Earlier published in: | Not applicable                                                         |
| Keywords:             | indicating instruments, instruments, measuring instruments, voltmeters |
| Applies:              | S00910; S00913                                                         |
| Shape class:          | Characters, Circles, Lines                                             |
| Function class:       | P Presenting information                                               |
| Application class:    | Circuit diagrams, Connection diagrams                                  |

## S01846



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Phase-shifting                      |
| Status level:         | <b>Standard</b>                     |
| Released on:          | 2005-11-15                          |
| Earlier published in: | Not applicable                      |
| Keywords:             | phase-shifting                      |
| Applied in:           | S01837, S01838                      |
| Shape class:          | Arrows, Lines                       |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

## S01848



**Name:** Combined disconnector and earthing switch

**Status level:** **Standard**

**Released on:** 2007-04-04

**Earlier published in:** Not applicable

**Keywords:** disconnectors, earth connection, switches

**Applies:** S00200; S00288

**Shape class:** Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams, Function diagrams, Overview diagrams

**Remarks:** Individual actuator equipment may be added.

## S01849



**Name:** Live connectable, live disconnectable

**Status level:** **Standard**

**Released on:** 2009-01-19

**Earlier published in:** Not applicable

**Keywords:** live connectable, live line

**Applied in:** S01836

**Shape class:** Equilateral triangles

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

## S01851



|                       |                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------|
| Name:                 | Heat (occurrence of), general symbol                                                                       |
| Status level:         | Standard                                                                                                   |
| Released on:          | 2009-09-18                                                                                                 |
| Earlier published in: | Not applicable                                                                                             |
| Keywords:             | alarms, detectors, heat detectors                                                                          |
| Applied in:           | S01433, S01434, S01432, S01885, S01882, S01883, S01884                                                     |
| Shape class:          | Lines                                                                                                      |
| Function class:       | - Functional elements or attributes                                                                        |
| Application class:    | Conceptual elements or qualifiers                                                                          |
| Remarks:              | This general symbol illustrates the occurrence of heat. The symbol may apply as part of a detector symbol. |



## S01852



**Name:** Smoke (occurrence of), general symbol

**Status level:** **Standard**

**Released on:** 2009-09-18

**Earlier published in:** Not applicable

**Keywords:** alarms, detectors, smoke detectors

**Applied in:** S01435, S01436, S01876, S01874, S01875, S01902, S01893

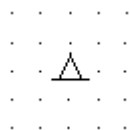
**Shape class:** Lines

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** This general symbol illustrates the occurrence of smoke. The symbol may apply as part of a detector symbol.

## S01853



**Name:** Flame (occurrence of), general symbol

**Status level:** **Standard**

**Released on:** 2009-09-18

**Earlier published in:** Not applicable

**Keywords:** alarms, detectors, flame detectors

**Applied in:** S01437, S01880, S01879, S01878, S01881

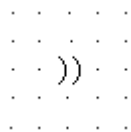
**Shape class:** Equilateral triangles

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

**Remarks:** This general symbol illustrate the occurrence of a flame. The symbol may apply as part of a detector symbol.

## S01854



**Name:** Motion (occurrence of), general symbol

**Status level:** **Standard**

**Released on:** 2009-09-18

**Earlier published in:** Not applicable

**Keywords:** alarms, detectors, motion detectors

**Applied in:** S01438, S01872, S01873

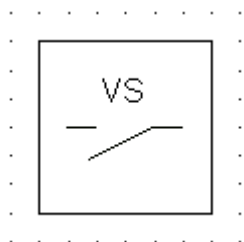
**Shape class:** Circle segments

**Function class:** - Functional elements or attributes

**Application class:** Conceptual elements or qualifiers

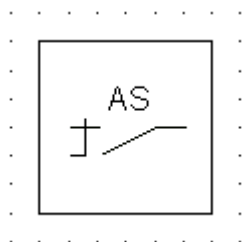
**Remarks:** This general symbol illustrate the occurrence of motion. The symbol may apply as part of a detector symbol.

## S01855



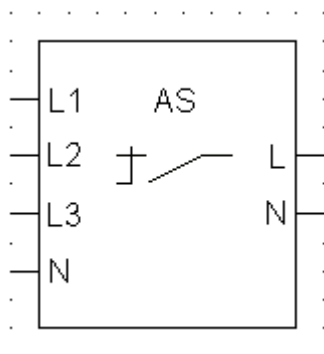
|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Instrument multi-position selector switch for voltage circuit                    |
| Status level:         | Standard                                                                         |
| Released on:          | 2009-09-11                                                                       |
| Earlier published in: | Not applicable                                                                   |
| Alternative names:    | Instrument diverter switch for voltage circuit                                   |
| Keywords:             | instrument switches, switches                                                    |
| Applied in:           | S01858                                                                           |
| Applies:              | S00227; S01454                                                                   |
| Shape class:          | Characters, Rectangles                                                           |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Circuit diagrams                                                                 |
| Remarks:              | VS: Voltmeter change-over Switch                                                 |

## S01856

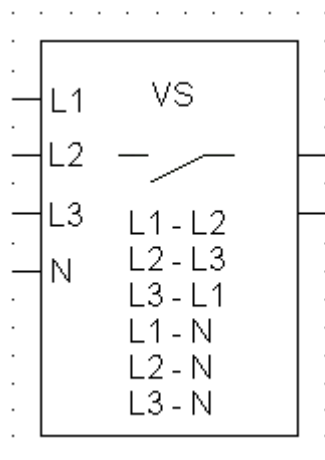


|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Instrument multi-position selector switch for current circuit                    |
| Status level:         | Standard                                                                         |
| Released on:          | 2009-09-11                                                                       |
| Earlier published in: | Not applicable                                                                   |
| Alternative names:    | Instrument diverter switch for current circuit                                   |
| Keywords:             | instrument switches, switches                                                    |
| Applied in:           | S01857                                                                           |
| Applies:              | S00233; S01454                                                                   |
| Shape class:          | Characters, Rectangles                                                           |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Circuit diagrams                                                                 |
| Remarks:              | AS: Amperemeter change-over Switch                                               |

## S01857

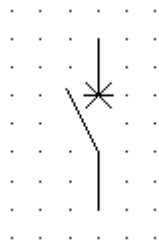


|                       |                                                                                    |
|-----------------------|------------------------------------------------------------------------------------|
| Name:                 | Instrument multi-position selector switch for current circuit with shown terminals |
| Status level:         | Standard                                                                           |
| Released on:          | 2009-09-11                                                                         |
| Earlier published in: | Not applicable                                                                     |
| Keywords:             | instrument switches, switches                                                      |
| Applies:              | S01856                                                                             |
| Shape class:          | Characters, Rectangles                                                             |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal   |
| Application class:    | Circuit diagrams                                                                   |

**S01858**

|                              |                                                                                    |
|------------------------------|------------------------------------------------------------------------------------|
| <b>Name:</b>                 | Instrument multi-position selector switch for voltage circuit with shown terminals |
| <b>Status level:</b>         | Standard                                                                           |
| <b>Released on:</b>          | 2009-09-11                                                                         |
| <b>Earlier published in:</b> | Not applicable                                                                     |
| <b>Keywords:</b>             | instrument switches, switches                                                      |
| <b>Applies:</b>              | S01855                                                                             |
| <b>Shape class:</b>          | Lines                                                                              |
| <b>Function class:</b>       | Q Controlled switching or varying, S Converting a manual operation into a signal   |
| <b>Application class:</b>    | Circuit diagrams, Overview diagrams                                                |

## S01859



**Name:** Disconnecting circuit breaker

**Status level:** **Standard**

**Released on:** 2008-09-10

**Earlier published in:** Not applicable

**Keywords:** circuit breakers, DCB, disconnectors

**Applies:** S00227; S01860

**Shape class:** Lines

**Function class:** Q Controlled switching or varying

**Application class:** Circuit diagrams, Overview diagrams

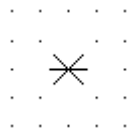
**Remarks:** This symbol shall be used only if breaking and isolating are functionally integrated and controlled as one action.

NOTE - Locking of the breaker in the isolated position shall normally be performed as a separate, additional action.

If the two functions breaking and isolating are controlled as separate actions (also if integrated into one component), the symbols S00219 (Circuit breaker function) and S00220 (Disconnecter function) should be used and combined with the symbol S00227 (Switch) as indicated in symbol S01413 (Multiple-function switching device).



## S01860



|                       |                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------|
| Name:                 | Disconnecting circuit breaker function                                                                             |
| Status level:         | Standard                                                                                                           |
| Released on:          | 2008-09-10                                                                                                         |
| Earlier published in: | Not applicable                                                                                                     |
| Keywords:             | circuit breakers, disconnectors, isolators                                                                         |
| Applied in:           | S01859                                                                                                             |
| Applies:              | S00219; S00220                                                                                                     |
| Shape class:          | Lines                                                                                                              |
| Function class:       | - Functional elements or attributes                                                                                |
| Application class:    | Conceptual elements or qualifiers                                                                                  |
| Symbol restrictions:  | This symbol shall be used only if breaking and isolating are functionally integrated and controlled as one action. |

## S01863



Name: Wireless connection

Status level: **Standard**

Released on: 2012-10-12

Earlier published in: Not applicable

Keywords: connections, installations in buildings, wireless

Application notes: A00374

Shape class: Circle segments

Function class: T Converting but maintaining kind

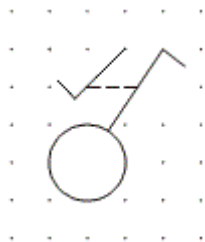
Application class: Installation diagrams

## S01864



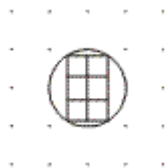
|                       |                                                 |
|-----------------------|-------------------------------------------------|
| Name:                 | Stand alone emergency stop equipment            |
| Status level:         | Standard                                        |
| Released on:          | 2013-01-19                                      |
| Earlier published in: | Not applicable                                  |
| Alternative names:    | emergency stop                                  |
| Keywords:             | emergency, installations in buildings, switches |
| Applies:              | S00151; S00174; S00466                          |
| Application notes:    | A00266, A00371                                  |
| Shape class:          | Circle segments, Circles, Lines                 |
| Function class:       | S Converting a manual operation into a signal   |
| Application class:    | Installation diagrams                           |

## S01865



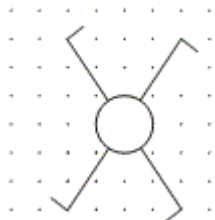
|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Foot switch                                                                      |
| Status level:         | Standard                                                                         |
| Released on:          | 2012-10-12                                                                       |
| Earlier published in: | IEC 60617-2 (ed.2.0)                                                             |
| Alternative names:    | push button operated by foot                                                     |
| Keywords:             | installations in buildings, operated by foot, switches                           |
| Applies:              | S00176; S00475                                                                   |
| Application notes:    | A00367                                                                           |
| Shape class:          | Circles, Lines                                                                   |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |

## S01866



|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| Name:                 | Push button group unit                                                       |
| Status level:         | Standard                                                                     |
| Released on:          | 2010-05-22                                                                   |
| Earlier published in: | Not applicable                                                               |
| Alternative names:    | keypad                                                                       |
| Keywords:             | installations in buildings, keypad, push button, push button group, switches |
| Applies:              | S00475                                                                       |
| Shape class:          | Circles, Lines , Squares                                                     |
| Function class:       | Q Controlled switching or varying                                            |
| Application class:    | Installation diagrams                                                        |

## S01867



**Name:** Double two-way single pole switch

**Status level:** **Standard**

**Released on:** 2012-03-18

**Earlier published in:** Not applicable

**Keywords:** installation in buildings, switches

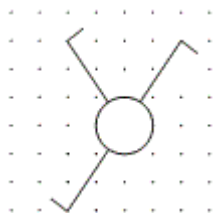
**Applies:** S00470

**Shape class:** Circles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Installation diagrams

## S01868



**Name:** Combi-switch: two-way single pole and single pole on-off switch

**Status level:** **Standard**

**Released on:** 2012-10-12

**Earlier published in:** Not applicable 11-14-00

**Keywords:** installation in buildings, switches

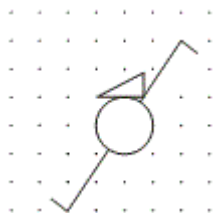
**Applies:** S00471

**Shape class:** Circles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Installation diagrams

## S01869



**Name:** Combi-switch: two-way single pole switch with dimmer

**Status level:** **Standard**

**Released on:** 2012-10-12

**Earlier published in:** Not applicable

**Keywords:** installation in buildings, switches

**Applies:** S00471; S00473

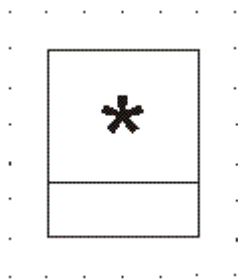
**Shape class:** Circles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Installation diagrams



## S01870



**Name:** Detector, General symbol

**Status level:** **Standard**

**Released on:** 2010-10-21

**Earlier published in:** Not applicable

**Keywords:** alarms, detectors, installation in buildings, security system

**Applied in:** S01880, S01885, S01876, S01874, S01882, S01879, S01872, S01875, S01878, S01883, S01871, S01884, S01873, S01881

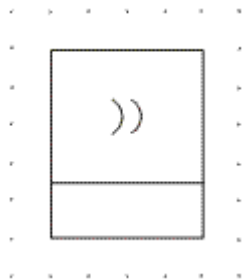
**Application notes:** A00266, A00357

**Shape class:** Lines , Squares

**Function class:** B Converting variable to signal

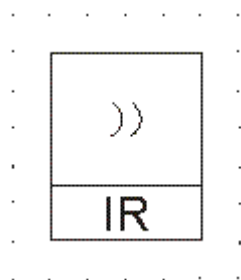
**Application class:** Circuit diagrams, Installation diagrams

## S01871



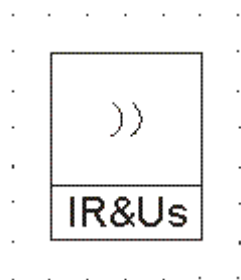
|                       |                                                                 |
|-----------------------|-----------------------------------------------------------------|
| Name:                 | Motion detector (type not specified)                            |
| Status level:         | <b>Standard</b>                                                 |
| Released on:          | 2010-10-21                                                      |
| Earlier published in: | Not applicable                                                  |
| Keywords:             | alarms, detectors, installations in buildings, motion detectors |
| Applied in:           | S01872                                                          |
| Applies:              | S01870                                                          |
| Application notes:    | A00266                                                          |
| Shape class:          | Circle segments, Lines , Rectangles                             |
| Function class:       | B Converting variable to signal                                 |
| Application class:    | Installation diagrams                                           |

## S01872



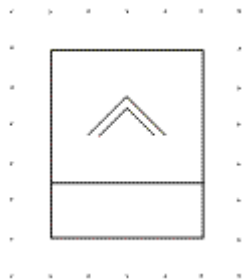
|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| Name:                 | Motion detector, Infrared                                      |
| Status level:         | Standard                                                       |
| Released on:          | 2010-10-21                                                     |
| Earlier published in: | Not applicable                                                 |
| Keywords:             | alarms, detectors, installation in buildings, motion detectors |
| Applies:              | S01854; S01870; S01871                                         |
| Application notes:    | A00266                                                         |
| Shape class:          | Lines , Squares                                                |
| Function class:       | B Converting variable to signal                                |
| Application class:    | Installation diagrams                                          |

## S01873



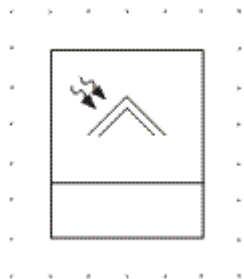
|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| Name:                 | Motion detector, infrared and ultrasonic                       |
| Status level:         | <b>Standard</b>                                                |
| Released on:          | 2010-10-21                                                     |
| Earlier published in: | Not applicable                                                 |
| Keywords:             | alarms, detectors, installation in buildings, motion detectors |
| Applies:              | S01854; S01870                                                 |
| Application notes:    | A00266                                                         |
| Shape class:          | Lines , Squares                                                |
| Function class:       | B Converting variable to signal                                |
| Application class:    | Installation diagrams                                          |

## S01874



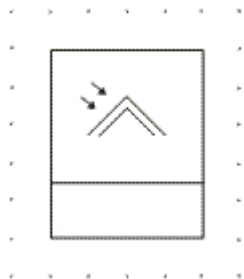
|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| Name:                 | Smoke detector, (type not specified)                          |
| Status level:         | <b>Standard</b>                                               |
| Released on:          | 2010-10-21                                                    |
| Earlier published in: | Not applicable                                                |
| Keywords:             | alarms, detectors, installation in buildings, smoke detectors |
| Applied in:           | S01876                                                        |
| Applies:              | S01852; S01870                                                |
| Application notes:    | A00266                                                        |
| Shape class:          | Lines , Squares                                               |
| Function class:       | B Converting variable to signal                               |
| Application class:    | Installation diagrams                                         |

## S01875



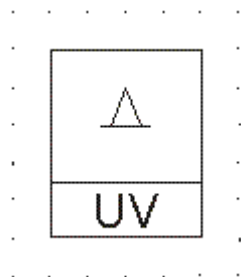
|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| Name:                 | Smoke detector, ionizing                                      |
| Status level:         | <b>Standard</b>                                               |
| Released on:          | 2010-10-21                                                    |
| Earlier published in: | Not applicable                                                |
| Keywords:             | alarms, detectors, installation in buildings, smoke detectors |
| Applies:              | S00129; S01852; S01870                                        |
| Application notes:    | A00266                                                        |
| Shape class:          | Lines , Squares                                               |
| Function class:       | B Converting variable to signal                               |
| Application class:    | Installation diagrams                                         |

## S01876



|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| Name:                 | Smoke detector, optical                                       |
| Status level:         | <b>Standard</b>                                               |
| Released on:          | 2010-10-21                                                    |
| Earlier published in: | Not applicable                                                |
| Keywords:             | alarms, detectors, installation in buildings, smoke detectors |
| Applies:              | S00128; S01852; S01870; S01874                                |
| Application notes:    | A00266                                                        |
| Shape class:          | Lines , Squares                                               |
| Function class:       | B Converting variable to signal                               |
| Application class:    | Installation diagrams                                         |

## S01878



**Name:** Flame detector, Ultraviolet

**Status level:** **Standard**

**Released on:** 2010-10-21

**Earlier published in:** Not applicable

**Keywords:** alarms, detectors, flame detectors, installation in buildings

**Applies:** S01853; S01870; S01881

**Application notes:** A00266

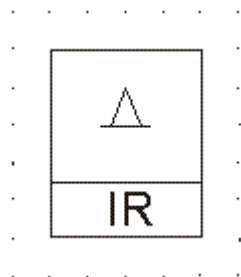
**Shape class:** Lines , Squares

**Function class:** B Converting variable to signal

**Application class:** Installation diagrams

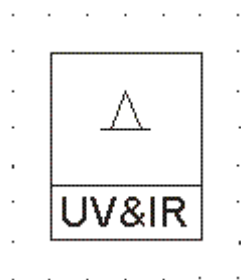


## S01879



|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| Name:                 | Flame detector, Infrared                                      |
| Status level:         | Standard                                                      |
| Released on:          | 2010-10-21                                                    |
| Earlier published in: | Not applicable                                                |
| Keywords:             | alarms, detectors, flame detectors, installation in buildings |
| Applies:              | S01853; S01870; S01881                                        |
| Application notes:    | A00266                                                        |
| Shape class:          | Lines , Squares                                               |
| Function class:       | B Converting variable to signal                               |
| Application class:    | Installation diagrams                                         |

## S01880



**Name:** Flame detector, Infrared and ultraviolet

**Status level:** **Standard**

**Released on:** 2010-10-21

**Earlier published in:** Not applicable

**Keywords:** alarms, detectors, flame detectors, installation in buildings

**Applies:** S01853; S01870; S01881

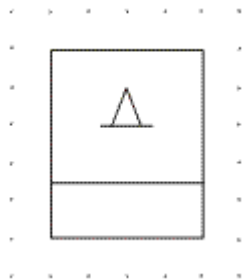
**Application notes:** A00266

**Shape class:** Lines , Squares

**Function class:** B Converting variable to signal

**Application class:** Installation diagrams

## S01881



Name: Flame detector, (type not specified)

Status level: **Standard**

Released on: 2010-10-21

Earlier published in: Not applicable

Keywords: alarms

Applied in: S01880, S01879, S01878

Applies: S01853; S01870

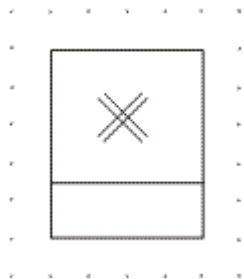
Application notes: A00266

Shape class: Lines , Squares

Function class: B Converting variable to signal

Application class: Installation diagrams

## S01882



**Name:** Heat detector, (type not specified)

**Status level:** **Standard**

**Released on:** 2010-10-21

**Earlier published in:** Not applicable

**Keywords:** alarms, detectors, heat detectors, installation in buildings

**Applied in:** S01885, S01883, S01884

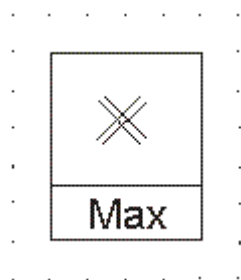
**Application notes:** A00266

**Shape class:** Lines , Squares

**Function class:** B Converting variable to signal

**Application class:** Installation diagrams

## S01883



**Name:** Heat detector, maximum

**Status level:** **Standard**

**Released on:** 2010-10-21

**Earlier published in:** Not applicable

**Keywords:** alarms, detectors, heat detectors, installation in buildings

**Applies:** S01851; S01870; S01882

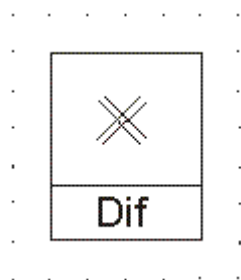
**Application notes:** A00266

**Shape class:** Lines , Squares

**Function class:** B Converting variable to signal

**Application class:** Installation diagrams

## S01884



**Name:** Heat detector, differential

**Status level:** **Standard**

**Released on:** 2010-10-21

**Earlier published in:** Not applicable

**Keywords:** alarms, detectors, heat detectors, installation in buildings

**Applies:** S01851; S01870; S01882

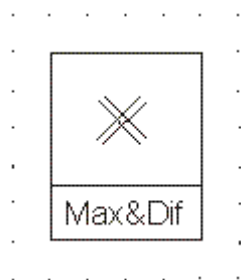
**Application notes:** A00266

**Shape class:** Lines , Octagons, Ovals, Parallelograms, Rectangles, Right-angled triangle, Squares

**Function class:** B Converting variable to signal

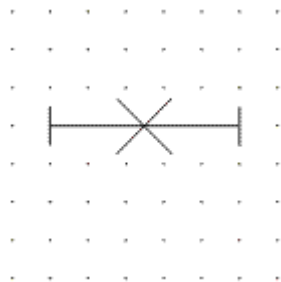
**Application class:** Installation diagrams

## S01885



|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| Name:                 | Heat detector, maximum and differential                      |
| Status level:         | <b>Standard</b>                                              |
| Released on:          | 2010-10-21                                                   |
| Earlier published in: | Not applicable                                               |
| Keywords:             | alarms, detectors, heat detectors, installation in buildings |
| Applies:              | S01851; S01870; S01882                                       |
| Application notes:    | A00266                                                       |
| Shape class:          | Lines , Squares                                              |
| Function class:       | B Converting variable to signal                              |
| Application class:    | Installation diagrams                                        |

## S01886



**Name:** Fluorescent lamp, general symbol

**Status level:** **Standard**

**Released on:** 2010-11-01

**Earlier published in:** Not applicable

**Keywords:** installation in buildings, lamps, lightning outlets and fittings

**Applies:** S00481; S00484

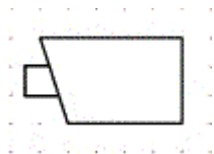
**Shape class:** Lines

**Function class:** E Providing radiant or thermal energy

**Application class:** Installation diagrams

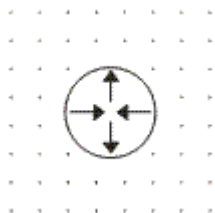


## S01887



|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| Name:                 | Camera                                                        |
| Status level:         | Standard                                                      |
| Released on:          | 2010-11-01                                                    |
| Earlier published in: | Not applicable                                                |
| Alternative names:    | Video camera                                                  |
| Keywords:             | camera, CCTV, installations in buildings, surveillance camera |
| Applies:              | S00060                                                        |
| Application notes:    | A00358                                                        |
| Shape class:          | Depicting shapes                                              |
| Function class:       | B Converting variable to signal                               |
| Application class:    | Installation diagrams, Overview diagrams                      |

## S01894



Name: Router

Status level: **Standard**

Released on: 2011-04-21

Earlier published in: Not applicable

Keywords: Ethernet, IP, LAN, networking, networks, Router, WAN

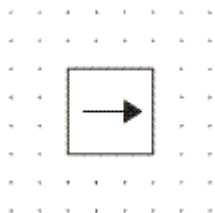
Applies: S00061

Shape class: Arrows, Circles

Function class: K Processing signals or information, Q Controlled switching or varying

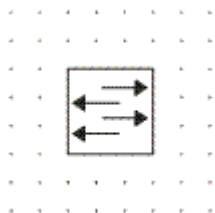
Application class: Connection diagrams, Function diagrams, Network maps, Overview diagrams

## S01895



|                       |                                                                         |
|-----------------------|-------------------------------------------------------------------------|
| Name:                 | Hub                                                                     |
| Status level:         | Standard                                                                |
| Released on:          | 2011-04-21                                                              |
| Earlier published in: | Not applicable                                                          |
| Keywords:             | Ethernet, Hub, IP, LAN, networking, networks, WAN                       |
| Applies:              | S00051                                                                  |
| Shape class:          | Arrows, Squares                                                         |
| Function class:       | K Processing signals or information, Q Controlled switching or varying  |
| Application class:    | Connection diagrams, Function diagrams, Network maps, Overview diagrams |

## S01896



Name: Network switch

Status level: **Standard**

Released on: 2011-04-21

Earlier published in: Not applicable

Keywords: Ethernet, IP, LAN, network switch, networking, networks, WAN

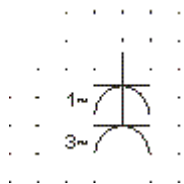
Applies: S00059

Shape class: Arrows, Squares

Function class: K Processing signals or information, Q Controlled switching or varying

Application class: Connection diagrams, Function diagrams, Network maps, Overview diagrams

## S01897



**Name:** 3 phase and 1 phase socket outlet

**Status level:** **Standard**

**Released on:** 2012-04-23

**Earlier published in:** Not applicable

**Keywords:** installations in buildings, socket outlets

**Applies:** S00460

**Application notes:** A00266

**Replacing:** S01892

**Shape class:** Depicting shapes, Half-circles, Lines

**Function class:** X Connecting

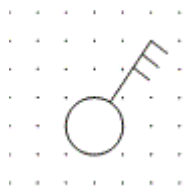
**Application class:** Installation diagrams

## S01898



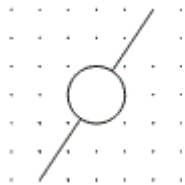
|                       |                                                 |
|-----------------------|-------------------------------------------------|
| Name:                 | Bus coupling unit                               |
| Status level:         | Standard                                        |
| Released on:          | 2012-05-07                                      |
| Earlier published in: | Not applicable                                  |
| Keywords:             | Bus, Bus interface, installations in buildings  |
| Applies:              | S01733                                          |
| Shape class:          | Arrows, Lines , Rectangles                      |
| Function class:       | T Converting but maintaining kind, X Connecting |
| Application class:    | Installation diagrams                           |

## S01899



|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Three pole switch                                                                |
| Status level:         | Standard                                                                         |
| Released on:          | 2012-04-23                                                                       |
| Earlier published in: | Not applicable                                                                   |
| Alternative names:    | Three phase switch                                                               |
| Keywords:             | installation in buildings, switches                                              |
| Applies:              | S00466                                                                           |
| Application notes:    | A00266, A00362                                                                   |
| Shape class:          | Circles, Lines                                                                   |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |

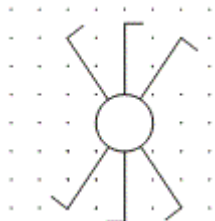
## S01900



|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Two-way switch, general symbol for installation diagram                          |
| Status level:         | <b>Standard</b>                                                                  |
| Released on:          | 2012-04-23                                                                       |
| Earlier published in: | Not applicable                                                                   |
| Alternative names:    | Change over switch, general symbol for installation diagrams                     |
| Keywords:             | installation in buildings, switches                                              |
| Application notes:    | A00372, A00373                                                                   |
| Shape class:          | Circles, Lines                                                                   |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |
| Remarks:              | In this graphical symbol number of poles is not presented                        |



## S01901



|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Triple two-way single pole switch                                                |
| Status level:         | Standard                                                                         |
| Released on:          | 2012-04-23                                                                       |
| Earlier published in: | Not applicable                                                                   |
| Alternative names:    | Triple change over single pole switch                                            |
| Keywords:             | installation in buildings, switches                                              |
| Applies:              | S00471                                                                           |
| Application notes:    | A00266, A00363                                                                   |
| Shape class:          | Circles, Lines                                                                   |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |

## S01902



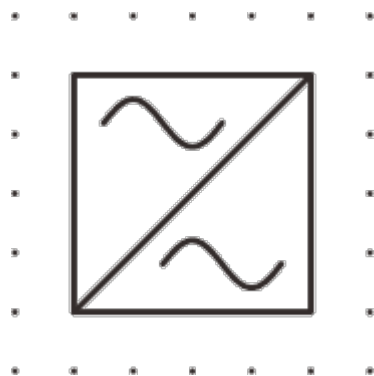
|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| Name:                 | Smoke alarm device                                        |
| Status level:         | Standard                                                  |
| Released on:          | 2012-04-23                                                |
| Earlier published in: | Not applicable                                            |
| Keywords:             | alarm device, installations in buildings, smoke detectors |
| Applies:              | S01417; S01852                                            |
| Application notes:    | A00266                                                    |
| Replacing:            | S01893                                                    |
| Shape class:          | Half-circles, Lines                                       |
| Function class:       | B Converting variable to signal                           |
| Application class:    | Installation diagrams                                     |

## S01903



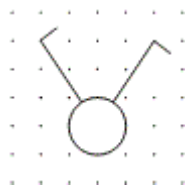
|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Name:                 | AC power supply                                                                                    |
| Status level:         | Standard                                                                                           |
| Released on:          | 2012-05-23                                                                                         |
| Earlier published in: | Not applicable                                                                                     |
| Keywords:             | power feeding, power generators                                                                    |
| Applies:              | S00061; S01403                                                                                     |
| Shape class:          | Circles, Depicting shapes                                                                          |
| Function class:       | G Initiating a flow                                                                                |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Installation diagrams, Overview diagrams |

## S01904



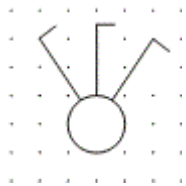
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Frequency converter                                                         |
| Status level:         | Standard                                                                    |
| Released on:          | 2012-05-23                                                                  |
| Earlier published in: | Not applicable                                                              |
| Keywords:             | converters, power converters                                                |
| Alternative forms:    | S01232                                                                      |
| Applies:              | S00059; S00214; S01403                                                      |
| Application notes:    | A00143                                                                      |
| Shape class:          | Depicting shapes, Squares                                                   |
| Function class:       | T Converting but maintaining kind                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01905



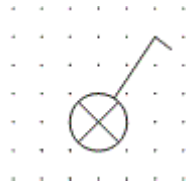
|                       |                                      |
|-----------------------|--------------------------------------|
| Name:                 | Double single pole switch.           |
| Status level:         | Standard                             |
| Released on:          | 2012-04-12                           |
| Earlier published in: | Not applicable                       |
| Keywords:             | installations in buildings, switches |
| Applies:              | S00466                               |
| Application notes:    | A00360                               |
| Replacing:            | S00470                               |
| Shape class:          | Circles, Lines                       |
| Function class:       | Q Controlled switching or varying    |
| Application class:    | Installation diagrams                |

## S01906



|                       |                                      |
|-----------------------|--------------------------------------|
| Name:                 | Triple On-Off switch                 |
| Status level:         | Standard                             |
| Released on:          | 2012-04-23                           |
| Earlier published in: | Not applicable                       |
| Keywords:             | installations in buildings, switches |
| Alternative forms:    | S01909                               |
| Application notes:    | A00266, A00361                       |
| Replacing:            | S01862                               |
| Shape class:          | Circles, Lines                       |
| Function class:       | Q Controlled switching or varying    |
| Application class:    | Installation diagrams                |

## S01907



**Name:** Single pole switch with signal lamp

**Status level:** **Standard**

**Released on:** 2012-04-23

**Earlier published in:** Not applicable

**Keywords:** indicator lamps, installation in buildings

**Applies:** S00466; S00467; S00965

**Application notes:** A00266, A00364

**Shape class:** Circles, Lines

**Function class:** Q Controlled switching or varying

**Application class:** Installation diagrams

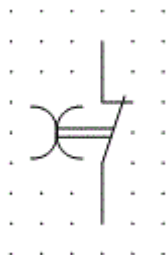
## S01909



|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Triple single pole switch                                                        |
| Status level:         | Standard                                                                         |
| Released on:          | 2012-10-10                                                                       |
| Earlier published in: | Not applicable                                                                   |
| Alternative names:    | Triple On-Off switch                                                             |
| Keywords:             | installations in buildings, switches                                             |
| Form:                 | Form B                                                                           |
| Alternative forms:    | S01906                                                                           |
| Applies:              | S00466                                                                           |
| Application notes:    | A00266, A00361, A00370                                                           |
| Shape class:          | Circles, Lines                                                                   |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |



## S01911



**Name:** Break contact, delayed

**Status level:** **Standard**

**Released on:** 2012-12-10

**Earlier published in:** Not applicable

**Keywords:** contacts, switches

**Applies:** S00148; S00149; S00229

**Application notes:** A00060, A00061, A00070

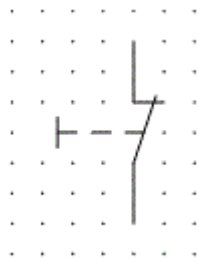
**Shape class:** Half-circles, Lines

**Function class:** K Processing signals or information

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

**Remarks:** The contact is delayed both when the device containing the contact is being activated and when it is being de-activated.

## S01912



**Name:** Switch, manually operated, break contact

**Status level:** **Standard**

**Released on:** 2012-12-10

**Earlier published in:** Not applicable

**Keywords:** contacts, switches

**Applies:** S00229

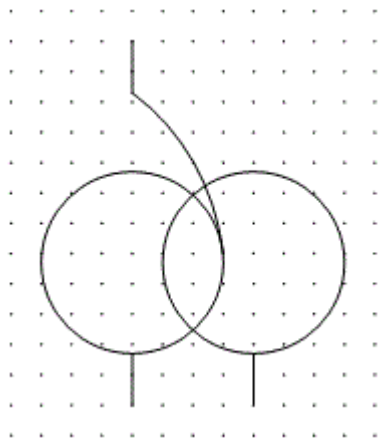
**Application notes:** A00060, A00061, A00082, A00083

**Shape class:** Lines

**Function class:** S Converting a manual operation into a signal

**Application class:** Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams

## S01913



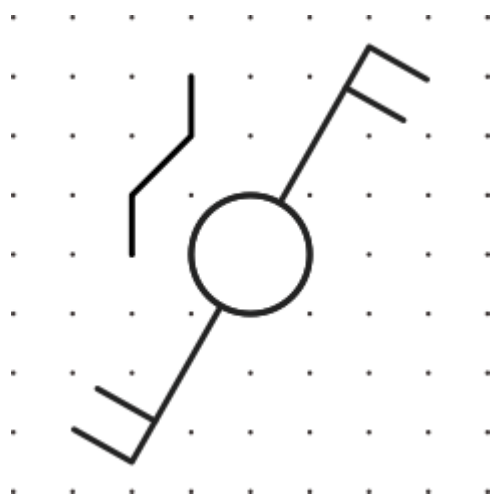
|                       |                                                                             |
|-----------------------|-----------------------------------------------------------------------------|
| Name:                 | Auto-transformer with tertiary winding, general                             |
| Status level:         | Standard                                                                    |
| Released on:          | 2012-12-10                                                                  |
| Earlier published in: | Not applicable                                                              |
| Keywords:             | auto-transformers, transformers, transformers with separate windings        |
| Alternative forms:    | S01914                                                                      |
| Applies:              | S00002; S00806; S00808; S00846; S00848                                      |
| Shape class:          | Circles, Equilateral triangles, Lines                                       |
| Function class:       | T Converting but maintaining kind                                           |
| Application class:    | Circuit diagrams, Connection diagrams, Function diagrams, Overview diagrams |

## S01914



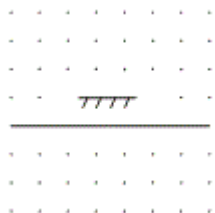
|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| Name:                 | Auto-transformer with tertiary winding, general                      |
| Status level:         | <b>Standard</b>                                                      |
| Released on:          | 2012-12-10                                                           |
| Earlier published in: | Not applicable                                                       |
| Keywords:             | auto-transformers, transformers, transformers with separate windings |
| Alternative forms:    | S01913                                                               |
| Applies:              | S00847                                                               |
| Shape class:          | Half-circles                                                         |
| Function class:       | T Converting but maintaining kind                                    |
| Application class:    | Circuit diagrams                                                     |

## S01915



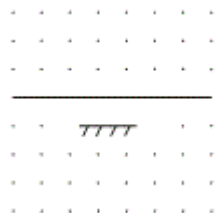
|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| Name:                 | Pole exchanger, two-pole                                                         |
| Status level:         | Standard                                                                         |
| Released on:          | 2013-07-07                                                                       |
| Earlier published in: | IEC 60617-11 (ed.2.0)                                                            |
| Alternative names:    | Intermediate pole changer, two poles                                             |
| Keywords:             | installations in buildings, switches                                             |
| Applies:              | S00024; S00466                                                                   |
| Application notes:    | A00254, A00266                                                                   |
| Replacing:            | S00472                                                                           |
| Shape class:          | Circles, Lines                                                                   |
| Function class:       | Q Controlled switching or varying, S Converting a manual operation into a signal |
| Application class:    | Installation diagrams                                                            |

## S01916



|                       |                                         |
|-----------------------|-----------------------------------------|
| Name:                 | Connection, behind surface              |
| Status level:         | <b>Standard</b>                         |
| Released on:          | 2013-07-07                              |
| Earlier published in: | Not applicable                          |
| Alternative names:    | Flush mounted connector                 |
| Keywords:             | cables, connections, connectors, wiring |
| Applies:              | S00001                                  |
| Replacing:            | S01448                                  |
| Shape class:          | Depicting shapes, Lines                 |
| Function class:       | X Connecting                            |
| Application class:    | Installation diagrams                   |

## S01917



Name: Connection, surface mounted

Status level: **Standard**

Released on: 2013-07-07

Earlier published in: Not applicable

Keywords: cables, connections, connectors, wiring

Applies: S00001

Replacing: S01448

Shape class: Depicting shapes, Lines

Function class: X Connecting

Application class: Installation diagrams

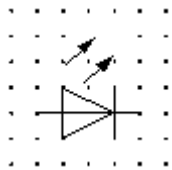
## S01918



|                       |                                     |
|-----------------------|-------------------------------------|
| Name:                 | Mechanically lockable               |
| Status level:         | Standard                            |
| Released on:          | 2013-12-17                          |
| Earlier published in: | Not applicable                      |
| Keywords:             | lock, lockable, locked, padlock     |
| Shape class:          | Depicting shapes                    |
| Function class:       | - Functional elements or attributes |
| Application class:    | Conceptual elements or qualifiers   |

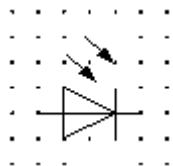


## S01919



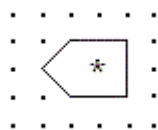
|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| Name:                 | Light emitting diode (LED), general symbol          |
| Status level:         | Standard                                            |
| Released on:          | 2013-12-17                                          |
| Earlier published in: | IEC 60617-5 (ed.2.0)                                |
| Keywords:             | diodes, LED, photo-emissive devices, semiconductors |
| Applies:              | S00127; S00641                                      |
| Application notes:    | A00042                                              |
| Replacing:            | S00642                                              |
| Shape class:          | Arrows, Equilateral triangles, Lines                |
| Function class:       | E Providing radiant or thermal energy               |
| Application class:    | Circuit diagrams                                    |

## S01920



|                       |                                                           |
|-----------------------|-----------------------------------------------------------|
| Name:                 | Photodiode                                                |
| Status level:         | Standard                                                  |
| Released on:          | 2013-12-17                                                |
| Earlier published in: | IEC 60617-5 (ed.2.0)                                      |
| Keywords:             | diodes, photo-conductive devices, photo-sensitive devices |
| Applies:              | S00127; S00641                                            |
| Application notes:    | A00042                                                    |
| Replacing:            | S00685                                                    |
| Shape class:          | Arrows, Equilateral triangles, Lines                      |
| Function class:       | B Converting variable to signal                           |
| Application class:    | Circuit diagrams                                          |

## S01921



Name: Sensor

Status level: **Standard**

Released on: 2014-06-29

Earlier published in: Not applicable

Keywords: Sensor

Applied in: S01922

Application notes: A00375

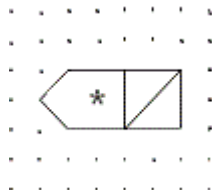
Shape class: Depicting shapes, Lines

Function class: B Converting variable to signal

Application class: Circuit diagrams, Installation diagrams, Overview diagrams

Remarks: The asterisk shall be replaced by a letter symbol in accordance with ISO 80000 or IEC 60027, or a standardized graphical symbol for the quantity being measured. Note that a letter symbol may be composed of letters and numbers. Anything else shall be omitted

## S01922



Name: Transducer

Status level: **Standard**

Released on: 2015-02-09

Earlier published in: Not applicable

Keywords: transducers

Applies: S00213; S01921

Application notes: A00375

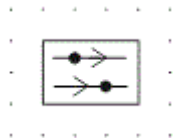
Shape class: Depicting shapes, Lines , Squares

Function class: B Converting variable to signal

Application class: Circuit diagrams, Installation diagrams, Overview diagrams

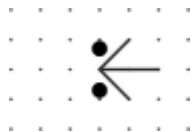
Remarks: The asterisk shall be replaced with a letter symbol in accordance with ISO 80000 or IEC 60027, or a graphical symbol for the quantity being measured, or else shall be omitted.

## S01923



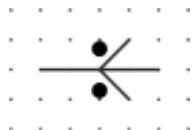
|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Name:                 | Transceiver                                                            |
| Status level:         | Standard                                                               |
| Released on:          | 2015-02-08                                                             |
| Earlier published in: | Not applicable                                                         |
| Alternative names:    | Transmitter-receiver                                                   |
| Keywords:             | tranceivers                                                            |
| Applies:              | S00060; S00102; S00103                                                 |
| Application notes:    | A00376                                                                 |
| Shape class:          | Circles, Depicting shapes, Lines , Squares                             |
| Function class:       | K Processing signals or information, T Converting but maintaining kind |
| Application class:    | Circuit diagrams, Installation diagrams, Overview diagrams             |

## S01924



|                       |                                                                                                                                |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Name:                 | Superconducting region, One superconducting connection                                                                         |
| Status level:         | Standard                                                                                                                       |
| Released on:          | 2017-10-11                                                                                                                     |
| Earlier published in: | Not applicable                                                                                                                 |
| Keywords:             | superconducting electronic devices, superconducting line, superconducting region, switches                                     |
| Applies:              | S01925; S01926                                                                                                                 |
| Shape class:          | Dots (points), Lines                                                                                                           |
| Function class:       | X Connecting                                                                                                                   |
| Application class:    | Circuit diagrams                                                                                                               |
| Remarks:              | Vertical two dots pair is superconducting region, and perpendicular line with right angle wedge is superconducting connection. |

## S01925



**Name:** Normal-superconducting boundary

**Status level:** Standard

**Released on:** 2017-10-11

**Earlier published in:** Not applicable

**Keywords:** conductors, normal-conducting line, superconducting electronic devices, superconducting line, superconducting region

**Applied in:** S01924

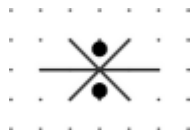
**Shape class:** Dots (points), Lines

**Function class:** X Connecting

**Application class:** Circuit diagrams

**Remarks:** Vertical two dots pair is superconducting region, perpendicular line with right angle wedge on right hand side is superconducting connection, perpendicular line on left hand side is normal conducting connection.

## S01926



Name: Josephson junction

Status level: **Standard**

Released on: 2017-10-11

Earlier published in: Not applicable

Keywords: conductors, SIS, SNS, STJ, superconducting bridges, superconducting electronic devices, superconducting tunnel junctions, superconductor insulator superconductor junctions, superconductor normal-conductor superconductor junctions

Applied in: S01924

Shape class: Dots (points), Lines

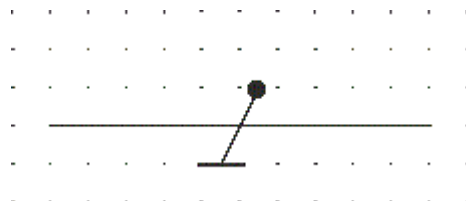
Function class: X Connecting

Application class: Circuit diagrams

Remarks: Vertical two dots pair is superconducting region, perpendicular lines with right angle wedges are superconducting connections on both sides. Josephson junction formed from two superconductors separated by insulator or normal conductor of very small thickness of by superconducting bridge of small section, so that two superconductors are only weakly coupled non-superconducting region which is normal conducting or insulating is extremely small.



## S01927



**Name:** System-referencing-conductor

**Status level:** Standard

**Released on:** 2021-02-16

**Earlier published in:** Not applicable

**Keywords:** electrical installations, identification of conductors, installation in buildings

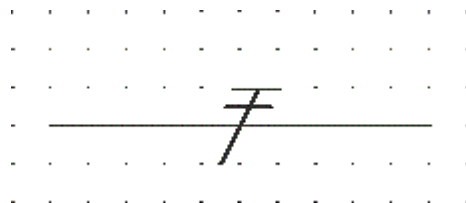
**Applies:** S00001; S00446; S00447

**Shape class:** Dots (points), Lines

**Function class:** - Functional elements or attributes

**Application class:** Circuit diagrams, Installation diagrams, Overview diagrams

## S01928



Name: PEL conductor

Status level: **Standard**

Released on: 2022-09-27

Earlier published in: Not applicable

Alternative names: Combined protective earthing conductor and line conductor

Keywords: electrical installations, identification of conductors, installation in buildings

Applies: S00001; S00447

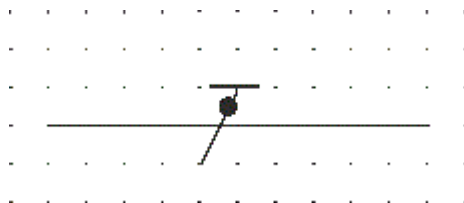
Shape class: Lines

Function class: - Functional elements or attributes

Application class: Circuit diagrams, Installation diagrams, Overview diagrams

Remarks: Old Name: Combined protective and line conductor (PEL) and Old Alternative name: PEL conductor were replaced by respective new names taking into account 3/1545/DC. (2022-01-16)

## S01929



|                       |                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------|
| Name:                 | PEN conductor                                                                     |
| Status level:         | Standard                                                                          |
| Released on:          | 2021-02-17                                                                        |
| Earlier published in: | IEC 60617-11 (ed.2.0) 11-11-03                                                    |
| Alternative names:    | PEM conductor                                                                     |
| Keywords:             | electrical installations, identification of conductors, installation in buildings |
| Applies:              | S00001; S00446; S00447                                                            |
| Application notes:    | A00106                                                                            |
| Replacing:            | S00448                                                                            |
| Shape class:          | Dots (points), Lines                                                              |
| Function class:       | - Functional elements or attributes                                               |
| Application class:    | Circuit diagrams, Installation diagrams, Overview diagrams                        |

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### Application note A00001

A drawing method in which the symbol for conductors in a cable (S00009), screened conductor (S00007), or twisted connection (S00008) is shown either above, below, or beside the intermingled group of conductor symbols may be used if several conductors are contained within the same screen or cable or are twisted together, but the symbols for these conductors are intermingled with symbols for other connections.

The symbol shall be connected by a leader line pointing to the individual lines representing the conductors within the same screen, cable or twisted group.

For an example, see S00010.

**Applies to:** S00007, S00008, S00009, S00010, S01831

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## Application note A00002

Terminal markings may be added.

Applies to: S00018

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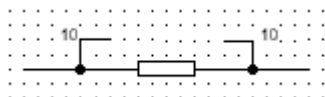
---

### Application note A00003

"n" shall be replaced by the total number of circuits. The figure shall be placed adjacent to the junction symbol. See IEC 61082-1.

A pair of mirror-imaged symbols indicates the extent of the circuit(s).

Illustration of concept: 10 parallel and identical resistors, see "A00003Illustration.gif" below.



Applies to: S00023, S00026, S01351

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[A00003Illustration.gif](#)

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### Application note A00004

The symbol applies to multi-phase or DC power circuits. The interchanged conductors may be indicated.

Applies to: S00024, S00025

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### Application note A00005

The stroke shall be drawn parallel to the symbol for the non-interrupted conductor.

Applies to: S00029



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### Application note A00006

In single line representation the symbol denotes the female part of a multi-contact connector.

Applies to: S00031, S01352, S01354

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### **Application note A00007**

In single line representation the symbol denotes the male part of a multi-contact connector.

**Applies to:** S00032, S01353, S01354

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### Application note A00008

The symbol "Connector, fixed portion of an assembly" should be used only when it is desired to distinguish between the fixed and movable parts in a connector assembly.

**Applies to:** S00036, S00037, S00038

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### Application note A00009

The longest pole on the plug symbol "Telephone type plug and jack" represents the tip of the plug, and the shortest the sleeve.

**Applies to:** S00039, S00040

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### Application note A00010

If the coaxial plug or socket is connected to a coaxial pair, the tangential stroke shall be extended on the appropriate side.

Applies to: S00042

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### Application note A00011

If the coaxial structure is not maintained, the tangential line shall be drawn only on the coaxial side.

Applies to: S00011, S00012

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### **Application note A00012**

The high pressure side is the longer side of the trapezium thus retaining gland in bulk-head.

**Applies to:** S00056, S00513

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### Application note A00013

Suitable symbols or legends shall be inserted in or added to the symbol outline to indicate the type of object.

**Applies to:** S00059, S00060, S00061, S01225



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### **Application note A00014**

An outline of another shape may be used if layout demands it.

**Applies to:** S00062, S00063

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### **Application note A00015**

If the enclosure has special protective features attention may be drawn to these by a note.

**Applies to:** S00062, S00063

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### **Application note A00016**

The envelope symbol may be omitted if no confusion is likely. The envelope must be shown if there is a connection to it.

**Applies to:** S00062, S00063

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### **Application note A00017**

If necessary the envelope symbol may be split.

**Applies to:** S00062, S00063

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### Application note A00018

The symbol is used to indicate a boundary of a group of objects associated physically, mechanically or functionally.

Applies to: S00064

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### **Application note A00019**

Any combination of short and long strokes may be used.

**Applies to:** S00064

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### Application note A00020

The symbol may be drawn in any convenient shape.

Applies to: S00065

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### Application note A00021

The asterisk shall be replaced by the symbol(s) for an equipment or device protected against unintentional direct contact.

Applies to: S00066



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### Application note A00022

The voltage may be indicated at the right of the symbol and the type of system at the left.

EXAMPLE: 2/M <symbol S00067> 220/110 V

Applies to: S00067, S01349

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### Application note A00023

The numerical value of the frequency or the frequency range may be added at the right-hand side of the symbol.

**Applies to:** S00069, S00070, S00071, S00072, S00107

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### Application note A00024

The voltage value may also be indicated to the right of the symbol.

Applies to: S00071, S00072, S00107

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### **Application note A00025**

The number of phases and the presence of a neutral may be indicated at the left-hand side of the symbol.

**Applies to:** S00071, S00107

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### Application note A00026

If it is necessary to indicate a system in accordance with the designations established in IEC 60364-3 the corresponding designation shall be added to the symbol.

**Applies to:** S00072, S00107

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### **Application note A00027**

Symbols S00073, S00074 and S00075 may be used when it is necessary on a given drawing to distinguish between different frequency ranges

**Applies to:** S00073, S00074, S00075

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### **Application note A00028**

Adjustability is a kind of non-inherent variability which enables to perform an adjustment, i.e. to set the variable quantity on a suitable value.

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### **Application note A00029**

Variability is non-inherent when the variable quantity is controlled by an external device, for example, when the resistance is controlled by a regulator.



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### **Application note A00030**

Variability is inherent when the variable quantity depends on qualities of the device itself, for example, when the resistance changes as a function of voltage or of temperature.

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### Application note A00031

The symbols for adjustability, variability and automatic control should be drawn across the main symbol at about 45° to the centre line of the latter symbol.

**Applies to:** S00083, S00084, S00085, S00086, S00088, S00089, S00090, S00091, S00092

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### Application note A00032

Information on the controlling quantity, for example voltage or temperature, may be shown adjacent to the symbol.

**Applies to:** S00083, S00084, S00085, S00086

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### Application note A00033

Information on the conditions under which adjustability is permitted may be shown adjacent to the symbol.

**Applies to:** S00085, S00086

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### Application note A00034

A figure indicating the number of steps may be added.

Applies to: S00087, S00088

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### Application note A00035

The controlled quantity may be indicated adjacent to the symbol.

**Applies to:** S00091, S00092, S00095, S00097, S00098

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### Application note A00036

An arrow may be used to indicate the direction in which the movable part of a device shall move to give a required effect (see A00036Example.pdf below).

It may also indicate the direction of a force or the direction of motion of the physical part symbolized. In such cases a note to indicate the view point may be required.

**Applies to:** S00093, S00094, S00095, S00096, S00097, S00098

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[A00036Example.pdf](#)

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### **Application note A00037**

The effect caused by movement may be explained by symbols or by a text.

**Applies to:** S00093, S00094, S00096



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### Application note A00038

The dot may be omitted if the sense is unambiguously given by the arrowhead in combination with the symbol to which it is applied. For example see symbol S01128.

Applies to: S00102

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### Application note A00039

The dot may be omitted if the sense is unambiguously given by the arrowhead in combination with the symbol to which it is applied. For example see symbol S01127.

Applies to: S00103

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### **Application note A00040**

The type of material may be indicated either by using its chemical symbol, or by one of the qualifying symbols given below.

These symbols have been drawn in rectangles, but the rectangle may be omitted when they are used in conjunction with another symbol.

If necessary, use may be made of the symbols for materials given in ISO 128

**Applies to:** S00113, S00114, S00115, S00116, S00117, S00118, S00119, S01216, S01217

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### Application note A00041

Arrows pointing towards a symbol denote that the device symbolized will respond to incident radiation of the indicated type.

Arrows pointing away from a symbol denote the emission of the indicated type of radiation by the device symbolized.

Arrows located within a symbol denote an internal radiation source.

**Applies to:** S00127, S00128, S00129, S00130, S00131, S00901

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### Application note A00042

If source and target are shown, the arrows shall point from source to target.

If there is a target but no specific source shown, the arrows shall point downwards and to the right.

If there is no specific target shown, the arrows shall point upwards and to the right.

These rules are applied for the original combination of the symbol in the 60617 database which means "Variant A" described in ISO 81714-1. For the other variants, the arrows rotate together with the other elements to keep the position in the whole combination of "Variant A"

**Applies to:** S00127, S00128, S00129, S00685, S00901, S01919, S01920

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### Application note A00043

If it is necessary to show the specific type of ionizing radiation, the symbol may be augmented by the addition of symbols or letters such as the following:

ALPHA = alpha particle

BETA = beta particle

GAMMA = gamma rays

DELTA = deuteron

RHO = proton

ETA = neutron

PI = pion

KAPPA = K meson

MY = muon

X = X-ray

Applies to: S00129

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### Application note A00044

Each symbol represents an idealized shape of the waveform.

**Applies to:** S00132, S00133, S00134, S00135, S00136, S00137

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### **Application note A00045**

The length of the link symbol may be adjusted to the layout of the diagram.

**Applies to:** S00144, S00145, S00146, S00147



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### Application note A00046

The arrow is assumed to be placed in front of the link symbol.

Applies to: S00146

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### **Application note A00047**

Action is delayed when the direction of movement is from the arc towards its centre.

**Applies to:** S00148, S00149

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### Application note A00048

The triangle is pointed in the return direction.

Applies to: S00150

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### Application note A00049

If desired, a more detailed drawing of the cam may be shown. This applies also to a profile plate.

**Applies to:** S00182, S00183, S00185

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### Application note A00050

Information showing the form of stored energy may be added in the square.

Applies to: S00186

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### **Application note A00051**

Supplementary information may be given to define the status or the purpose of the earth if this is not readily apparent.

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### **Application note A00052**

This symbol may be used in place of symbol S00200 to indicate an earth connection having a specified protective function, for example for protection against electrical shock in case of a fault.

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### Application note A00053

The hatching may be completely or partly omitted if there is no ambiguity. If the hatching is omitted, the line representing the frame or chassis shall be thicker as shown in symbol S01410.

Applies to: S00203



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### **Application note A00054**

Additional indications may be added to the symbols S00205 to S00207 according to IEC 60375.

**Applies to:** S00205, S00206, S00207

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### Application note A00055

If the direction of change is not obvious, it may be indicated by an arrowhead on the outline of the symbol.

Applies to: S00213

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### Application note A00056

A symbol or legend indicating the input or output quantity, waveform etc. may be inserted in each half of the general symbol to show the nature of the conversion.

Example see symbol S00894.

Applies to: S00213

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### **Application note A00057**

This symbol shall be used only when it is necessary to distinguish between analogue and other forms of signals and connections.

**Applies to:** S00216, S00217

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### **Application note A00058**

See also A00321.

**Applies to:** S00216

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### **Application note A00059**

See also A00321 and ISO/IEC 646.

**Applies to:** S00217

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### Application note A00060

A small circle, open or filled in, representing the hinge point, may be added to most of the symbols. For example, see symbol S00228.

In some symbols the circle indicating the hinge point shall be shown. For example, see symbol S00231.

**Applies to:** S00227, S00229, S00230, S00232, S00233, S00234, S00235, S00236, S00237, S00238, S00239, S00240, S00241, S00242, S00243, S00244, S00245, S00246, S00247, S00248, S00249, S00250, S00251, S00253, S00254, S00255, S00256, S00257, S00258, S00259, S00260, S00261, S00262, S00263, S00264, S00265, S00271, S00272, S00274, S00284, S00285, S00286, S00287, S00288, S00290, S00291, S00292, S00294, S00295, S01911, S01912

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## Application note A00061

For other methods of representing switches, especially complex, electronic switches, see S01556 (12-17A-01), S01557 (12-17A-02), S01604 (12-29-09), S01606 (12-29-11), S01804 (13-17-01), S01805 (13-17-02).

**Applies to:** S00218, S00219, S00220, S00221, S00222, S00223, S00224, S00225, S00226, S00227, S00228, S00229, S00230, S00231, S00232, S00233, S00234, S00235, S00236, S00237, S00238, S00239, S00240, S00241, S00242, S00243, S00244, S00245, S00246, S00247, S00248, S00249, S00250, S00251, S00252, S00253, S00254, S00255, S00256, S00257, S00258, S00259, S00260, S00261, S00262, S00263, S00264, S00265, S00267, S00268, S00269, S00270, S00271, S00272, S00273, S00274, S00275, S00276, S00277, S00278, S00279, S01911, S01912



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### Application note A00062

This qualifying symbol may be applied to simple contact symbols to indicate position switches if there is no need to show the means of operating the contact. In complicated cases, where it is desirable to show the means of operation, one of the symbols 02-13-16 through 02-13-19 may be used instead.

Applies to: S00223

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### Application note A00063

To depict a contact which is mechanically operated in both directions, this symbol shall be placed on both sides of the contact symbol.

Applies to: S00223

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### Application note A00064

This symbol may be used to indicate automatic return. For example, see 07-06-01.

Applies to: S00224, S00249, S00251

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### Application note A00065

This symbol shall not be used together with qualifying symbols S00218, S00219, S00220 and S00221. In many cases, symbol S00150 may be used.

**Applies to:** S00224, S00249, S00251

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### Application note A00066

This symbol may be used to indicate non-automatic return function. When this convention is invoked, its use should be appropriately referenced.

Applies to: S00225

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### Application note A00067

This symbol should not be used together with qualifying symbols S00218, S00219, S00220 and S00221. In many cases, symbol S00151 may be used.

Applies to: S00225

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### **Application note A00068**

This symbol shall be used to indicate that the positive operation of a mechanical device in the direction shown is ensured or is required. This means that the operation ensures that all contacts are in the position corresponding to the activating device.

**Applies to:** S00226

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### Application note A00069

If contacts are shown linked, the symbol shall apply to all the linked contacts unless otherwise indicated (see symbol 07-08-07).

Applies to: S00226



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### Application note A00070

See symbols S00148 and S00149. Closing and opening of the contact is delayed with respect to the activation or deactivation operation. The movement is delayed in the direction towards the centre of the arc ("parachute effect"). The symbol for delayed action may be drawn on that side of the contact symbol which is most suitable for the application and for the placing of item designations.

**Applies to:** S00243, S00244, S00245, S00246, S00247, S00248, S01911

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### Application note A00071

A rectangular outline may be used instead of a square.

**Applies to:** S00385, S00386, S00387, S00388, S00391, S00392, S00393, S00394, S00395, S00396, S00397, S00398, S00399, S00400, S00401, S00402, S00403, S00404, S01419, S01420

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### Application note A00072

On small scale maps it may be desirable to replace the hatched areas in the symbols by completely filled-in areas.

**Applies to:** S00386, S00388, S00390, S00392, S00394, S00396, S00398, S00400, S00402, S00404, S00406, S01420

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### Application note A00073

Examples of lines are given in S00001 and S00058.

**Applies to:** S00407, S00408, S00409, S00410, S00411, S00412, S00413, S00414, S00415, S00416, S00417, S00418

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### Application note A00074

Additional information may be shown above the line representing the duct route, for example the number of ways.

Applies to: S00410

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### **Application note A00075**

Qualifying symbols or designations may be used to indicate the apparatus contained in the enclosure.

**Applies to:** S00419, S00420

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### **Application note A00076**

Inputs and outputs may be oriented as required.

**Applies to:** S00421

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### **Application note A00077**

The symbol should be shown on the "creepout" side of the access chamber.

**Applies to:** S00424



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### Application note A00079

The type of anode material may be indicated by adding its chemical letter symbol.

Applies to: S00426

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### Application note A00082

Devices with "push" or "pull" operation most often have automatic return. It is therefore not necessary to show the automatic return symbol S00150.

On the other hand, a detent symbol S00151 shall be shown in those cases where non-return exists.

**Applies to:** S00253, S00254, S00255, S00257, S00258, S00267, S00268, S00269, S00273, S00292, S00294, S00295, S01912

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### Application note A00083

Devices operated by turning do not usually have automatic return. It is therefore not necessary for the detent symbol S00151 to be shown.

On the other hand, the automatic return symbol S00150 should be shown in those cases where an automatic return exists.

**Applies to:** S00253, S00256, S00267, S00268, S00269, S00273, S00292, S00294, S00295, S01912

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### Application note A00084

Where in a set of contacts one or some of them are constructed to have positive opening operation this positivity may concern:

- either the opening of break contact(s) (for example S00262: Position switch and S00258: Emergency stop switch) or the closing of a make contact (for example S00257: Alarm) and
- either all the contacts or only particular contacts (see for example S00296) but
- not both the opening and the closing of the same contact.

**Applies to:** S00259, S00260, S00261, S00262

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### Application note A00085

The letter THETA may be replaced by the operating temperature conditions.

Applies to: S00263

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### Application note A00086

There are many ways in which complex switching functions can be achieved mechanically, for example by rotary wafer switches, slide switches, drum controllers, cam-operated contact assemblies, etc. There are also many ways in which the switching functions may be symbolized on circuit diagrams (see IEC 61082-1).

Studies have shown that there is no unique system of symbolization which is superior in every application. The system employed should be chosen with due regard to the purpose of the diagram and the degree of complexity of the switching device that it is desired to symbolize.

Therefore this symbol presents only one of the possible methods for symbolizing complex switches. To facilitate understanding, each example includes a constructional drawing of the device symbolized. The method shown here uses a general symbol for a complex switch which must be supplemented by a table of connections. Two examples are shown.

Applies to: S00280

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### Application note A00087

Qualifying symbols may be shown inside the general symbol to indicate particular types of starters. See symbols S00301, S00302 and S00303.

Applies to: S00297

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### Application note A00088

The number of steps may be indicated

Applies to: S00298



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### Application note A00089

Operating devices with several windings may be indicated by inclusion inside the outline of the appropriate number of inclined strokes, see symbol S00308.

**Applies to:** S00305, S00306

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### Application note A00090

Polarity dots may be used to indicate the relationship between the direction of the current through the winding of a polarized relay and the movement of the contact arm according to the following connection.

When the winding terminal identified by the polarity dot is positive with respect to the other winding terminal, the contact arm moves or tends to move towards the position marked with the dot.

Applies to: S00319

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### Application note A00091

The asterisk shall be replaced by one or more letters or qualifying symbols indicating the parameters of the device, in the following order:

- characteristic quantity and its mode of variation;
- direction of energy flow;
- setting range;
- re-setting ratio;
- delayed action;
- value of time delay

Applies to: S00327

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### Application note A00092

Letter symbols for characteristic quantities shall be in accordance with established standards, for example, IEC 60027 and ISO 31.

Applies to: S00327

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### Application note A00093

A figure giving the number of similar measuring elements may be included in the symbol as shown in example S00342.

Applies to: S00327

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### Application note A00094

The symbol may be used as a functional symbol representing the whole of the device, or as a symbol representing only the actuating element of the device.

Applies to: S00327

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### Application note A00095

The method of operating may be indicated.

Applies to: S00355

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### Application note A00096

The small circle representing the hinge point (see application note A00060) shall not be added to this symbol.

Applies to: S00376



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### Application note A00097

Appropriate qualifying symbols may be added to denote the function of the static switch. See symbols S00229 to S00247.

Applies to: S00376

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### Application note A00098

A qualifying symbol to denote the type of actuating element may be added.

Applies to: S00379

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### Application note A00099

1. The asterisk (\*) shall either be replaced by the symbol for the coupling medium or be omitted.
2. X and Y shall either be replaced by the appropriate indications for the quantities concerned or be omitted.
3. The double solidus may be replaced by a double diagonal.

Applies to: S00383

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### **Application note A00100**

Branch feeders may be drawn from any convenient point on the circle.

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### **Application note A00101**

The dot is used to distinguish an output at a relatively higher level.

**Applies to:** S00430, S00435

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### **Application note A00102**

Branch or spur feeders may leave the sloping sides of the symbol at any convenient angle.

**Applies to:** S00430, S00435

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### Application note A00103

The stroke inside the circle may be replaced by a designation.

Applies to: S00437, S01336

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### **Application note A00104**

The stroke representing the subscriber's feeder may be omitted if no ambiguity will arise.

**Applies to:** S00437, S01336



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### Application note A00105

Symbol S01244 may also be used.

Applies to: S00442

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### Application note A00106

The symbols shown in S00446 ... S00449 may be replaced by letter symbols given in IEC 60445.

**Applies to:** S00446, S00447, S00448, S00449, S01929

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### **Application note A00107**

If the arrow is pointing towards the top border (edge) of the drawing sheet, the wiring goes upwards.

**Applies to:** S00450

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### Application note A00108

If the arrow is pointing towards the bottom border (edge) of the drawing sheet, the wiring goes downwards.

Applies to: S00451

## Application note A00109

Designations in accordance with relevant IEC or ISO standards, may be used to distinguish different types of outlet symbols:

### TELEPHONE SYSTEMS

TP = Telephone system

WT = Wireless telephone system

DP = Door phone system

IC = Intercom system

### COMMUNICATION SYSTEMS

TV = TV system

PA = Public address system ( SS = sound system)

AV = Audio visual system

IS = Information service system

CS = Conference- and interpretation system (congress system)

BC = Broadcasting system

### ANNOUNCEMENT SYSTEMS

DB = Door bell system

EC = Entry call system

NC = Nurse call system

OL = Occupied light system

TC = Time clock system

SC = Service call system

IL = Info lighting system

EC = Emergency call system

PS = Paging system

### SECURITY SYSTEMS

EL = Electric lock system

AC = Time attendance and access control system

IA = Intrusion alarm system

PN = Panic call system

CC = CCTV system

DG = Door- and gate control system

FA = Fire detection and fire alarm system

FW = Fire warning system

FP = Fire protection control system

SE = Smoke exhaust system

### INFORMATION NETWORK SYSTEMS

GC = Generic cabling system

IT = IT systems

### INTEGRATED CONTROL SYSTEMS

BS = Bus control system

MC = Multi-control system

## BUILDING AUTOMATION SYSTEMS

BM = Building management system

Note that these letters are qualifiers to the symbols only and that the qualifier are intended for used in the area of Building installations.

For the purpose of identification of a connection or outlet, the relevant letter codes in IEC 61346-2 should be applied.

Applies to: S00465

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### Application note A00110

Protection can be by means of a break-glass cover

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### **Application note A00111**

The symbol may be qualified as shown in S00965



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### Application note A00112

The symbol shall only be used when the auxiliary apparatus is not incorporated in the luminaire.

Applies to: S00490

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### **Application note A00113**

The asterisk shall be replaced by the proper equipment designation, or be omitted.

**Applies to:** S00515, S00519, S00520, S00526, S00527

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### Application note A00114

Surface lights are light fixtures inset flush in the surface of runways, stopways, taxiways and aprons.

Elevated navigation aids are lights and indicators not flush mounted.

The beam types are defined as shown in the file A00114BeamTypes.pdf attached below.

**Applies to:** S00533, S00534, S00535, S00536, S00537, S00538, S00539, S00540, S00541, S00542, S00543, S00544, S00545, S00546, S00547, S00548, S00549, S00550, S00551, S00552, S00553, S00554



[A00114BeamTypes.pdf](#)

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## Application note A00116

Colours are indicated by adaption of the symbol according to Table 1 (omni-directional) and Table 2 (bi-directional), see the files A00116Table1.pdf and A00116Table2.pdf attached below. If use is made of colours or combinations of colours not listed in Table 1 or 2, the colour name or the colour code according to IEC 60757 shall be indicated adjacent to the symbol.

**Applies to:** S00533, S00534, S00535, S00536, S00537, S00538, S00539, S00540, S00541, S00542, S00543, S00544, S00545, S00546, S00547, S00550, S00551

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[A00116Table1.pdf](#) [A00116Table2.pdf](#)

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### **Application note A00118**

Colours may be indicated in accordance with A00116. See also Tables 1 and 2 (A00115).

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### **Application note A00119**

If confusion can arise, an arrow showing the beam direction may be added.

**Applies to:** S00533, S00534

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### Application note A00120

The number of separate windings should be indicated:

- either by the number of strokes drawn,
- or by adding a figure to the symbol

**Applies to:** S00796, S00797, S00798, S00799

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### Application note A00121

Symbol S00806 may be used to symbolize a multiphase polygon connection of windings by adding a figure to denote the number of phases.

Applies to: S00806



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### **Application note A00122**

Symbol S00796 may also be used to represent windings which can be externally connected in various ways .

**Applies to:** S00796, S00799, S00800

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### Application note A00123

Symbol 00808 may also be used to symbolize a multiphase star connection of windings by adding a figure to denote the number of phases.

Applies to: S00808

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### Application note A00124

Brushes are shown only if necessary. For an example of application, see symbol S00825.

Applies to: S00818

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### Application note A00125

The asterisk, \*, shall be replaced by one of the following letter designations:

C Rotary converter

G Generator

GP Permanent magnet generator

GS Synchronous generator

M Motor

MG Machine capable of use as a generator or motor

MGS Synchronous generator - motor

MP Permanent magnet motor

MS Synchronous motor

RC Rotary Condenser

Applies to: S00819

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## Application note A00126

The symbols S00067 and S00107 may be added, as shown in many of the examples.

**Applies to:** S00819, S00823, S00824, S00825, S00826, S00827, S00828, S00829, S00830, S00831, S00832, S00833, S00834, S00835, S00836, S00837, S00838, S00839, S00840

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### Application note A00127

If it is desired to show that there is a magnetic core, a single line may be added parallel to the symbol. The line may be annotated to indicate non-magnetic materials; it may be interrupted to indicate a gap in the core.

**Applies to:** S00583, S00842, S00845, S00849, S00851, S00853, S00855, S00857, S00859, S00861, S00863, S00865, S00867, S00869, S00871, S00873, S00875, S00877, S00879, S00881, S00883, S00885, S00887, S00889, S00891, S01344

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### Application note A00128

Two forms of symbols are given for the same type of transformer:

- Form 1 uses a circle to represent each winding. Its use is preferably restricted to single-line representation. Symbols for transformer cores are not used with this form.
- Form 2 uses symbol S00583 to represent each winding. The number of half-circles may be varied to differentiate between winding.

**Applies to:** S00841, S00842, S00844, S00845, S00846, S00847, S00848, S00849, S00850, S00851, S00852, S00853, S00854, S00855, S00856, S00857, S00858, S00859, S00860, S00861, S00862, S00863, S00864, S00865, S00866, S00867, S00868, S00869, S00870, S00871, S00872, S00873, S00874, S00875, S00876, S00877, S00878, S00879, S00880, S00881, S00882, S00883, S00884, S00885, S00886, S00887, S00888, S00889, S00890, S00891, S01343, S01344, S01837, S01838, S01840, S01841, S01842

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### Application note A00129

In the case of symbols for current and pulse transformers, straight lines, representing primary windings may be used for form 1 and form 2.

**Applies to:** S00841, S00842, S00843, S00844, S00845, S00850, S00851, S00880, S00881, S00882, S00883, S00884, S00885, S00886, S00887, S00888, S00889, S00890, S00891, S01343, S01344



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### Application note A00130

The instantaneous voltage polarities may be indicated in form 2 of the symbol. IEC 60375 gives a method of indicating the instantaneous voltage polarities of coupled electric circuits. For an example, see S00843.

**Applies to:** S00842, S00843, S00845, S00847, S00849, S00851, S00853, S00855, S00857, S00859, S00861, S00863, S00865, S00867, S00869, S00873, S00877, S00879, S00881, S00883, S00885, S00887, S00889, S00891, S01344

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### Application note A00131

For a rotary generator, use symbol S00819.

Applies to: S00899

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### Application note A00132

The asterisk shall either be replaced by letter(s) or a graph denoting the transition behavior, or be omitted.

To indicate an open-loop controller the symbol shall be used with only one input

Applies to: S00909

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### Application note A00133

The general symbol for a machine S00819 should be used to represent an asynchronous machine, if no external connections to the rotor exist, for example in a squirrel cage motor. An inner circle, representing the rotor, should be shown in those cases where external connections to the rotor exist, see for example symbol S00838.

**Applies to:** S00836, S00837, S00838, S00839, S00840

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### Application note A00134

For measuring transformers and pulse transformers use the appropriate symbols S00841 - S00851 and S01343 - S01344.

**Applies to:** S00878, S00879, S00880, S00881, S00882, S00883, S00884, S00885, S00886, S00887, S00888, S00889, S00890, S00891

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### Application note A00135

The method of connecting transformer windings may also be indicated by codes. See IEC 60076: Power transformers.

**Applies to:** S00802, S00803, S00804, S00805, S00806, S00807, S00808, S00809, S00810, S00811, S00812, S00813, S00814

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### Application note A00136

The type of coupling, power division proportions, reflection coefficients, etc., may be indicated. The angles between the ports may be drawn as convenient.

**Applies to:** S01185, S01186, S01187, S01188, S01189, S01190, S01191, S01192, S01193, S01194, S01195, S01196

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### Application note A00137

The convention is that the power entering at one port is conveyed only to the two directly connected ports and thence away from the device.

**Applies to:** S01189, S01190, S01191, S01192, S01193, S01194



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### Application note A00138

The symbol, consisting of a downwards pointing vertical arrow between two horizontal lines, represents the transition from one energy level to a lower one. It should be drawn in the lower left-hand corner of the square.

Pumping by light may be shown by placing symbol S00127 above the appropriate material symbol, see S00113 ... S00119.

For an example of application, see symbol S01216 .

**Applies to:** S01212, S01213, S01214, S01215, S01216, S01217

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### **Application note A00140**

The f and f/n may be replaced by indications of the input and output frequencies .

**Applies to:** S01234

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### **Application note A00141**

The asterisk shall be replaced by details of the code.

**Applies to:** S01223, S01224

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### Application note A00142

The  $f$  and  $n_f$  may be replaced by indications of the input and output frequencies

Applies to: S01233

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### Application note A00143

The f1 and f2 or the sine symbols may be replaced by indications of the input and output frequencies.

Applies to: S01232, S01904

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### Application note A00144

The asterisk within the symbol shall be replaced with one of the following:

- the letter symbol for the unit of the quantity measured, or a multiple or sub-multiple thereof (see examples S00913 and S00919);
- the letter symbol for the quantity measured (see examples S00917 and S00918);
- a chemical formula (see example S00925);
- a graphical symbol (see example S00920).

The symbol or formula used shall be related to the information displayed by the instrument regardless of the means used to obtain the information.

**Applies to:** S00910, S00911, S00912, S00920, S00921, S00922, S00923, S00924, S00925, S00926, S00927, S00928, S00929, S00930, S00931, S00932, S00933, S00934, S00935, S00936, S00937, S00938, S00939, S00940, S00941, S00942, S00943, S00945

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### Application note A00145

The letter symbols for the units and for the quantities measured shall be selected from one of the parts of IEC 60027 Letter symbols to be used in electrical technology.

Provided IEC 60027, or the letter symbols for chemical elements, do not apply, other letter symbols may be used, if they are explained on the diagram or in referenced documents.

**Applies to:** S00910, S00911, S00912, S00913, S00914, S00915, S00916, S00917, S00918, S00919, S00923, S00924, S00926, S00928, S00929, S00932, S00933, S00934, S00935, S00936, S00937, S00938, S00939, S00940, S00941, S00943, S00944, S00945

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### Application note A00146

If the letter symbol for the unit of the quantity measured is used, it may be necessary to show the letter symbol for the quantity as supplementary information. It should be placed below the letter symbol (see example S00914).

Supplementary information concerning the quantity measured, and any necessary qualifying symbols may be shown below the quantity letter symbol.

**Applies to:** S00910, S00911, S00912, S00923, S00942, S00943, S00944



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### Application note A00147

If more than one quantity is indicated or recorded by an instrument, the appropriate symbol outlines shall be placed attached in line, horizontally or vertically (see examples S00929 and S00944).

**Applies to:** S00910, S00911, S00912, S00929, S00944

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### Application note A00148

This symbol may also be used for a remote instrument, which repeats a reading transmitted from an integrating meter. For example, see S00941.

This symbol may be combined with that for a recording instrument to represent a combined instrument. For example, see S00944.

Symbols S00099...S00106 may be used to specify the direction of energy flow. For examples, see S00934 and S00937.

The number of rectangles at the top of the symbol indicates the number of different summations by a multirate meter. For example, see S00939.

**Applies to:** S00912, S00933, S00934, S00935, S00936, S00937, S00938, S00939, S00940, S00941, S00944, S00945

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### Application note A00149

A frequency spectrum is represented on a diagram by means of symbols on a horizontal frequency axis. The symbols show the functions of the various frequencies and frequency bands used in the transmission system as well as their relative positions in the spectrum.

**Applies to:** S01291, S01292, S01293, S01294, S01296, S01297, S01298, S01299, S01300, S01301, S01302, S01303, S01304, S01305, S01306, S01307

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### **Application note A00150**

This is a qualifying symbol particular to semiconductor devices. If necessary, a special function or property essential for circuit operation may be indicated by a qualifying symbol placed adjacent to, or forming part of the symbol of the device.

**Applies to:** S00636, S00637, S00638, S00639, S00640

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### Application note A00151

Symbol S00128 may be used to indicate that coherent light is being used.  
If no confusion can arise the symbol element denoting an optical wave guide (S00127 or S00128 in a small circle) may be omitted.

Applies to: S01318

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### **Application note A00152**

Fibre index identifiers should be placed adjacent to the symbol element denoting an optical wave guide to avoid confusion with signal waveforms.

**Applies to:** S01319, S01320, S01321

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### Application note A00153

The diameter of optical fibres shall be indicated from the inside of the fibre towards the outside, for example:

a = core,

b = cladding,

c = first coating,

d = jacketing.

Applies to: S01322, S01323, S01324

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### Application note A00154

When a single line represents a group of optical fibres, their number may be indicated either by adding small strokes or one stroke and a figure.

**Applies to:** S01323, S01324



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### **Application note A00155**

For transmission systems (FDM) the order of the group to which the pilot refers, for example: group, supergroup, mastergroup or supermastergroup, may be indicated by adding the respective number 1, 2, 3 or 4 of oblique strokes.

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### **Application note A00156**

Example of a composite cable containing both copper conductors and optical fibres.

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### Application note A00157

The symbol S01334 may also be used to represent a combiner if the direction of information flow corresponds with a combiner. See symbol S01335.

**Applies to:** S01334, S01335

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### **Application note A00158**

The circle may be omitted if no confusion can arise.

**Applies to:** S01337

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### Application note A00159

This symbol may also be used to represent a fused coupler if the direction of information flow corresponds with a fused coupler.

Applies to: S01337

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### **Application note A00160**

In a star coupler of this type each port is bidirectional and may be used as input and output at the same time. Each port feeds every other port.

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### **Application note A00161**

The division of a band into channels, groups, etc., may be shown by adding vertical lines.

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### Application note A00162

There is no indication of how much of the bandwidth shown by the symbol is actually used. The symbols for this rule to be applied may be used to represent a single channel, group, etc., or a number of channels, groups, etc., providing they are all erect.

**Applies to:** S01303, S01304, S01305, S01306



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### **Application note A00164**

The gate and source connections shall be drawn in line.

**Applies to:** S00671, S00672

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### Application note A00165

The connection line to the symbol S00702 may be shown horizontally. See symbol S00770.

Applies to: S00702, S00770

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### Application note A00166

Symbol S00703 may be used if no confusion is likely.

Applies to: S00704

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### Application note A00167

Symbol S00705 may be used if no confusion will arise.

Applies to: S00709, S00714

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### Application note A00168

Symbol S00709 may be used if no confusion will arise.

Applies to: S00710, S00712

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### Application note A00169

The step from the low-resistance to the high-resistance state is reached by making the electrode marked with the step-function symbol the anode

Applies to: S00792

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### **Application note A00170**

The letters (I, G, O, C) are not part of solion tetrode symbol.

I = input

G = grid

O = output

C = common

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## Application note A00171

A conductivity cell is an element for measuring the conductivity of liquids.

Applies to: S00795



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### **Application note A00172**

If desired, the direction of rotation of the discharge may be shown by an arrow.

**Applies to:** S00774, S00775

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### Application note A00173

The asterisk shall be replaced by the appropriate letters for the particular synchronous device being symbolized. The letters to be used according to the function are as follows:

First letter - Function

C - Control

T - Torque

R - Resolver

Succeeding letter - Function

D - Differential

R - Receiver

T - Transformer

X - Transmitter

B - Rotatable stator winding

In the symbol, the inner circle represents the rotor and the outer circle the stator or, in certain instances, a rotatable outer winding.

**Applies to:** S00962, S00963

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### Application note A00174

If it is desired to indicate the colour, a notation according to the following code is placed adjacent to the symbol:

RD = red

YE = yellow

GN = green

BU = blue

WH = white

If it is desired to indicate the type of lamp, a notation according to the following code is placed adjacent to the symbol:

Ne = neon

Xe = xenon

Na = sodium vapour

Hg = mercury

I = iodine

IN = incandescent

EL = electroluminescent

ARC = arc

FL = fluorescent

IR = infra-red

UV = ultra-violet

LED = light emitting diode

**Applies to:** S00965, S00966

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### **Application note A00175**

Respective contacts close once at every unit (10 0), ten (10 1), hundred (10 2), thousand (10 3) events registered by the counter

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### Application note A00176

Junction influences a semiconductor layer by means of an electric field, for example in a junction field effect transistor

Applies to: S00620, S00621

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### Application note A00177

This symbol indicates the conductivity type of the channel for insulated gate field effect transistors (IGFET).

Applies to: S00622, S00623

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### Application note A00178

The slanting line with arrow represents the emitter.

Applies to: S00625, S00626, S00627, S00628

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### Application note A00179

The slanting line represents the collector.

Applies to: S00629, S00630



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### Application note A00180

The short slanting line indicates the point of change along the vertical line from P to N, or from N to P.

No ohmic connection shall be made to the short slanting line.

Applies to: S00631

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### **Application note A00181**

The intrinsic region lies between the linked slanting lines.  
Any ohmic connection to the region shall be made between the short slanting lines and not to them.

**Applies to:** S00632, S00633

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## Application note A00182

The connection to the collector is made to the long slanting line.

Applies to: S00634, S00635

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### **Application note A00183**

In the case of multiple gates, the primary gate and the source connection shall be drawn in line.

**Applies to:** S00679

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### Application note A00184

This symbol is used to represent a reverse blocking triode thyristor, if it is not necessary to specify the type of gate.

Applies to: S00057

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### Application note A00185

When this symbol is used to represent a carrier which is modulated in frequency or phase, the letter symbols f or "phi" shall be added. For example, see symbol S01309. The arrowhead on the vertical line representing the carrier (and the arrowhead on the frequency axis) may be omitted if no confusion is likely.

Applies to: S01291

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### **Application note A00187**

For transmission systems (FDM) the order of the group to which the pilot refers, for example: group, supergroup, mastergroup or supermastergroup, may be indicated by adding the respective number 1, 2, 3 or 4 of oblique strokes.

**Applies to:** S01294

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### **Application note A00188**

If it is desired to show whether a particular band of frequencies is erect or inverted, symbol S01303 or S01306 shall be used.

The order of a band of frequencies forming part of a transmission system may be indicated by adding oblique strokes according to the rule with symbol S01294.

**Applies to:** S01300, S01301, S01302



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### Application note A00190

For frequency modulation, replace "phi" by f.

Applies to: S01309

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### Application note A00191

For static power generators, see symbol S00899 and the examples of that.

Applies to: S00819

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### Application note A00192

If a single line represents a group of conductors, the number of connections may be indicated either by adding as many oblique strokes or one stroke followed by the figure for the number of connections.

**Applies to:** S00002, S00003, S00058, S01414, S01415

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### Application note A00193

Additional information may be indicated such as:

- kind of current
- system of distribution
- frequency
- voltage
- number of conductors
- cross-sectional area of each conductor
- the chemical symbol for the conductor material

The number of conductors is followed by the sectional area, separated by x.

If different sizes are used, their particulars should be separated by +.

For dimensional data:

- for low-frequency cables and wires, see IEC 60189 (series); and
- for multicore and symmetrical pair/quad cables for digital communications, see IEC 61156-1;
- for radio-frequency cables, see IEC 61196 (series)
- for optical fibres, see IEC 60793-1 (Series) , IEC 60793-2 (series) and ITU specifications for optical fibres.

**Applies to:** S00001, S00002, S00003, S00004, S00005, S00058

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### Application note A00194

The length of the symbol for connection, or group of connections, may be adjusted to the layout of the diagram.

**Applies to:** S00001, S00002, S00003, S00004, S00005, S00058

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### Application note A00195

The symbol may be used to represent switching systems without regard to the type of equipment used

**Applies to:** S00981, S00982, S00983, S00984, S00985, S00986, S00987, S00988, S00989, S00990, S00991

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### Application note A00196

Connection stage:

An arrangement of inlets and outlets such that only one switching point is used to connect inlet to an outlet. A number of connections may exist at any time in one connection stage.

**Applies to:** S00981, S00982, S00983, S00984, S00985, S00992, S00993

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### Application note A00197

Marking stage:

In a common-control system, that sequence of connecting stages which is controlled by one marking process. A marking stage may consist of one or more connecting stages.

**Applies to:** S00986, S00987, S00988, S00992, S00993



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### Application note A00198

Switching stage:

A sequence of connecting stages which jointly perform a specified switching function, for example preselection or route selection.

**Applies to:** S00989, S00990, S00991, S00992, S00993

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### Application note A00199

Highway-group:

The maximum number of circuits which have access to one highway.

Applies to: S00992, S00993

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### **Application note A00200**

Circuits on one side may be connected individually to circuits on the other side.

**Applies to:** S00981, S00982, S00983, S00984, S00985

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### Application note A00201

The number of inlets and outlets in each group may be indicated by a figure on the relevant line.

Applies to: S00984

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### **Application note A00202**

The qualifying symbol indicating a marking stage is a dot. It shall be added to the inlets of the first connecting stage and to the outlets of the last connecting stage of that marking stage.

**Applies to:** S00986, S00987, S00988

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### Application note A00203

The qualifying symbol indicating a switching stage is an arc. It shall be added to the inlets of the first connecting stage and to the outlets of the last connecting stage of that switching stage.

**Applies to:** S00989, S00990, S00991

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### **Application note A00204**

The symbol S00060 may be qualified to represent switching equipment by the inclusion of symbol S00981

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### Application note A00205

A suitable designation, for example a letter symbol, may be added to indicate a particular type of equipment.

**Applies to:** S00994, S00995



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### Application note A00206

The small circle representing the hinge point may be open or filled in.

Applies to: S00996, S00997

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### **Application note A00207**

The groups of outlets or contacts may be shown in a line instead of in an arc

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### **Application note A00208**

The individual outlets or contacts may be shown in a line instead of in an arc.

**Applies to:** S01002

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### Application note A00209

The dots in the circle may be omitted if no confusion is likely.

Applies to: S01020

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### Application note A00210

In single line representation the symbol denotes the female part and the male part of a multi-contact connector.

Applies to: S00033

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### Application note A00211

The lines could be exchange or extension lines.

Applies to: S01028

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### Application note A00212

The symbol may be used to represent the complete local end equipment.

**Applies to:** S01029, S01030, S01031, S01032, S01033, S01034, S01035, S01037

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### Application note A00213

If the tapes are cut and fed one by one to the transmitter, the dashed line between the block symbols is omitted.

Applies to: S01036



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### Application note A00214

The  $\pm$  sign indicates double current.

The "+0", "0+", "-0" or "0-" signs indicate single current.

The "0f" sign indicates alternating current.

The signs within the quotation marks are within the symbols shown with the first character above the second.

**Applies to:** S01038, S01039, S01040, S01041

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### Application note A00215

The symbols applying this application note are qualifying symbols specifically to be applied to the symbols applying the application note A00216.

**Applies to:** S01042, S01043, S01044, S01045, S01046, S01047, S01048, S01049, S01051, S01052

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### Application note A00216

The symbols applying this note may be qualified with the symbols applying the note A00215. The symbols applying the note A00215 are specifically constructed to be applicable for those symbols applying this note.

**Applies to:** S01053, S01054, S01055, S01056, S01057, S01058, S01059, S01060, S01061, S01062, S01063, S01064, S01065, S01066, S01067, S01068, S01069, S01070, S01071, S01072, S01073, S01074, S01075, S01076, S01077, S01078, S01079

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### **Application note A00217**

The arrow points in the direction of energy transfer.

**Applies to:** S01049

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### Application note A00218

n shall be replaced by the actual number of tracks but may be omitted if  $n = 1$ .

Applies to: S01065, S01066

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### Application note A00219

The qualifying symbol representing the transducer head may be omitted if qualifying symbols linked to application note A00215 is applied.

Applies to: S01075

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### Application note A00220

Symbol S00102 or S00103 is used to indicate a transmitting or receiving radio station. For examples of use, see symbols S01126 to S01130

Applies to: S01125

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### **Application note A00221**

The asterisk shall be replaced by the indication of the propagation mode suppression.

**Applies to:** S01149, S01174



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### **Application note A00222**

The line is not interrupted at the junction regardless of the type of connector.

**Applies to:** S01151

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### **Application note A00223**

Y may be replaced by the appropriate lumped circuit symbol.

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### Application note A00224

Z may be replaced by the appropriate lumped circuit symbol.

Applies to: S01162

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### **Application note A00225**

Appropriate indications may be added to specify the type of transition .

**Applies to:** S01169

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### **Application note A00227**

The letter PHI may be replaced by the letter B.

**Applies to:** S01176

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## Application note A00228

The symbols S00498 ... S00532 may be used to show installation details of:

- enclosures of trays used to house electrical conductors or
- prefabricated assemblies including electrical conductors or
- special communication transmission paths.

Typical applications are for:

a) power distribution systems with:

- site installed wiring or
- factory installed wiring and outlets or
- factory-built busbar trunking systems, according to IEC 60439-2;

b) installation channels, ducts or wireways for:

- telephone circuits,
- TV and radio broadcasting distribution systems
- data transmission circuits,
- signalling systems,
- flexible coaxial and fiber optic cables;

c) coaxial radio-frequency transmission lines;

d) waveguide runs.

**Applies to:** S00498, S00499, S00500, S00501, S00502, S00503, S00504, S00505, S00506, S00507, S00508, S00509, S00510, S00511, S00512, S00513, S00514, S00515, S00516, S00517, S00518, S00519, S00520, S00521, S00522, S00523, S00524, S00525, S00526, S00527, S00528, S00529, S00530, S00531, S00532

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### Application note A00230

The symbol is applied where deliberate use is made of the voltage dependent characteristic.

Applies to: S00582

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### Application note A00231

The symbol is applied where deliberate use is made of the temperature dependent characteristic.

Applies to: S00581



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### Application note A00232

Information on the direction of current, its relative amplitude and the logic conditions imposed by the state in the magnetic remanence may be added.

Applies to: S00596

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### Application note A00233

Symbol S000001 is used to represent a line or other telecommunication circuit. The usage of circuits may be indicated by letters, symbols S01080 to S01083.

**Applies to:** S01080, S01081, S01082, S01083

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### Application note A00234

A dashed line may be used to identify a radio link or any section of a radio circuit.  
The antenna symbol S01102 may be placed at the radio terminal points.

Applies to: S01084

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### Application note A00235

Horizontal (vertical) polarization shall be indicated by an arrow shown perpendicular (parallel) to the stem of the antenna symbol.

Applies to: S01094

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### Application note A00236

Symbol S01102 may be used to represent any type of antenna or aerial array. The stem of the symbol may represent any type of balanced or unbalanced feeder, including a single conductor. A drawing of the general shapes of the main lobes of the polar diagrams of the antenna may be given adjacent to the antenna symbol.

Supplementary references in figures or letter symbols may be taken from the current Radio Regulations published by the International Telecommunication Union (ITU), Geneva.

Alternatively a name or a reference may be written adjacent to the general antenna symbol.

**Applies to:** S01102

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### **Application note A00237**

If there is no risk of confusion, the general antenna symbol (S01102) may be omitted.

**Applies to:** S01114

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### Application note A00238

The triangle is pointed in the direction of transmission.

Applies to: S01239, S01240, S01457

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### Application note A00239

The quantity to be adjusted may be indicated beside the arrowhead.

Applies to: S01241



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### **Application note A00240**

The Greek letter "phi" may be replaced by B if no confusion arises.

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### Application note A00241

The Greek letter  $\varphi$  may be replaced by *B* if no confusion arises.

Applies to: S01256

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### **Application note A00242**

If it is desirable to indicate that the equalization refers to the time derivative of "phi", "phi" may be replaced by "phi dot".

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### **Application note A00243**

If it is desirable to indicate that the equalization refers to the time derivative of "phi", "phi" may be replaced by "phi dot".

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### Application note A00244

If it is desirable to indicate that the equalization refers to the time derivative of  $\varphi$ ,  $\varphi$  may be replaced by " $\varphi$  dot".

Applies to: S01259

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### Application note A00245

There are two ways of showing details of the operation carried out by a limiter.

The first is the use of the symbol S01267 supplemented by appropriate waveform symbols on the input and output lines.

The second is the use of a specific symbol consisting of a rectangle containing a figure derived from the input/output characteristic in the following manner:

a) The axes are deleted, but the origin is indicated by a short vertical stroke representing the y-axis.

b) The origin may be located in the rectangle in such a position that the characteristic makes the maximum use of the available space.

See symbols S01268 - S01271.

**Applies to:** S01267

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### Application note A00246

Symbol S01278 is used as follows:

The left hand side represents the modulating or modulated signal input.

The right hand side represents the modulated or demodulated signal output.

The bottom side represents the input of the carrier-wave if required.

Qualifying symbols may be placed inside or outside the symbol.

**Applies to:** S01278

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### Application note A00247

Dashed lines representing the various parts of the linkage system shall be located in the following way:

To the left: From the operating means for opening and closing.

To the right: To associated main and auxiliary contacts.

Top or below: From actuator having an overriding opening function.

Applies to: S00293



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### Application note A00248

The graphical representation of any one tube need show only those elements and details which are, for the purpose of the drawing or diagram, relevant to a correct interpretation and/or necessary for showing circuit connections.

**Applies to:** S00744, S00745, S00746, S00747, S00748, S00749, S00750, S00751, S00752, S00753, S00754, S00755, S00756, S00757, S00758, S00759, S00760, S00761, S00762, S00763, S00764, S00765, S00766, S00767, S00769, S00770, S00771, S00772, S00773, S00774

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### Application note A00250

For an example of application, see A00250Application.pdf below.

Applies to: S00212

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[A00250Application.pdf](#)

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### Application note A00251

It is sometimes convenient to indicate the purpose of each switch position by adding text to the position diagram. It is also possible to indicate limitations of movement of the operating device as shown in the drawing A00251Example.pdf below.

Applies to: S00272

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[A00251Example\\_rev.pdf](#)

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### Application note A00252

18-position rotary wafer switch with six terminals, here designated A to F, constructed as shown in the drawing A00252Example.pdf below, switch shown in position 1.

Applies to: S00281

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[A00252Example.pdf](#)

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### Application note A00253

Six-position rotary drum switch with 5 terminals, constructed as shown in drawing A00253Example.pdf below:

The symbols (+ - o) in the table indicate the terminals that are connected together at any position (restposition or intermediate position) of the switch, i.e. terminals having the same indicating symbols, for example +, are interconnected.

Where additional symbols are required, the characters available on a computer keyboard (english) should be used, for example x, =.

Applies to: S00282

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[A00253Example.pdf](#)

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### Application note A00254

For the equivalent circuit diagram, see A00254 Equivalentent.pdf below.

A component with presented function has two poles that can be interchanged. This component if applied in an installation circuit for e.g. lighting in stairs, is connected in one single electrical phase, but that is carried by two alternate wires that are interchanged by this polechanger. In other applications it might be used for different purposes.

**Applies to:** S00472, S01456, S01915

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[A00254Equivalentent.pdf](#)

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### Application note A00255

See A00255Explication.pdf for explanations.

Applies to: S00595

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[A00255Explication.pdf](#)

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### Application note A00256

See A00256Example.pdf for an example.

Applies to: S00909

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[A00256Example.pdf](#)



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### Application note **A00257**

Application example: Trunking diagram for a switching system. See A00257Ex.pdf.

Applies to: S00992, S00993

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[A00257Ex.pdf](#)

### Application note A00258

1. The numerical value of the frequency or the frequency range may be added at the right-hand side of the symbol.

Example "Alternating current, 50 Hz":

- Using symbol S01403: <Symbol S01403> 50 Hz
- Using symbol S01404: AC 50 Hz

Example "Alternating current, frequency range 100 kHz to 600 kHz":

- Using symbol S01403: <Symbol S01403> 100 kHz ... 600 kHz
- Using symbol S01404: AC 100 kHz ... 600 kHz

2. The voltage value may also be indicated to the right of the symbol. The number of phases and the presence of a neutral may be indicated at the left-hand side of the symbol.

Example "Alternating current: three-phase with neutral, 400 V (230 V between phase and neutral), 50 Hz". (See also IEC 61293):

- Using symbol S01403: 3/N <Symbol S01403> 400/230 V 50 Hz
- Using symbol S01404: 3/N AC 400/230 V 50 Hz

3. If it is necessary to indicate a system in accordance with the designations established in IEC 60364-1 the corresponding designation shall be added to the symbol.

Example "Alternating current, three-phase, 50 Hz; system having one point directly earth-connected and separate neutral and protective conductors throughout":

- Using symbol S01403: 3/N/PE <symbol S01403> 50 Hz / TN-S
- Using symbol S01404: 3/N/PE AC 50 Hz / TN-S

**Applies to:** S01403, S01404

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### Application note A00259

The voltage may be indicated at the right of the symbol and the type of system at the left.  
Example "Two conductors with mid-wire, 220/110 V":

- Using symbol S01401: 2/M <symbol S01401> 220/110 V
- Using symbol S01402: 2/M DC 220/110 V

**Applies to:** S01401, S01402

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### Application note A00260

For different unspecified frequency ranges see symbols S00073, S00074 and S00075.

Applies to: S01403

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### Application note A00261

"Variability" pertains to a quantity associated with a device represented by the symbol, the value of which is dependent on factors internal to the device.

"Adjustability" pertains to a quantity associated with a device represented by the symbol, the value of which may be set or controlled by external means.

**Applies to:** S00081, S00082, S00083, S00084, S00085, S00086, S00088, S00089, S00090, S00091, S00092

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## Application note A00262

Dotted lines are used to indicate the context of the actually described symbol in order to facilitate the understanding and application of it.

At the application of the symbol such lines are to be replaced by other types of lines in accordance with applicable rules for the preparation of diagrams.

**Applies to:** S00024, S00026, S01391, S01392, S01393, S01396, S01397, S01398, S01399, S01400, S01414, S01415, S01458, S01459, S01460, S01461

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### **Application note A00263**

The number of half-circles may be varied to suit the application.

**Applies to:** S00583

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### Application note A00264

Symbol S00019 is used if it is not necessary to specify in which end of the horizontal connecting line the physical connection is made to the line coming from below.

Symbol S01414 is used if it is required to explicitly specify in which end of the horizontal connecting line the physical connection is made to the line coming from below.

Applies to: S01414



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### Application note A00265

The asterisk shall be replaced by the relevant device symbol.

Applies to: S01440, S01441, S01442

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## Application note A00266

The mounting methods and/or directions of a device may be specified by the addition of letter codes adjacent to the symbol. IEC 61082-1 (clause 8.3) specifies the following letters:

- H = Horizontal (components mounted side by side)
- V = Vertical
- F = Flush (recessed)
- S = Surface
- B = Floor (bottom)
- T = Ceiling (top)

For the mounting in hidden locations, which may be of relevance for detectors, additional letters may be specified. Such letters shall be explained in the document or in supporting documentation.

**Applies to:** S00469, S00471, S00472, S00474, S01432, S01433, S01434, S01435, S01436, S01437, S01438, S01850, S01864, S01870, S01871, S01872, S01873, S01874, S01875, S01876, S01878, S01879, S01880, S01881, S01882, S01883, S01884, S01885, S01897, S01899, S01901, S01902, S01906, S01907, S01908, S01909, S01910, S01915

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### **Application note A00267**

An indication of any specific kind of substation may be added inside the symbol, for example: "AC/DC".

**Applies to:** S00389, S00390

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### Application note A00268

For more specific types of complex switches, replace the general switch symbol S00227, with more specific ones, for example: S00253 to get a manual complex switch.

Applies to: S01454

## Application note A00269

### 1 Graphical symbols for binary logic elements

IEC 60617 DB contains graphical symbols that have been developed to represent logic functions. They are intended also to represent physical devices or combinations of physical devices capable of carrying out these functions. The symbols have been prepared with a view to electrical applications, but many can also be applied to non-electrical devices, for example pneumatic, hydraulic or mechanical.

### 2 General notes

2.1 For explanation of "logic states", "logic levels", etc., see 7.4.1 of IEC 61082-1.

2.2 The symbols 0 and 1 are used to identify the two logic states of a binary variable. These states are referred to as 0-state and 1 -state.

2.3 A binary variable may be equated to any physical quantity for which two distinct ranges can be defined. These distinct ranges are referred to as logic levels and are denoted H and L. H is used to denote the logic level with the more positive algebraic value, and L is used to denote the logic level with the less positive algebraic value.

2.4 In the case of a system in which logic states are equated with other qualities of a physical quantity (for example positive or negative pulses, presence or absence of a pulse), H and L may be used to represent these qualities or may be replaced by more suitable designations.

### 3 Explanation of terms

To facilitate understanding of the descriptions for the binary logic elements, it is useful to define three terms.

3.1 "Internal logic state" describes a logic state assumed to exist inside a symbol outline at an input or an output.

3.2 "External logic state" describes a logic state assumed to exist outside a symbol outline:

- on an input line prior to any external qualifying symbol at that input, or
- on an output line beyond any external qualifying symbol at that output.

3.3 "Logic level" describes the physical quality assumed to represent a logic state of a binary variable (see clauses 2.2 and 2.3). For illustrations, see A00269\_Illustration\_a\_EN.pdf below.

### 4 Composition of the symbol - Symbol construction

4.1 A symbol comprises an outline or combination of outlines together with one or more qualifying symbols. Application of the symbols requires in addition the representation of input and output lines. For illustrations, see A00269\_Illustration\_b\_EN.pdf below. The single asterisks (\*) denote possible positions for qualifying symbols relating to inputs and outputs.

If and only if the function of an element is completely determined by the qualifying symbols associated with its inputs and/or outputs, no general qualifying symbol is needed.

4.2 General additional information may be included in a symbol outline as described in IEC 61082-1.

4.3 Information not standardized in this standard relating to a specific input [output] may be shown in square brackets inside the outline adjacent to the relevant input [output] and should follow [precede] any qualifying symbols applying to the input [output] as shown in symbol S01592 (12-28-14).

Additional information relating to the general logic function of the element may be shown in square brackets inside the outline.

4.4 All outputs of an element represented by a single un-subdivided symbol always have identical internal logic states determined by the function of the element except when indicated otherwise by an associated qualifying symbol or label inside the symbol outline. The subdivision of a symbol and the qualifying symbols referred to here include those explicitly shown and those only implied according to the simplification rules of A00271, clause 3.

4.5 In some figures, lowercase letters which are not part of the symbols have been shown outside the outline just to identify the inputs outputs] as referred to in the description.

4.6 The symbols and descriptions in this standard are intended for signal flow from left to right. If a symbol is instead intended for right-to-left flow, this is explicitly stated in the description of the symbol or indicated in the symbol itself.

When interpreting a symbol, one should assume, unless otherwise indicated, that a terminal shown on the left with respect to the normal reading orientation of the labels inside the symbol is an input, and that one shown on the right is an output. Inputs may also be shown on the right and outputs on the left if it aids the layout of the diagram or better conveys the structure of the device.

The direction of signal flow shall be clearly implied or indicated. Explicit indication may be done by using qualifying symbols that inherently indicate the direction of signal flow (such as qualifying symbols defined only for inputs or only for outputs, or general qualifying symbols that indicate flow direction) or by other symbols on the diagram that are connected into the terminal.

If the direction of signal flow on a terminal line is not otherwise obvious, that line shall be marked with an arrowhead (symbol S00099 (02-05-01)) pointing in the direction of signal flow or with the symbol for bidirectional signal flow (symbol S01547 (12-10-02)), whichever applies. No arrowhead shall touch the outline or any other qualifying symbol. See, for example, symbol S01599 (12-29-06).

**Applies to:** S01463, S01464, S01465, S01466, S01467, S01468, S01469, S01470, S01471, S01472, S01473, S01474, S01475, S01476, S01477, S01478, S01479, S01480, S01481, S01482, S01483, S01484, S01485, S01486, S01487, S01488, S01489, S01490, S01491, S01492, S01493, S01494, S01495, S01496, S01497, S01498, S01499, S01500, S01501, S01502, S01503, S01504, S01505, S01506, S01507, S01508, S01509, S01510, S01511, S01512, S01513, S01514, S01515, S01516, S01517, S01518, S01519, S01520, S01521, S01522, S01523, S01524, S01525, S01526, S01527, S01528, S01529, S01530, S01531, S01532, S01533, S01534, S01535, S01536, S01537, S01538, S01539, S01540, S01541, S01542, S01543, S01544, S01545, S01546, S01547, S01548, S01549, S01550, S01551, S01552, S01553, S01554, S01555, S01556, S01557, S01558, S01559, S01560, S01561, S01562, S01563, S01564, S01565, S01566, S01567, S01568, S01569, S01570, S01571, S01572, S01573, S01574, S01575, S01576, S01577, S01578, S01579, S01580, S01581, S01582, S01583, S01584, S01585, S01586, S01587, S01588, S01589, S01590, S01591, S01592, S01593, S01594, S01595, S01596, S01597, S01598, S01599, S01600, S01601, S01602, S01603, S01604, S01605, S01606, S01607, S01608, S01609, S01610, S01611, S01612, S01613, S01614, S01615, S01616, S01617, S01618, S01619, S01620, S01621, S01622, S01623, S01624, S01625, S01626, S01627, S01628, S01629, S01630, S01631, S01632, S01633, S01634, S01635, S01636, S01637, S01638, S01639, S01640, S01641, S01642, S01643, S01644, S01645, S01646, S01647, S01648, S01649, S01650, S01651, S01652, S01653, S01654, S01655, S01656, S01657, S01658, S01659, S01660, S01661, S01662, S01663, S01664, S01665, S01666, S01667, S01668, S01669, S01670, S01671, S01672, S01673, S01674, S01675, S01676, S01677, S01678, S01679, S01680, S01681, S01682, S01683, S01684, S01685, S01686, S01687, S01688, S01689, S01690, S01691, S01692, S01693, S01694, S01695, S01696, S01697, S01698, S01699, S01700, S01701, S01702, S01703, S01704, S01705, S01706, S01707, S01708, S01709, S01710, S01711, S01712, S01713, S01714, S01715, S01716, S01717, S01718, S01719, S01720, S01721, S01722, S01723, S01724, S01725, S01726, S01727, S01728, S01729, S01730, S01731, S01732, S01733, S01734, S01735, S01736, S01737, S01738, S01739, S01740, S01741, S01742, S01743, S01744, S01745, S01746, S01747, S01809, S01810, S01811





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### Application note A00270

The length-width ratio of outlines is arbitrary.  
For combinations of outlines, see A00271.

**Applies to:** S01463, S01464, S01465



### Application note A00271

Use and combination of outlines

1 To reduce the space required for the representation of a group of associated elements, the outlines of the elements may be joined or embedded provided the following rules are observed.

1.1 There is no logic connection between elements when the line common to their outlines is in the direction of signal flow.

For illustrations, see A00271\_illustration\_a.pdf below.

NOTE - This rule does not necessarily apply in those arrays in which there exist two or more directions of signal flow, for example indicated by a common control block, a common output element, or by dependency notation.

1.2 There is at least one logic connection between elements if the line common to the two outlines is perpendicular to the direction of signal flow.

Because common control blocks are not elements, no logic connections to or from a common control block exist except those to the attached array and connections that are explicitly shown.

Each connection can be shown by the presence of qualifying symbols at one or both sides of the common line. If confusion is likely about number of logic connections, use should be made of the internal connection symbol (symbol S01475 (12-08-01)).

If no indications are shown on either side of the common line, it is assumed that there exists only one logic connection.

For illustrations, see A00271\_illustration\_b\_EN.pdf below.

2 The common control block may be used in conjunction with an array of related elements as a point of placement for inputs or outputs associated with more than one element of the array, or with no element of the array. Such inputs and outputs shall be labelled if appropriate.

2.1 If an input shown at a common control block is an affecting input in the sense of dependency notation (see A00276), it is connected as an input only to those elements of the array in which its identifying number appears. If an input shown at a common control is not an affecting input in the sense of dependency notation, it is an input common to, or affecting, all elements of the array.

The common control block is placed on one end of an array of related elements.

Unless indicated otherwise, the element next to the common control block is assumed to be the lowest order element.

For illustrations, see A00271\_Illustration\_c.pdf below.

2.2 A common output, depending on all elements of the array, can be shown as the output of a common output element. In the case where any array element has more than one output, the common output element may be used only if those outputs always have identical internal logic states. There is one internal connection from each of the elements to the common output element and these shall not be shown. In addition, the common output element may have other inputs and they must be explicitly shown. The function of the common output element shall be indicated.

Each input of a common output element corresponding with an output of the array has the same internal logic state as that output.

A common output element is shown

- inside the common control block, or
- at the end of the array, opposite the common control block if there is one.

Where it is appropriate to show an array of common output elements, the double line needs to be shown only once.

For illustrations, see A00271\_Illustration\_d\_EN.pdf below.

3 To represent an array of elements having the same qualifying symbols, it may be sufficient to show the symbols that are inside the outline in only the first of the outlines, provided no confusion is likely. Similarly, in the case of an array of elements each consisting of several identical subarrays, it is sufficient to show the first one in full and to represent each of the others by a simple outline. It is assumed that the identifying numbers of affecting inputs [outputs] in the sense of dependency notation and of inputs [outputs] affected thereby differ in each element of the array (for illustration of the concept see A00277). See also the simplifications resulting from the use of dependency notation.

For illustrations, see A00271\_Illustration\_e\_EN.pdf below.

4 If in a simplified array of identical elements the representation of the functions of a terminal requires two or more lines connected together outside the outline, it is sufficient to show these lines only with the first element and represent them with each simplified element by a single line. Symbols outside the outline common to all lines connected together shall be shown with this single line. Symbols outside the outline not common to all lines connected together may be omitted, or the most suitable set may be shown.

For illustrations, see A00271\_Illustration\_f\_EN.pdf below.

**Applies to:** S01463, S01464, S01465, S01476, S01587, S01596





[A00271\\_Illustration\\_e\\_EN.pdf](#) [A00271\\_Illustration\\_e\\_FR.pdf](#) [A00271\\_Illustration\\_f\\_EN.pdf](#) [A00271\\_Illustration\\_f\\_FR.pdf](#)

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## Application note A00272

The symbol defines the relationship between the internal logic state and the external logic state or level.

If a symbol is not shown at an input or output, it is assumed that the internal logic 1-state corresponds to

- the external logic 1-state in a diagram using the symbol for logic negation, or
- the logic H-level in a diagram using the the symbol for logic polarity.

In the latter kind of diagram, external logic states do not exist.

The symbols for logic negation and logic polarity shall not be used together on the same diagram, except when internal connections with logic negation are to be shown on diagrams using the symbol for logic polarity. See symbols S01809 and S01478.

See also IEC 61082-1.

**Applies to:** S01466, S01467, S01468, S01469, S01470, S01471, S01472, S01473, S01474, S01618

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### Application note A00273

An internal connection is a connection within a logic element. It is useful to be able to symbolize such a connection in order to show the logic relationships between elements whose outlines are combined. In many applications, it is also convenient to use the symbols to show the function of complex elements. In such cases, dependency notation (see A00276 and A00277) should be used to define effects of any internal inputs and outputs.

**Applies to:** S01475, S01476, S01477, S01478, S01479, S01480, S01481, S01482, S01483, S01484, S01485, S01486, S01487, S01488, S01489, S01490, S01809

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[A00273\\_Illustration.pdf](#)

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### Application note A00274

If identical symbols are shown at two or more inputs to indicate functions of those inputs, the inputs are assumed to stand in an OR relationship. For example, see symbol S01664.

**Applies to:** S01503, S01504, S01505, S01506, S01507, S01508, S01509, S01510, S01511, S01512, S01513, S01514, S01519, S01520, S01521, S01522, S01526, S01527, S01530, S01532, S01533, S01536, S01543, S01544, S01545

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### Application note A00275

Non-logic connections and signal-flow indicators, internal pull-down and internal pull-up

1 Symbols S01748 (13-04-01) through S01751 (13-04-04) may be used to denote an input or an output carrying analogue or digital signals respectively.

2 For supply voltage inputs, use symbol S01753 (13-05-01).

3 In principle, the direction of signal flow within a symbol is from left to right and from top to bottom. If this rule cannot be maintained and the direction of signal flow is not obvious, then the signal lines should be marked with arrowheads pointing in the direction of signal flow. These arrowheads shall not touch the outline or any qualifying symbol. See, for example, symbol S01599 (12-29-06).

**Applies to:** S01546, S01547, S01548, S01549

## Application note A00276

### Dependency notation

#### 1 General explanation

Dependency notation is a means of denoting the relationships between inputs, between outputs, or between inputs and outputs, without actually showing all the elements and interconnections involved.

NOTE - Apart from its use in complex elements, dependency notation should not be used to replace the symbols for combinative elements.

The information provided by dependency notation supplements that provided by the qualifying symbols for an element's function.

In the convention for dependency notation, use will be made of the terms "affecting" and "affected". In the case where it is not evident which inputs must be considered as being the affecting or the affected ones (for example, if they stand in an AND relationship), the choice may be made in any convenient way.

In some complex elements, outputs may have an effect on inputs and other outputs. For the sake of simplicity, the text of sections 2 and 3 refers to "affecting inputs" only, but it should be understood that the recommended notation applies to affecting outputs also.

#### 2 Convention

Dependency notation usually defines relationships between internal logic states. However, in the case of 3-state outputs, passive-pull-down outputs, passive-pull-up outputs and open-circuit outputs (symbols S01493 (12-09-03) through S01498 (12-09-08)), ENABLE dependency (A00284) defines relationships between the internal logic states of affecting inputs and the external states of affected outputs.

Application of dependency notation is accomplished by

- labelling the input affecting other inputs or outputs with a particular letter symbol denoting the relationship involved followed by an identifying number, and
- labelling each input or output affected by that affecting input with that same number.

If it is the complement of the internal logic state of the affecting input [output] that does the affecting, a bar shall be placed over the identifying number at the affected input [output].

NOTE - For an example of use, see symbol S01669 (12-42-11). For a technique avoiding the use of a bar, see the note with symbol S01691 (12-49-04).

If the affected input or output requires a label to denote an effect it has on the element, this label shall be prefixed by the identifying number of the affecting input.



If an input or output is affected by more than one affecting input, the identifying numbers of each of the affecting inputs shall appear in the label of the affected one, separated by commas.

The left-to-right order of these identifying numbers is the same as the sequence of the affecting relationships (see also A00289).

Two affecting inputs labelled with different letters shall not have the same identifying number unless one of the letters is A (see A00287).

If two affecting inputs have the same letter and the same identifying number, they stand in an OR relationship to each other.

If the labels denoting the functions of affected inputs or outputs must be numbers (for example, outputs of a coder), the identifying numbers to be associated with both affecting inputs and affected inputs or outputs shall be replaced by another character selected to avoid ambiguity, for example Greek letters.

An affecting input affects only the corresponding affected inputs and outputs of the symbol.

### 3 Types of dependency

The following types of dependency are defined.

AND, OR, and NEGATE dependencies are used to denote Boolean relationships between inputs and/or outputs.

INTERCONNECTION dependency is used to indicate that an input or output imposes its logic state on one or more other inputs and/or outputs.

TRANSMISSION dependency is used to indicate controlled transmission paths between affected ports.

CONTROL dependency is used to identify a timing input or a clock input of a sequential element and to indicate which inputs are controlled by it.

SET and RESET dependencies are used to specify the internal logic states of an RS-bistable element when the R- and S-inputs both stand at their internal 1-States.

ENABLE dependency is used to identify an Enable input and to indicate which inputs and/or outputs are controlled by it (for example which outputs take on their high-impedance condition).

MODE dependency is used to identify an input that selects the mode of operation of an element and to indicate the inputs and/or outputs that depend on that mode.

ADDRESS dependency is used to identify the Address inputs of a memory.

Table I (see A00276\_Table\_EN.pdf below) lists the various dependencies and summarizes their effects. More detailed definitions appear in A00277 through A00289, together with illustrations of the concepts.

In these illustrations, following general symbols are used.

S01566 (12-27-01) through S01578 (12-27-13)

S01607 (12-30-01)

S01610 (12-32-01)

S01623 (12-34-01)  
S01626 (12-36-01) through S01629 (12-36-04)  
S01636 (12-38-01) through S01643 (12-38-08)  
S01655 (12-40-01)  
S01674 (12-44-01) and S01675 (12-44-02)  
S01678 (12-46-01) through S01682 (12-46-05)  
S01685 (12-48-01) through S01687 (12-48-03)  
S01706 (12-50-01) through S01710 (12-50-05)  
S01723 (12-52-01)

In Table I, the word "action" implies

- that affecting inputs will have their normally defined effect on the function of the element;
- that affected outputs will take on the internal logic States determined by the function of the element.

**Applies to:** S01550, S01551, S01552, S01553, S01554, S01555, S01556, S01557, S01558, S01559, S01560, S01561, S01562, S01563, S01564, S01565, S01766, S01767, S01773, S01774, S01775, S01777, S01810, S01811



[A00276\\_Table\\_EN.pdf](#) [A00276\\_Table\\_FR.pdf](#)

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### Application note A00277

AND dependency (G-dependency)

Each input [output] affected by a Gm-input [Gm-output] stands in an AND relationship with this Gm-input [Gm-output].

See A00277\_Illustration.pdf

Applies to: S01810, S01811

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[A00277\\_Illustration.pdf](#)

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### Application note A00278

OR dependency (V-dependency)

Each input [output] affected by a Vm-input [Vm-output] stands in an OR relationship with this Vm-input [Vm-output].

See A00278\_Illustration.pdf below.

Applies to: S01550, S01551

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[A00278\\_Illustration.pdf](#)

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### Application note A00279

NEGATE dependency (N-dependency)

Each input [output] affected by an Nm-input [Nm-output] stands in an EXCLUSIVE-OR relationship with this Nm-input [Nm-output].

See A00279\_Illustration.pdf below.

Applies to: S01552, S01553

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[A00279\\_Illustration\\_EN.pdf](#)



[A00279\\_Illustration\\_FR.pdf](#)

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### Application note A00280

INTERCONNECTION dependency (Z-dependency)

INTERCONNECTICIN dependency is used to indicate that an input [output] imposes its internal logic state on one or more other inputs. For an example of use, see symbol S01591 (12-28-13).

The internal logic state of an input [output] affected by a Zm-input [Zm-output] is identical to the internal logic state of its affecting Zm-input [Zm-output] unless modified by additional dependency notation.

See A00280\_Illustration.pdf below.

Applies to: S01554, S01555

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### Application note A00281

TRANSMISSION dependency (X-dependency)

TRANSMISSION dependency is used to indicate controlled transmission paths between affected ports (inputs, outputs and/or input-outputs). Unless otherwise indicated, the transmission paths are bidirectional. The TRANSMISSION dependency provides a way of symbolizing simple analogue switches and it enables more complicated devices to be depicted in a concise manner.

See A00281\_Illustration\_EN.pdf

**Applies to:** S01556, S01557, S01777, S01804, S01805

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[A00281\\_Illustration\\_EN.pdf](#)



[A00281\\_Illustration\\_FR.pdf](#)

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## Application note A00282

CONTROL dependency (C-dependency)

CONTROL dependency shall be used only for sequential elements and may imply more than a simple AND relationship. It identifies an input that produces action, for example the dock of an edge-triggered bistable circuit or the data enable of a level-operated transparent latch.

See A00282\_Illustration\_EN.pdf below.

For comparison of C-, EN-, and M-effects on inputs, See A00286.

Applies to: S01558, S01559

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[A00282\\_Illustration\\_EN.pdf](#)



[A00282\\_Illustration\\_FR.pdf](#)



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### Application note A00283

SET and RESET dependency (S- and R-dependency)

SET and RESET dependencies are used if it is necessary to specify the effect of the combination  $R = S = 1$  on a bistable element. These dependencies should not be used if such specification is not necessary. For an example of application, see the remark with symbol S01665 (12-42-07).

Affecting S- and R-inputs can affect only outputs.

See A00283\_Illustration\_EN.pdf

Applies to: S01560, S01561, S01665

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[A00283\\_Illustration\\_EN.pdf](#)



[A00283\\_Illustration\\_FR.pdf](#)

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### Application note A00284

ENABLE dependency (EN-dependency)

ENABLE dependency is used to indicate an ENABLE input that does not necessarily affect all outputs of an element. It can also be used if one or more inputs of an element are affected.

See A00284\_Illustration\_EN.pdf

For comparison of C-, EN-, and M-effects on inputs, see A00286.

Applies to: S01562

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[A00284\\_Illustration\\_EN.pdf](#)



[A00284\\_Illustration\\_FR.pdf](#)

## Application note A00285

### MODE dependency (M-dependency)

1 MODE dependency is used to indicate that the effects of particular inputs and outputs of an element depend on the mode in which the element is operating.

For comparison of C-, EN-, and M-effects on inputs, see A00286.

The use of the bit-grouping symbol and the solidus is explained in A00288 and A00289, respectively.

- M-dependency affecting inputs:

For illustrations, see A00285\_Illustration\_a.pdf below.

Mode 0 ( $b = 0, c = 0$ ): the outputs remain at their existing states as none of the inputs has an effect.

Mode 1 ( $b = 1, c = 0$ ): parallel loading takes place through inputs e and f.

Mode 2 ( $b = 0, c = 1$ ): shifting down and serial loading through input d take place.

Mode 3 ( $b = 1, c = 1$ ): counting up by increment of 1 per clock pulse takes place (input a).

- Determining the function of an output:

For illustrations, see A00285\_Illustration\_b.pdf below.

If input a stands at its internal 1-state establishing mode 1 output b will stand at its internal 1-state if the content of the register equals 15. If input a stands at its internal 0-state, output b will stand at its internal 1-state if the content of the register equals 0.

For explanation, see also A00289.

- Modifying dependent relationships of outputs:

For illustrations, see A00285\_Illustration\_c.pdf below.

At output e the label set causing negation (if  $c = 1$ ) is effective in modes 2 and 3 only. In modes 0 and 1, this output stands at its normally defined state as if it had no labels.

At output f the label set has effect if the mode is not 0, so output f is negated (if  $c = 1$ ) in modes 1, 2 and 3. In mode 0 the label set has no effect so the output stands at its normally defined state. In this example  $\bar{0}$  (with macron),4 is equivalent to  $(1/2/3) 4$ .

At output g there are two label sets. The first set, causing negation (if  $c = 1$ ), is effective only in mode 2. The second set, subjecting g to AND dependency on d, has effect only in mode 3.

Note that in mode 0 none of the dependency relationships has any effect on the outputs, so e, f and g will all stand at the same state.

2 In complex elements with a large number of different modes, application of the convention for MODE dependency may lead to a very extended labelling.

In such cases, the inputs and outputs affected by any affecting Mm-input are simply labelled with the letter M, but then the diagram containing the symbol must also contain either a table in which the effects of these inputs in the different modes are clearly explained or a statement as to where such a table is to be found. If no confusion is likely, these letters M may be omitted.

Applies to: S01563, S01564, S01653, S01654



[A00285\\_Illustration\\_a.pdf](#) [A00285\\_Illustration\\_b.pdf](#) [A00285\\_Illustration\\_c.pdf](#)

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### Application note A00286

#### Comparison of C-, EN-, and M-effects on Inputs

With regard to affected inputs, Cm-, ENm,- and Mm-inputs all have the same effect. However, their intended applications are different:

- Cm should be used to identify an input that produces action;
- ENm should be used to identify an input that produces a single preparatory effect;
- Mm should be used to identify one or more inputs that singly or together produce alternative preparatory effects.

**Applies to:** S01558, S01559, S01562, S01563, S01564

## Application note A00287

### ADDRESS dependency (A-dependency)

1 ADDRESS dependency provides a clear representation of those elements, particularly memories, which use address control inputs to select specified sections of a multidimensional array. ADDRESS dependency allows a symbolic representation of only a single general case of the sections of the array, rather than requiring a symbolic presentation of the entire array. An input of the array shown at a particular element of this general section is common to the corresponding elements of all sections of the array. An output of the array shown at a particular element of this general section is the result of the OR function of the outputs of the corresponding elements of the selected sections. If any function other than OR is performed, this should be indicated by adding the appropriate qualifying symbol below the general qualifying symbol, for an example, see [A00287\\_example.pdf](#) below.

If the label of an output of the array shown at a particular element of this general section indicates that this output is an open-circuit output or a 3-state output, then this indication refers to the output of the array and not to those of the sections of the array.

Inputs which are not affected by any affecting ADDRESS input have their normally defined effect on all sections of the array, whereas inputs affected by an ADDRESS input have their normally defined effect only on the section selected by that ADDRESS input.

An affecting ADDRESS input is labelled with the letter A followed by an identifying number which corresponds to the address of the particular section of the array selected by this input.

Within the general section presented by the symbol, inputs and outputs affected by an Am-input are labelled with the letter A, which stands for the identifying numbers, i.e. the addresses, of the particular sections. This letter A is subject to the rules of dependency notation concerning identifying numbers associated with affected inputs and outputs.

If an output affected by an Am-input also has other labels, then the labels preceding the letter A affect the output of the section selected by this Am-input and the labels placed behind the letter A affect the output of the array, that is, after the application of the OR function (or the indicated function) to the corresponding outputs of the selected sections of the array.

For an illustration, see [A00287\\_Illustration\\_a.pdf](#) below.

2 The identifying numbers of affecting ADDRESS inputs correspond to the addresses of the sections selected by these inputs. They need not necessarily differ from those of other affecting dependency-inputs (for example, G, V, N, ...), because in the general section presented by the symbol they are replaced by the letter A.

If there are several sets of affecting Am-inputs for the purpose of independent and possibly simultaneous access to sections of the array, then the letter A is modified to 1A, 2A, ... Because they have access to the same sections of the array, these sets of Am-inputs may have the same identifying numbers.

Two affecting ADDRESS inputs having the same identifying number stand in no relation to each other nor to any affecting dependency-input (for example, Gm, Vm, Nm, ...) having the same

identifying number.

For illustrations, see A00287\_Illustration\_b\_EN.pdf below.

The use of the bit-grouping symbol is explained in A00288.

Applies to: S01565



[A00287\\_Illustration\\_a.pdf](#) [A00287\\_Illustration\\_b\\_EN.pdf](#) [A00287\\_Illustration\\_b\\_FR.pdf](#) [A00287\\_example.pdf](#)

## Application note A00288

### Special techniques used in dependency notation

#### 1 Use of a coder to produce affecting Inputs

1.1 If the effect of a set of affecting inputs is produced by decoding the signals on these inputs, the symbol for a coder (S01610 (12-32-01)) may be used as an embedded symbol.

For an illustration, see A00288\_Illustration\_a.pdf below.

1.2 If all affecting inputs produced by a coder are of the same type and if their identifying numbers correspond with the numbers shown at the outputs of the coder, the Y in the qualifying symbol X/Y may be replaced by the letter denoting the type of dependency and the indications of the affecting inputs should then be omitted.

For an illustration, see A00288\_Illustration\_b.pdf below.

#### 2 Use of bit grouping to produce affecting Inputs

If all affecting inputs produced by a coder are of the same type and have consecutive identifying numbers (not necessarily corresponding with the numbers that would have been shown at the outputs of the coder), the bit grouping symbol (symbol S01516 (12-09-24)) can be used. In this case, the asterisk shall be replaced by the letter denoting the type of dependency followed by m1/m2. The m1 shall be replaced by the smallest identifying number and the m2 shall be replaced by the largest. The range of the identifying numbers ( $m2 - m1 + 1$ ) must equal the number of outputs of the coder.

To reduce the space required for showing numbers that are powers of 2 and have more than 3 digits, m1 and m2 may be replaced by a 1-to-3-digit number that is a power of 2 followed by k indicating multiplication factor of 1024 or by M indicating a multiplication factor of 1 048 576, whichever applies.

For example, 1 024 may be replaced by 1k, 65 536 by 64k, and 1 048 576 by 1 M.

For illustrations, see A00288\_Illustration\_c.pdf below.

#### 3 Designation of labelled inputs having inherent storage

It often occurs that a labelled input other than a D-input has inherent storage. Such an input may be labelled mD,\* , in which:

- m shall be replaced by the identifying numbers of the inputs that affect the storage operation;
- the asterisk shall be replaced by the symbol denoting the function of the stored input. If that symbol is a number, the comma following the D may be omitted.

For illustrations, see A00288\_Illustration\_d.pdf below.

See also A00289.



**Applies to:** S01550, S01551, S01552, S01553, S01554, S01555, S01556, S01557, S01559, S01560, S01561, S01562, S01563, S01564, S01565, S01810, S01811



[A00288\\_Illustration\\_a.pdf](#) [A00288\\_Illustration\\_b.pdf](#) [A00288\\_Illustration\\_c.pdf](#) [A00288\\_Illustration\\_d.pdf](#)

### Application note A00289

The ordering of labels associated with inputs and with outputs

#### 1 Order of input labels

1.1 If one or more of the symbols S01540 (12-09-47), S01498 (12-09-08B) and S01492 (12-09-02) are required at an input, they shall be shown, as needed, in that order (S01540 (12-09-47), S01498 (12-09-08B), S01492 (12-09-02)) reading from the input towards the interior of the element. These symbols shall be drawn between the input line(s) and any input-qualifying symbol, for example, dependency notation.

For an illustration, see A00289\_Illustration\_a\_EN.pdf below.

1.2 If an input exerting a single function is affected by other inputs, the qualifying symbol for that function shall be preceded by the identifying numbers of the affecting inputs. The left-to-right order of these identifying numbers shall be the order in which the effects or modifications must be applied. The affected input exerts no function if the logic state of any one of the affecting inputs or outputs, considered separately, would cause the affected input to have no effect, regardless of the logic states of other affecting inputs.

For an illustration, see A00289\_Illustration\_b\_EN.pdf below.

1.3 If an input exerts more than one function or has more than one set of labels of affecting inputs, the indications of these functions or these sets may be shown on different input lines, which must be connected together outside the outline (see examples S01619 (12-33-07), S01698 (12-49-11), S01702 (12-49-15)). However, there are cases in which this method of presentation is not advantageous. In those cases, the input may be shown once with the different sets of labels separated by solidi. No meaning is attached to the order of these sets of labels. If one of the functional effects of an input is that of an unlabelled input of the element, a solidus shall precede the first set of labels shown (see, for example, symbol S01700 (12-49-13)).

For illustrations, see A00289\_Illustration\_c.pdf below.

1.4 If all inputs of a combinative element are disabled (caused to have no effect on the function of the element), the internal logic states of the outputs of the element are not specified by the symbol. If all inputs of a sequential element are disabled (caused to have no effect on the function of the element), the content of this element is not changed and the outputs remain at their existing internal logic states.

1.5 Labels may be factored using algebraic techniques.

For illustrations, see A00289\_Illustration\_d.pdf below.

1.6 In general, dependency notation shown at the inputs to the left of the bit-grouping symbol applies to the inputs of the coder, and dependency notation shown after the bit-grouping symbol applies to the inputs fed by the outputs of the coder. However, for inputs with inherent storage, see 1.7.

For illustrations, see [A00289\\_Illustration\\_e.pdf](#) below.

1.7 Any combinatorial logic element together with a storage register on all its inputs is functionally equivalent to that same element together with a storage register on its outputs.

For an illustration, see [A00289\\_Illustration\\_f.pdf](#) below.

Thus element A of the illustration is functionally equivalent to element B.

Because of this, inherent storage at an input may be indicated by placing the "mD", as defined in clause 3 of A00288, either between the bit-grouping symbol and the symbol denoting the function of the stored input, or directly at the inputs.

For an illustration, see [A00289\\_Illustration\\_g.pdf](#) below.

## 2 Order of output labels

2.1 If an output has a number of different labels, regardless of whether they are identifying numbers of affecting inputs or outputs or not, these labels shall be shown in the following order:

- if the postponed output symbol (S01491 (12-09-01)) has to be shown, this comes first, if necessary preceded by the indications of the inputs to which it must be applied;
- followed by the qualifying symbols determining or modifying the internal logic state of the output, such that the left-to-right order of these labels correspond to the order in which their effects must be applied. For application, see symbol S01702 (12-49-15);
- followed by the label indicating the effect of the output on inputs and other outputs of the element.

Symbols for open-circuit, passive-pull-down, passive-pull-up and 3-state outputs, and outputs with special amplification (drive capability) shall each be drawn adjacent to their output lines as described with these symbols (S01493 (12-09-03) ... S01499 (12-09-08A)).

If an output needs several different sets of labels which can be considered to stand in an internal OR relationship (for example, depending on the mode of action), these sets may be shown on different output lines which must be connected together outside the outline. However, there are cases in which this method of presentation is not advantageous. In those cases the output may be shown once with the different sets of labels separated by solidi.

Two adjacent identifying numbers of affecting inputs in a set of labels not already separated by a non-numeric character shall be separated by a comma (see A00276).

For illustrations, see [A00289\\_Illustration\\_h.pdf](#) below.

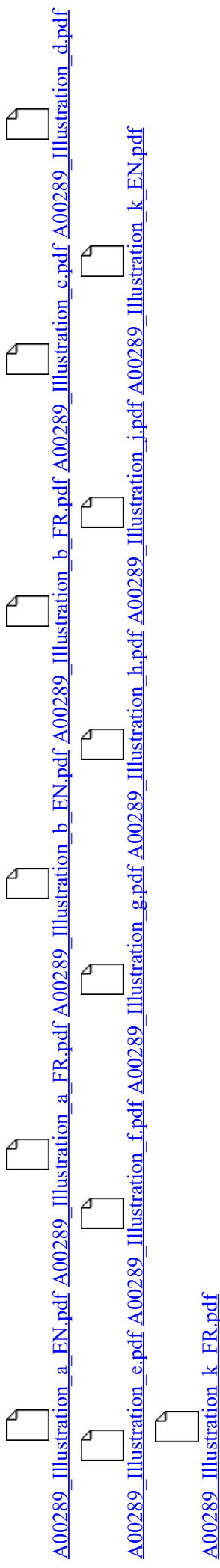
2.2 Labels may also be factored using algebraic techniques.

For illustrations, see [A00289\\_Illustration\\_j.pdf](#) below.

2.3 If the bit grouping symbol for outputs (symbol S01517 (12-09-25)) is used and the sets of labels of all outputs grouped together differ only in the indications of the weights, the sets of labels, including the symbols for open-circuit, passive-pull-down, passive-pull-up and 3-state outputs, and outputs with special amplification (drive capability) (symbols S01493 (12-09-03) ... S01499 (12-09-08A)) but excluding the indications of the weights, may be shown only once between the symbol replacing the asterisk and the grouping symbol, provided that, except for the grouping symbol and the weights, the proper order of the labels is maintained.

For an illustration, see A00289\_Illustration\_k\_EN.pdf below.

**Applies to:** S01493, S01550, S01551, S01552, S01553, S01554, S01555, S01556, S01557, S01559, S01560, S01561, S01562, S01563, S01564, S01565, S01766, S01767, S01773, S01774, S01775, S01777, S01810, S01811



## Application note A00290

### Combinative and sequential elements

#### General notes

1 All qualifying symbols inside the outline are defined in terms of the internal logic states of the relevant inputs and outputs (see sections 1, 2, and 3 of A00269).

2 In many cases, examples are based on commercial devices, and terminal numbers (for one unspecified package type) have been shown for the assistance of the reader. Where the type number implies the product of a specific manufacturer, this is done to avoid uncertainties caused by functional variations that sometimes occur between devices that have the same generic portion of the type number and are made by different manufacturers.

3 Where the logic polarity indicator has not been used, positive logic convention is assumed.

4 A given element may be symbolized in more than one way depending on the purpose it serves in the system (for example, symbols S01588 (12-28-10) and S01589 (12-28-11)). Also, use is often made of the complementary representation especially of combinative elements to enhance the understanding of the diagram. For example, an OR element is shown by the symbol for an AND but with negated inputs and outputs. In any case, the choice of the symbol should be governed by the relevant application of the element being shown on the diagram (see IEC 61082-1 for detailed information).

**Applies to:** S01566, S01567, S01568, S01569, S01570, S01571, S01572, S01573, S01574, S01575, S01576, S01577, S01578

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### Application note A00291

The qualifying symbol for the function of the element indicates the number of inputs which must take on the internal 1-state to cause the outputs to take on their internal 1-states.  
Subject to this rule other qualifying symbols may be developed.

**Applies to:** S01566, S01567, S01569, S01570, S01571, S01572, S01573, S01574, S01575, S01576, S01577, S01578

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### Application note A00293

The symbol for amplification (S01457) may be combined with other symbols for functions. The absence of this symbol does not necessarily indicate the absence of special amplification.

**Applies to:** S01594, S01595, S01596, S01597

**Application note A00296**

## Coders, code converters

## 1 Relationships between inputs and outputs of coders

## 1.1 Indication of input and output codes in the general qualifying symbol

This method of indicating code conversion is based on the following rule:

Depending on the input code, the internal logic states of the inputs determine an internal value (or its equivalent). This internal value is reproduced by the internal logic states of the outputs, depending on the output code.

The relationships between the internal logic states of the inputs and the internal value shall be indicated in one of the following ways:

- label the inputs with numbers, in which case the internal value equals the sum of the numbers associated with those inputs that stand at their internal 1-states; or
- replace X by an appropriate designation of the input code and label the inputs with characters that refer to this code.

The relationships between the internal value and the internal logic states of the outputs shall be indicated in one of the following ways:

- label each output with a list of numbers representing the internal values that lead to the internal 1-state of that output. These numbers shall be separated by solidi. This method may also be applied when Y is replaced by a letter denoting a type of dependency (see also A00288). If a continuous range of internal values produces the internal 1-state of an output, this can be indicated by two numbers that are inclusively the beginning and the end of the range, with these two numbers separated by three dots, for example, 4 ... 9 = 4/5/6/7/8/9; or
- replace Y by an appropriate indication of the output code and label the outputs with characters that refer to this code.

For illustrations, see A00296\_illustration\_a\_EN.pdf below.

NOTE - Alternatively, the general qualifying symbol BIN/6 may be used instead of X/Y. See 1.1.1 and 1.1.2.

If X or Y is replaced by an indication of a specific code, further rules apply. In the following text, the codes are subdivided into three categories:

- summing codes,
- direct-indication codes, and



- identification codes.

### 1.1.1 Summing Codes

With these codes, like "X", there is an internal numeric value that corresponds to the sum of the weights of the inputs [outputs] that stand at their internal 1-states.

The indication of the relationships between the internal logic states of the inputs [outputs] and the internal value shall be accomplished by replacing X [Y] of the qualifying symbol with an appropriate indication of the input [output] code and by labelling the inputs [outputs] with numbers indicating their individual weights.

The following summing codes are defined:

- BIN Binary code

The number code in which the individual weights are all powers of 2. Inputs [outputs] shall be labelled either with decimal weights or with decimal exponents of the powers of 2.

- BCD 8-4-2-1 Binary-coded decimal

The number code in which each digit in the decimal representation of a number is encoded as a binary number in 4 bits with the relative weights of 8, 4, 2, and 1.

For an example, see A00296\_Example\_a\_EN.pdf below.

Inputs [outputs] shall be labelled with decimal weights, for example 1, 2, 4, 8, 10, 20, etc.

NOTE - For inputs, the behaviour of the element is unspecified by the symbol if the internal value produced by any set of four inputs exceeds 9 ( $\times 10^n$ ). For outputs, the behaviour of the element is unspecified by the symbol if the internal value requires more digits than are provided at the outputs.

- X-3 Excess-three code

The BCD code in which the internal value of each 4 inputs [outputs] is 3 ( $\times 10^n$ ) less than the sum of those inputs [outputs]. See note to BCD.

For illustrations, see A00296\_Illustration\_b\_EN.pdf below.

For invalid BCD codes, that is, those that would produce an internal value greater than 9, the resulting output states are not specified by this symbol. If the general qualifying symbol were BIN/Y, then the symbol would show that all outputs stand at the internal 0-state for internal values greater than 9.

- 2CMPL Twos complement code

The n-bit number code ( $x_{n-1}, \dots, x_0$ ) representing a number y in the range  $-2^{k+n-1} \leq y \leq 2^{k+n-1} - 2^k$ . (For integers,  $k = 0$ . For fixed-point fractions, k is negative.)

The individual weights of  $x_0$  through  $x_{n-2}$  are powers of 2 ( $2^k$  through  $2^{k+n-2}$ ). The additional bit ( $x_{n-1}$ ) indicates  $-2^{k+n-1}$ . The relationship between the values of the individual bits and y can be expressed by

$$y = -2^{k+n-1} x_{n-1} + \sum 2^{k+i} x_i$$

A negative [positive] number is represented by  $2^k$  plus the one's-complement (logic complement) of the corresponding positive [negative] number.

For an example, see A00296\_Example\_b\_EN.pdf below.

Inputs [outputs] shall be labelled either with positive decimal weights or with exponents of the powers of 2 including the highest order (sign) bit.

For an illustration, see A00296\_Illustration\_c.pdf below.

### 1.1.2 Direct-indication codes

With these codes, like "Y", the relationship between the internal numeric value and the internal logic state of each input [output] shall be indicated by replacing X [Y] of the qualifying symbol with an appropriate indication of the input [output] code and by labelling each input with a number indicating the internal value produced, or by labelling each output with a list of numbers indicating those internal values that lead to the internal 1-state of that output. These numbers shall be separated by solidi.

If a continuous range of internal values produces the internal 1-state of an output, this may be indicated by two numbers that are inclusively the beginning and the end of the range, with these two numbers separated by three dots, for example:

4 ... 9 = 4/5/6/7/8/9.

The following codes are defined:

- m General code with m states (m shall be replaced by a number)
- A code in which m combinations of internal logic states are defined for inputs or possibly for outputs.

- HPRI Highest-priority input code

An input code in which the input with the highest weight takes priority if more than one input stands at its internal 1-state. If no input stands at its internal 7-state, the internal value is zero.

- DEC Decimal code

The code in which 10 inputs [outputs] exist and have the weights 0 through 9.

NOTE - If the input [output] with the weight of zero is omitted, the internal value of zero corresponds to all inputs [outputs] standing at their internal 0-states.

- OCT Octal code

The code in which 8 inputs [outputs] exist and have the weights 0 through 7. See note to DEC.

- HEX Hexadecimal code

The code in which 16 inputs [outputs] exist and have the weights 0 through 15. See note to DEC.

Except for HPRI, if these codes are used for inputs and more than one input stands at its internal 1-state, the behaviour of the element is not specified by the symbol.

For illustrations, see A00296\_Illustration\_d\_EN.pdf below.

### 1.1.3 Identification codes

With these codes there is no internal numeric value. Instead, each input [output] pattern identifies a symbol (for example the letter "E") or other object according to a named coding scheme. The equivalent of the internal numeric value is the symbol or object identified by the input [output] pattern. Examples of these codes are ISO Latin-1, ASCII, EBCDIC, and 7-segment. The relationship between the internal symbol or object and the internal logic state of each input [output] shall be indicated by

replacing X [Y] of the qualifying symbol with an appropriate indication of the input [output] code and by labelling each input [output] with an appropriate indication of its bit position within the code.

If a code identifying a symbol is used in a coder together with a code that is associated with internal numeric values, the conversion to or from these codes is based on the symbolic decimal representation of those internal numeric values. If there is no symbolic representation for a value in the code, the behaviour of the element for that value is unspecified by the symbol for the element.

For an illustration, see A00296\_Illustration\_e.pdf below.

## 1.2 Use of coding tables

As an alternative to the use of the previously defined codes and labelling, the general qualifying symbol X/Y (or another, more appropriate, qualifying symbol) may be used together with an appropriate reference to a table (as, for example, in symbol S01621 (12-33-09)) in which the relationship between the inputs and outputs is indicated. The correspondence between inputs [outputs] and the columns in the table may be given in any convenient way, for example by using terminal designations. In this case, any internal labelling that might be confused with that arising in one of the other methods shall be avoided.

For an illustration, see A00296\_Illustration\_f\_EN.pdf below.

## 2 Replacement of X and Y by indications other than designations of the input code or the output code

2.1 The internal value of a coder may also be produced by other means, for example by a counter whose content is the internal value, by a multi-position switch whose position produces the internal value, etc. In such cases, the X shall be replaced by an appropriate indication of the means involved.

For illustrations, see A00296\_Illustration\_g\_EN.pdf below.

2.2 The internal value of a coder may also be represented by a visual display or be regarded as a value to become the content of an element or as a value on which a mathematical operation is performed. In such cases, the Y shall be replaced by the general qualifying symbol of the function involved.

For an illustration, see A00296\_Illustration\_h\_EN.pdf below.

2.3 It may be necessary, especially if an internal register is involved, to specify both an input code and an output code in addition to the type of register found in between the inputs and outputs, for example, "BCD/CTRDIV100/BIN".






For an illustration, see A00296\_Illustration\_j\_EN.pdf below.

**Applies to:** S01610, S01611, S01791



[A00296\\_Example\\_a\\_EN.pdf](#), [A00296\\_Example\\_b\\_FR.pdf](#), [A00296\\_Example\\_b\\_EN.pdf](#), [A00296\\_Illustration\\_b\\_FR.pdf](#)



- [A00296\\_Illustration\\_c.pdf](#)  [A00296\\_Illustration\\_d\\_EN.pdf](#)  [A00296\\_Illustration\\_d\\_FR.pdf](#)  [A00296\\_Illustration\\_e.pdf](#)  [A00296\\_Illustration\\_f\\_EN.pdf](#)  [A00296\\_Illustration\\_f\\_FR.pdf](#) 
- [A00296\\_Illustration\\_g\\_EN.pdf](#)  [A00296\\_Illustration\\_g\\_FR.pdf](#)  [A00296\\_Illustration\\_h\\_EN.pdf](#)  [A00296\\_Illustration\\_h\\_FR.pdf](#)  [A00296\\_Illustration\\_i\\_EN.pdf](#)  [A00296\\_Illustration\\_i\\_FR.pdf](#) 
- [A00296\\_Illustration\\_a\\_FR.pdf](#) 

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### Application note A00297

For the Font table T1, see A00297\_Table\_EN.pdf below.

Applies to: S01618

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[A00297\\_Table\\_EN.pdf](#) [A00297\\_Table\\_FR.pdf](#)

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### Application note A00301

A simple single-bit full adder may alternatively be depicted by the combination of the symbol for the ODD element (modulo 2 adder) and the logic threshold element as shown in A00301\_Example.pdf below.

Applies to: S01643

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[A00301\\_Example.pdf](#)

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### Application note A00303

Binary delay elements

For an illustration, see A00303\_illustration.pdf below.

Applies to: S01655, S01656

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[A00303\\_illustration.pdf](#)

## Application note A00304

### Bistable elements

1 The symbol for a bistable element does not contain a general qualifying symbol for the function, the latter being indicated by qualifying symbols associated with the inputs and outputs.

2 For bistable elements controlled by Cm-inputs (symbol S01558 (12-18-01)), it is necessary to distinguish between four types, that is: latches, edge-triggered bistables, pulse-triggered bistables, and data-lock-out bistables. In accordance with the descriptions of the symbols for a dynamic input (S01472 (12-07-07)) and for a postponed output (S01491 (12-09-01)), see A00304\_Example.pdf below.

For edge-triggered, pulse-triggered and data-lock-out bistables, the inputs affected by the Cm-input are assumed to be stable during the period that the Cm-input stands at its internal 1-state. If they do change their states during this period, the function of the element is not specified by the symbol.

The same symbology is used for more complex elements such as shift registers and counters to indicate whether they are of the edge-triggered, the pulse-triggered or the data-lock-out type. For elements of the pulse-triggered or the data-lock-out type, if reference is made to the content of the element (for example, by a CT-output), this content shall be considered as being the content after the application of the postponed-output symbol.

**Applies to:** S01491, S01659, S01660, S01661, S01662, S01663, S01664, S01665, S01666, S01667, S01668, S01669, S01670, S01671, S01672, S01673



[A00304\\_Example\\_EN.pdf](#)



[A00304\\_Example\\_FR.pdf](#)



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### Application note A00305

For an example, see A00305\_Example.pdf.

Applies to: S01665, S01735, S01737

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[A00305\\_Example.pdf](#)

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### Application note A00306

In some applications (for example fail-safe systems) it is necessary to indicate the internal logic state of the outputs of a bistable element at the moment the supply is switched on. The symbols associated to this application note show how this maybe done. The qualifying symbols may be applied to other types of bistable elements.

**Applies to:** S01671, S01672, S01673

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### Application note A00308

For the function table, see A00308\_Table\_EN.pdf below.

NOTE -The second and third line of the function table each indicate the logic levels the outputs will take on after the completion of any output pulse started before the relevant input took on its indicated level.

Applies to: S01676

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[A00308\\_Table\\_EN.pdf](#)



[A00308\\_Table\\_FR.pdf](#)

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### Application note A00309

For an explanatory diagram, see A00309\_diagram\_EN.pdf below.

Applies to: S01679

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[A00309\\_diagram\\_EN.pdf](#)



[A00309\\_diagram\\_FR.pdf](#)

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### Application note A00312

The use of the bar can be avoided by replacement as shown in A00312\_graphic\_EN.pdf below.

Applies to: S01691

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[A00312\\_graphic\\_EN.pdf](#)



[A00312\\_graphic\\_FR.pdf](#)

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### Application note A00315

#### Display elements

1 It should be recognized that the visual (optical) signals produced by display elements, for example LED or LCD, bar or dot matrices, are external outputs of those elements.

2 For the representation of complex-function display elements, see A00317.

For illustrations, see A00315\_Illustration\_EN.pdf below.

Applies to: S01723

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[A00315\\_Illustration\\_EN.pdf](#)



[A00315\\_Illustration\\_FR.pdf](#)

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### Application note A00316

For the detail [T1] Segment identification, see A00316\_Graphic.pdf.

Applies to: S01729

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[A00316\\_Graphic.pdf](#)

## Application note A00317

### Complex-function elements

The use of the qualifying symbols and dependency notation as described in A00269 through A00291, A00293, A00296, A00303, A00304, A00306, A00315, A00338, A00348 and relating graphical symbols may become impracticable for more complex circuit assemblies such as large-scale and very-large-scale integrated circuits. In these cases, the following techniques may be used.

#### 1 General

All of the above-mentioned rules and concepts may be employed. However, dependency notation may be used only if no confusion with other labelling is likely.

#### 2 Input and output designation

Inside the symbol outline, all inputs and outputs should be designated with the terminal names appearing on the selected data sheet or other documentation referenced in the description of symbol S01731 (12-54-01). This data sheet or other documentation should preferably be one that uses terminal names from a terminal-naming standard. Further abbreviation of these names should be considered only if these names are inconveniently long. For clarity, terminal names may be expanded or supplemented.

If labels defined in A00272 through A00291, A00293, A00296, A00303, A00304, A00306, A00315, A00338, A00348 and A00269 are used on the data sheet with a meaning other than that defined in those chapters, such labels shall be expanded to prevent confusion (for example DBUS instead of D).

In cases where the manufacturer's labelling prevents the use of the bit-grouping symbol for a clear representation of a bus, these labels may be modified provided correspondence with the data sheet is still possible.

#### 3 Negated terminal names

Negated terminal names may be converted to the un-negated form inside the symbol by using the negation or polarity symbols, depending upon the convention in force. If an input or output serves two functions that are activated at opposite polarities, a branch on the connecting line may be used to permit two separate labels to be shown, thus avoiding a negation bar.

For an illustration, see A00317\_illustration\_a\_EN.pdf below.

#### 4 In-line negation indication

If only an in-line notation can be used, the symbol  $\neg$  (symbol 11-2.3 of ISO 31-11) shall be used instead of the negation bar defined in section 2 of A00276.



If this symbol is immediately followed by an identifying number in the sense of dependency notation, it applies to that identifying number only.

If this symbol is not immediately followed by an identifying number in the sense of dependency notation, the negation applies to the string to the right of the symbol up to the first of the following:

- an unmatched closing parenthesis, or
- a solidus that is itself not enclosed within a matching set of parentheses to the right of the symbol, or
- the end of the string.

For illustrations, see A00317\_Illustration\_b.pdf below.

## 5 Functional grouping

The connecting lines should be functionally grouped and, where appropriate, be partitioned into control and data lines. The control lines may appear on the "control block outline" for which the common control block outline as described in A00270 is used.

## 6 Long character strings

Long character strings associated with input or output lines may be narrowed (at the expense of height) by inclusion in an open box as shown A00317\_Illustration\_c\_EN.pdf below. The box shall open away from the input or output line. The broken character string shall be justified flush against the closed side, taking into account embedded spaces. To avoid ambiguity as to the continuity of a negation bar, multiple characters under a single bar shall not be split. Strings should not be broken in such a way that readability is impaired or an intended space is lost.

7 Consecutive labels and terminal designations If both the internal labels and the (external) terminal designations are consecutive, then grouping of inputs [outputs] may be simplified by showing only the first and last connecting lines and their respective labels, the connecting lines being separated by dots or short strokes. Dots or short strokes may also be shown inside the symbol outline.

For an illustration, see A00317\_Illustration\_d.pdf below.

8 Function tables and truth tables When tables are used to provide additional information about the behaviour of the circuit, the table entries should refer to logic levels or to external logic states.

If the table entries refer to external logic states on a theoretical logic diagram or when using a single logic convention, then, in the table, any label derived from one appearing inside the symbol at an input or output bearing a negation symbol must be modified by adding (or removing) a negation bar. All other labels should appear on the table without modification.

For an example of use, see symbol S001735 (12-56-02).

## 9 Internal diagrams

To depict the functional behavior of a complex-unction element, a diagram inside the outline of a symbol (referred to as an internal diagram) may be used. In this case, the following rules shall be observed:

- the negation or polarity indicator shall be shown at the symbol outline at those inputs [outputs] to which it applies to indicate the relationship between the internal logic state of the input [output] and its external logic state or logic level;
- by definition, logic States, and not logic levels, exist within the outline of a symbol. Therefore the symbol for logic polarity cannot be used on an internal diagram, and the symbol for logic negation shall be applied where appropriate;
- input and output labels shall be shown inside and adjacent to the symbol outline and/or inside and adjacent to the outlines of the symbols appearing on the internal diagram. Labels containing identifying numbers in the sense of dependency notation shall only be shown inside the outlines of the internal symbols to which they apply. When labels are repeated after the application of logic negation, they shall be modified by adding (or removing) a negation bar;
- connections solely between elements of the internal diagram need not be labelled.

For illustrations, see A00317\_Illustration\_e\_EN.pdf below.

**Applies to:** S01731, S01734, S01735, S01736, S01737, S01738, S01739, S01740, S01741, S01742, S01743, S01744



[A00317\\_Illustration\\_a\\_EN.pdf](#) [A00317\\_Illustration\\_a\\_FR.pdf](#) [A00317\\_Illustration\\_b.pdf](#) [A00317\\_Illustration\\_c\\_EN.pdf](#) [A00317\\_Illustration\\_c\\_FR.pdf](#) [A00317\\_Illustration\\_d.pdf](#)



[A00317\\_Illustration\\_e\\_EN.pdf](#) [A00317\\_Illustration\\_e\\_FR.pdf](#)

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## Application note A00318

Bus indicators and data path representation

### 1 Bus indicators

In many cases, the use of a symbol for a bus can clarify the function of a complex element.

For illustrations, see A00318\_Illustration\_a.pdf below.

For the correspondence between the sequence of terminal designations and the sequence of bit numbers, the order of sequence of the terminal designations and the bit numbers shall be such that a left-to-right order corresponds to a top-to-bottom order.

### 2 Data path representation

The technique used for bus indicators may be extended to represent data paths (buses) on an internal diagram as A00318\_Illustration\_b\_EN.pdf below.

**Applies to:** S01732, S01733

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[A00318\\_Illustration\\_a.pdf](#) [A00318\\_Illustration\\_b\\_EN.pdf](#) [A00318\\_Illustration\\_b\\_FR.pdf](#)

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### Application note A00319

See A00319\_table.pdf.

Applies to: S01747

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[A00319\\_table.pdf](#)

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### Application note A00321

The symbol  $\cap$  (S00216) and # (S00217) shall be used when it is necessary to distinguish between analogue and digital signals. They may also be added to a general qualifying symbol or placed adjacent to symbols for internal connections ( S01475, S01479 and S01481) if confusion is likely regarding whether the function or signal is digital or analogue.

**Applies to:** S01748, S01749, S01750, S01751, S01752, S01768, S01769, S01770, S01771, S01772, S01773, S01774, S01775, S01776, S01777

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### Application note A00322

Any necessary supplementary information may be added to the symbol, provided no confusion is likely.

**Applies to:** S01753, S01754, S01755, S01756, S01757, S01759, S01760, S01761, S01762, S01763, S01764, S01765, S01766, S01767, S01768, S01769, S01770, S01771, S01772

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### Application note A00323

Elements performing mathematical functions

For illustrations, see A00323\_Illustration\_EN.pdf below.

Applies to: S01778

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[A00323\\_Illustration\\_EN.pdf](#)



[A00323\\_Illustration\\_FR.pdf](#)

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## Application note A00325

Amplifiers

For illustrations, see A00325\_Illustration\_EN.pdf below.

Applies to: S01781

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[A00325\\_Illustration\\_EN.pdf](#)



[A00325\\_Illustration\\_FR.pdf](#)



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### Application note A00327

Converters

For illustrations, see A00327\_Illustration\_EN.pdf below.

Applies to: S01791

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[A00327\\_Illustration\\_EN.pdf](#) [A00327\\_Illustration\\_FR.pdf](#)

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### Application note A00328

For an illustration, see A00328\_Illustration.pdf below.

Applies to: S01795

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[A00328\\_Illustration.pdf](#)

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### Application note A00330

For an illustration, see A00330\_Illustration.pdf below.

Applies to: S01798

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[A00330\\_Illustration.pdf](#)

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### Application note A00335

If there are no other inputs with an overriding effect, the transition at the output takes place when the input changes

- in a diagram using the symbol for logic negation as A00355\_a\_EN.pdf;

- in a diagram using the symbol for logic polarity as A00355\_b\_EN.pdf.

Applies to: S01491

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[A00335\\_a\\_EN.pdf](#) [A00335\\_b\\_EN.pdf](#) [A00335\\_a\\_FR.pdf](#) [A00335\\_b\\_FR.pdf](#)

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### Application note A00336

For an illustration, see A00336\_Illustration\_EN.pdf.

Applies to: S01492, S01609

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[A00336\\_Illustration\\_EN.pdf](#)



[A00336\\_Illustration\\_FR.pdf](#)

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### Application note A00337

For an illustration to S01503 (12-09-11), see A00337\_Illustration.pdf.

Applies to: S01503

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[A00337\\_Illustration.pdf](#)

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### Application note A00338

The description to the symbol may give the reader the impression that this is a dynamic input. This is not always the case, as it must be remembered that the internal logic state or level may possibly be modified by the effects of other inputs (for example Cm-inputs). If inputs represented by symbols S01505 to S01514 have a dynamic character, symbol S01472 should be used in addition. See, for example symbol S01683.

**Applies to:** S01505, S01506, S01507, S01508, S01509, S01510, S01511, S01512, S01513, S01514

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### Application note A00339

For an illustration to S01516 (12-09-24) and S01517 (12-09-25), see A00339\_Illustration.pdf. See also examples S01645 (12-39-02), S01646 (12-39-03), S01648 (12-39-05), S01649 (12-39-06), S01650 (12-39-07), S01651 (12-39-08), S01652 (12-39-09), S01653 (12-39-10) and S01654 (12-39-11).

Applies to: S01516, S01517

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[A00339\\_Illustration.pdf](#)



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### Application note A00340

For an illustration to S01518 (12-09-25A), see A00340\_Illustration\_EN.pdf.

Applies to: S01518

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[A00340\\_Illustration\\_FR.pdf](#) [A00340\\_Illustration\\_Rev 1\\_EN.pdf](#)

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### Application note A00341

- 1 The arrowheads are optional.
- 2 The symbol represents an internal transmission gate used in many integrated circuits such as CD 4013B and is equivalent to A00341\_Illustration.pdf below.

Applies to: S01605

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[A00341\\_Illustration.pdf](#)

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### Application note A00343

For an example, see A00343\_Illustration\_EN.pdf below.

Applies to: S01621

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[A00343\\_Illustration\\_FR.pdf](#)



[A00343\\_illustration\\_EN.pdf](#)

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### Application note A00344

For an explanatory diagram, see A00344\_diagram\_EN.pdf below.

Applies to: S01680

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[A00344\\_diagram\\_EN.pdf](#)



[A00344\\_diagram\\_FR.pdf](#)

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### Application note A00345

For an explanatory diagram, see A00345\_diagram\_EN.pdf below.

Applies to: S01681

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[A00345\\_diagram\\_EN.pdf](#) [A00345\\_diagram\\_FR.pdf](#)

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### Application note A00346

For an explanatory diagram, see A00346\_diagram\_EN.pdf below.

Applies to: S01682

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[A00346\\_diagram\\_EN.pdf](#)



[A00346\\_diagram\\_FR.pdf](#)

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### Application note A00347

For the illustration of segment identification, see A00347\_Graphic\_EN.pdf.

Applies to: S01700

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[A00347\\_Graphic\\_EN.pdf](#)



[A00347\\_Graphic\\_FR.pdf](#)

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### Application note A00348

Symbols in accordance with the superseded IEC 117-15 (60117-15) Recommended graphical symbols, Part 15: Binary Logic Elements, will be required for a prolonged changeover period but should be progressively superseded by the symbols in this standard. Although non-preferred, the use of other binary logic symbols recognized by official national standards, that is distinctive shapes in place of symbols S01566, S01567, S01574, S01575, S01576, S01577, S01579, S01580 and S01582 shall not be considered to be in contradiction to this standard. Usage of these other symbols in combination to form complex symbols (for example, use as embedded symbols) is discouraged.

**Applies to:** S01566, S01567, S01574, S01575, S01576, S01577, S01579, S01582



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### Application note A00349

For an example of an instrument multi-position selector switch used in a voltage measuring circuit, see the attached file A00349\_illustration.pdf

Applies to: S01844

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[A00349\\_illustration.pdf](#)

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### Application note A00350

For an example of an instrument multi-position selector switch used in a current measuring circuit, see attached file [A00350\\_illustration.pdf](#)

Applies to: S01845

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[A00350\\_illustration.pdf](#)

## Application note A00351

The following symbols shall be oriented as described or shown within this standard with respect to the inputs, outputs and outlines of the elements in which they appear. That is, these symbols, together with any associated terminal lines, shall be mirrored when the direction of signal flow is reversed:

S01239 (10-15-01) Amplifier, general symbol  
S01466 (12-07-01) Logic negation, shown at an input  
S01467 (12-07-02) Logic negation, output  
S01468 (12-07-03) Polarity indicator, input  
S01469 (12-07-04) Polarity indicator, output  
S01470 (12-07-05) Polarity indicator, input, right to the left  
S01471 (12-07-06) Polarity indicator, output, right to the left  
S01472 (12-07-07) Dynamic input  
S01473 (12-07-08) Dynamic input with logic negation  
S01474 (12-07-09) Dynamic input with polarity indicator  
S01475 (12-08-01) Internal connection  
S01477 (12-08-03) Internal connection with dynamic character  
S01478 (12-08-04) Internal connection with negation and dynamic character  
S01479 (12-08-05) Internal input (left hand side)  
S01480 (12-08-05A) Internal input (right-hand side)  
S01481 (12-08-06) Internal output (right-hand side)  
S01482 (12-08-07) Internal output (left-hand side)  
S01499 (12-09-08A) Output with special amplification  
S01500 (12-09-08B) Input with special amplification  
S01516 (12-09-24) Bit grouping for multibit input  
S01517 (12-09-25) Bit grouping for multibit output  
S01540 (12-09-47) Line grouping at the input side  
S01541 (12-09-48) Line grouping at the output side

**Applies to:** S01239, S01466, S01467, S01468, S01469, S01470, S01471, S01472, S01473, S01474, S01475, S01477, S01478, S01479, S01480, S01481, S01482, S01499, S01500, S01516, S01517, S01540, S01541

## Application note A00352

### 1 Scope

IEC 60617 contains graphical symbols that have been developed to represent functions operating on and/or producing analogue quantities. They are intended also to represent physical devices or combinations of physical devices capable of carrying out these functions.

The symbols have been prepared with a view to electrical applications, but many can also be applied to non-electrical devices, for example pneumatic, hydraulic or mechanical.

### 2 General notes

2.1 Construction and combination of outlines, labels and dependency notation should follow the applicable general rules of A00269 with the understanding that analogue connections carry a continuous range of signal levels rather than two logic states. Provided the direction of signal flow is clear or properly indicated, inputs may be shown on the right and outputs may be shown on the left if it aids layout of the diagram or better conveys the structure of the device.

2.2 In some figures, lower-case letters that are not part of the symbols have been shown outside the outline just to identify the inputs and outputs as referenced in the description.

2.3 Weighting factors applied to the input signals are each indicated by a sign indicator in combination with a numerical value placed inside the outline of the symbol adjacent to the relevant input.

In this International Standard  $w_1, w_2, \dots, w_n$ , which are understood to include the proper sign, are used to denote the values of the weighting factors. The symbols for sign indication are + and -. If the weighting factor is + 1 or -1, such as where a simple non-inverting or inverting input is shown, the number 1 may be omitted.

3.4 In IEC 60027, letter symbols for quantities are shown in italic (inclined) type. Upright lettering is allowed and normally used on diagrams. In this International Standard, upright letters are used for all lettering that is intended to be a final part of a symbol or a diagram.

2.5 In IEC 60027, the letters  $V$  and  $v$  are recommended as reserve symbols for voltage. For new graphical symbols for diagrams standardized letter codes in accordance with ISO/IEC 80000 series and IEC 60027 shall be used.

2.6 In symbols in this International Standard, the comma has been used for the decimal sign, as recommended in IEC 60027.

2.7 In this International Standard, the character " $\varphi$ " has been used for phase (difference). The " $\Phi$ " is considered to be equivalent.

2.8 In many cases, examples are based on commercially available devices. Therefore, type numbers and terminal designations (for one unspecified package type) are shown for the assistance of the reader. Where the type number implies the product of a specific manufacturer,

this is done to avoid uncertainties caused by functional variations that sometimes occur between devices that have the same generic portion of the type number but are made by different manufacturers.

2.9 Some symbols are shown in this International Standard with external connections or external networks. The function indicated by the symbol might be performed only when these external connections or external networks are present.

2.10 In cases where binary inputs or outputs are shown in this International Standard and the logic polarity indicator has not been used, positive logic convention is to be assumed.

2.11 Label grouping (see Clause 6 of A00317) may be employed to group adjacent and associated connecting lines whose labels are partially alike.

**Applies to:** S01748, S01749, S01750, S01751, S01752, S01753, S01754, S01755, S01756, S01757, S01758, S01759, S01760, S01761, S01762, S01763, S01764, S01765, S01766, S01767, S01768, S01769, S01770, S01771, S01772, S01773, S01774, S01775, S01776, S01777, S01778, S01779, S01780, S01781, S01782, S01783, S01784, S01785, S01786, S01787, S01788, S01789, S01790, S01791, S01792, S01793, S01794, S01795, S01796, S01797, S01798, S01799, S01800, S01801, S01802, S01803, S01804, S01805, S01806

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### Application note A00353

The inputs and outputs are digital in nature. See also A00321.

**Applies to:** S01768, S01769, S01770, S01771, S01772, S01773, S01774, S01775, S01776, S01777

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### Application note A00354

In accordance with the description of symbol S01492 (12-09-02), symbol S01608 (12-31-01) is equivalent to symbol S01577 (12-27-12) with a bi-threshold input (S01492 (12-09-02)).  
For an illustration, see A00354\_Illustration.pdf below.

Applies to: S01608

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[A00354\\_Illustration.pdf](#)

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### Application note A00355

This symbol is not equivalent to and AND gate with hysteresis function applied to each input instance.

For an illustration, see A00355\_Illustration.pdf below.

Applies to: S01609

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[A00355\\_Illustraton.pdf](#)



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### Application note A00356

In the examples of complex circuits, the following techniques have been used:

- the type number is shown within the symbol outline to satisfy the requirements of a reference to supporting documentation;
- the indication of the function and the type number are shown on separate lines.

If, on a diagram, other informations lead to the specific data sheet or documentation from which the symbol was derived, this type number may be omitted.

**Applies to:** S01734, S01735, S01736, S01737, S01738, S01739, S01740, S01741, S01742, S01743, S01744, S01745, S01746, S01747

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### Application note A00357

The asterisk shall be replaced by one or more following qualifying symbols to indicating the type of the detector:

- S01851 Heat (occurrence of), general symbol see S01882
- S01852 Smoke (occurrence of), general symbol see S01874
- S01853 Flame (occurrence of), general symbol see S01881
- S01854 Motion (occurrence of), general symbol see S01871

Applies to: S01870

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### Application note A00358

The symbols S00216 Analogue and S00217 Digital shall be applied to symbol S01887 Camera when it is necessary to distinguish camera has analog or digital output signals or connections.

**Applies to:** S00216, S00217, S01887

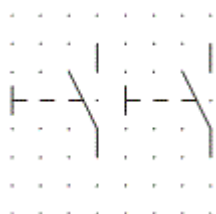
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### Application note A00359

Graphical symbol S01897 represent device (switch) in installation diagrams which has double actuators. Function of such device is illustrated in figure 1.



[A00241.gif](#)

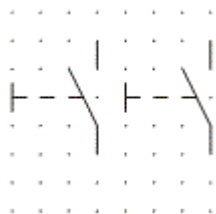
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### Application note A00360

Graphical symbol S01897, for use in installation diagrams, represents a device (switch) which has double actuators. The function of such device is illustrated in attached File:  
See Circuit diagram presentation of symbol S01897: A00360 Illustration.



Applies to: S00470, S01905

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[A00360\\_Illustration.gif](#)

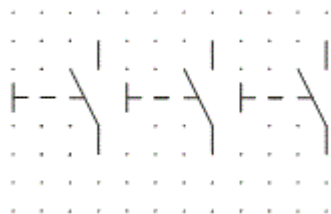
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### Application note A00361

Graphical symbol S01862, for use in installation diagrams, represents a device (switch) which has triple actuators. The function of such device is illustrated in attached File  
See Circuit diagram presentation of symbol S01862: A00361 Illustration.



Applies to: S01862, S01906, S01909

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[A00361 Illustration.gif](#)

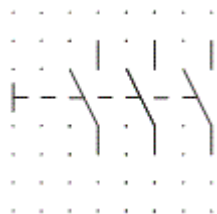
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### Application note A00362

Graphical symbol S01899, for use in installation diagrams, represents a device (switch) which has one actuator for three contacts. The function of such device is illustrated in attached File See Circuit diagram presentation of symbol S01899: A00362 Illustration



Applies to: S01899

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[A00362 Illustration.gif](#)

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### Application note A00363

Graphical symbol S01901, for use in installation diagrams, represents a device (switch) which has triple actuators. The function of such device is illustrated in attached File  
See Circuit diagram presentation of symbol S01901: A00363 Illustration



Applies to: S01901

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[A00363 Illustration.gif](#)



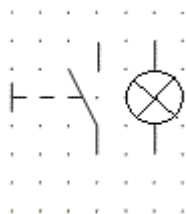
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### Application note A00364

Graphical symbol S00467, for use in installation diagrams, represents a device (switch) which has one actuator and one lamp. The function of such device is illustrated in attached File See Circuit diagram presentation of symbol S00467: A00364 Illustration



Applies to: S00467, S01907

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[A00364 Illustration.gif](#)

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### Application note A00365

Graphical symbol S00469, for use in installation diagrams, represents a device (switch) which has one actuator and two contacts. The function of such device is illustrated in attached File See Circuit diagram presentation of symbol S00469: A00365 Illustration



Applies to: S00469

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[A00365 Illustration.gif](#)

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### Application note A00366

Graphical symbol S00471, for use in installation diagrams, represents a device (switch) which has one actuator operating one swith-over contact. The function of such device is illustrated in attached File

See Circuit diagram presentation of symbol S004471: A00366 Illustration



Applies to: S00471

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[A00366 Illustration.gif](#)

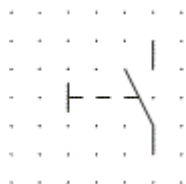
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### Application note A00367

Graphical symbol S00474, for use in installation diagrams, represents a device (switch) which has a single actuator. The function of such device is illustrated in attached File  
See Circuit diagram presentation of symbol S004474: A00367 Illustration



Applies to: S00474, S01865

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[A00367 Illustration.gif](#)

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### Application note A00368

If appropriate symbols indicating the parameter of the device are not applicable, the asterisk may also be replaced by commonly accepted designations e.g. IEC TR 62711.

Applies to: S00327

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### Application note A00369

If appropriate symbols indicating measuring instrument are not found, the asterisk may also be replaced by commonly accepted designations e.g. IEC TR 62711.

**Applies to:** S00910, S00911, S00912

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### Application note A00370

The alternative form of representing a switching device for installation purpose is used for indicating the number of contacts operated from individual actuators but assembled together in one device. The shown number indicates the number of contacts and does not indicate a multiplication of the complete symbol. If a different number of contacts than shown in symbol S01908 or S01909 are used, the number written at the symbol shall be changed to indicate the correct number of contacts.

**Applies to:** S01908, S01909

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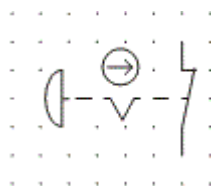
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### Application note A00371

Graphical symbol S01864, for use in installation diagrams, represents a device (switch) which has an actuator designed for emergency stop. The function of such device is illustrated in attached File

See Circuit diagram presentation of symbol S01864: A00371 Illustration



Applies to: S01864

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[A00371 Illustration.gif](#)



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## Application note A00372

General symbols S00466 and S01900 have been used to construct graphical symbol presenting different kind of functionalities of switches in installation diagrams.

Following principles have been applied to all graphical symbols for switches to be used in installation diagrams.

General symbol S00466 shall be used as basic symbol to construct graphical symbol presenting single or multi pole On/Off switch with one or more actuators.

General symbol S01900 shall be used as basic symbol to construct graphical symbol presenting single or multi pole two-way (change over) switch with one or more actuators.

Shape of circle in S00466 and S01900 represents device's installation box or housing.

If switch object has more than one actuator then stroke (On/Off or Two-way) representing actuators shall be added to the general symbol (see e.g. S00471 Two-way single pole switch, S01901 Triple two-way single pole switch, S00470 Double single pole switch, S01862 Triple single pole switch).

Number of poles controlled by the actuator(s) shall be presented by using "flag" symbol rotating clockwise at end of "actuator" symbol (see e.g. S00469 Two pole switch, S01899 Three pole switch).

**Applies to:** S00466, S01900

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[C00265-A00372\\_Application\\_note\\_for\\_poles\\_and\\_actuators\\_for\\_switthes\\_rev1.doc](#)

**Application note A00373**

If IEC 61082-1 clause 7.1.2.3 Simplified presentation is applied to graphical symbols for switches in installation diagrams then following examples (1 to 4) of interpretations should be considered.

**EXAMPLE 1**

Two single pole switch devices: see figure below

**EXAMPLE 2**

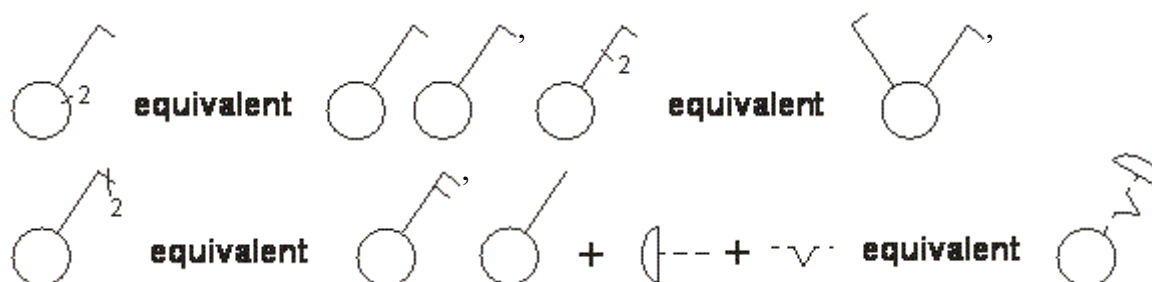
Double single pole device: see figure below

**EXAMPLE 3**

Two pole switch: see figure below

**EXAMPLE 4**

Stand alone emergency switch equipment: see figure below



**Applies to:** S00466, S00467, S01900



[A00373\\_1.gif](#) [A00373\\_2.gif](#) [A00373\\_3.gif](#) [A00373\\_4.gif](#)

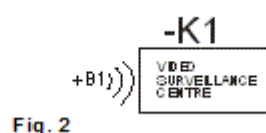
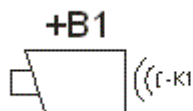
### Application note A00374

Graphical symbol S01863 shall be applied to graphical symbol which representing object with wireless connection. Direction of waves should be incoming (see fig.1 below).

Figure 1. Two pole switch (S00469) with wireless connection

Objects which have wireless connection between and when communicating objects have IEC 81346 reference designation then this reference designation adjacent to symbol S01863 show other part of wireless connection (see fig.2). Signal names (see IEC 61175) can be used as part of designations (See Fig. 2 below).

Figure 2. Camera (S01887) with wireless connection to video surveillance centre



Applies to: S01863

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[A00374.gif](#)

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### Application note A00375

The rectangular part of the symbol can be increased due to the amount of characters needed (see example). However, the angle of the arrowhead shall be kept constant.



Applies to: S01921, S01922

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[A00375.gif](#)

## Application note A00376

Graphical symbol for transceiver should be used with relevant type of connection symbols (e.g. S00001 electrical, S00011 coaxial, S01318 optical, S01863 wireless) see examples on table 1. Example of measuring application (temperature sensor, converter, transceiver) using graphical symbol transceiver as part of diagram see Figure 1

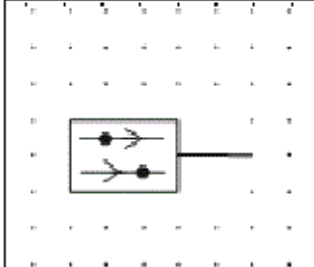
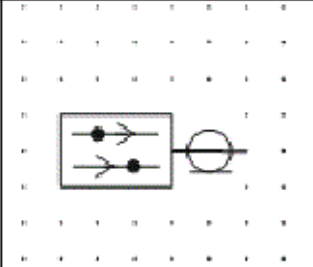
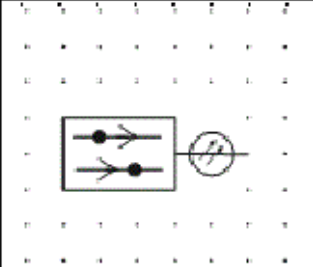
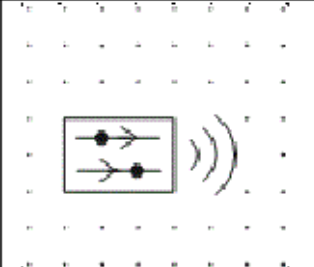
| Transceiver, connection type general electrical                                   | Transceiver, connection type electrical coaxial                                   | Transceiver, connection type optical                                               | Transceiver, connection type wireless                                               |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |

Table 1. Examples of transceiver symbol with different type of connections.

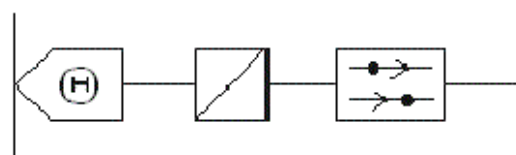


Figure 1. Example of measuring application (temperature sensor, converter, transceiver).

Applies to: S01923



[A00376 Illustration\\_1A.gif](#)



[A00376 Illustration\\_2A.gif](#)

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