
विद्युत तकनीकी शब्दावली
भाग 30 विद्युत ऊर्जा का शिरोपरी पारेषण और
वितरण
(पहला पुनरीक्षण)

Electrotechnical Vocabulary
Part 30 Overhead Transmission and
Distribution of Electrical Energy
(*First Revision*)

ICS 01.040.29; 29.240.01

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NATIONAL FOREWORD

This Indian Standard (Part 30) (First Revision) which is identical with IEC 60050-601 : 1985 'International electrotechnical vocabulary (IEV) — Part 601: Generation, transmission and distribution of electricity — General' issued by the International Electrotechnical Commission (IEC) was adopted by the Bureau of Indian Standards on the recommendation of the Basic Electrotechnical Standard and Power Quality Sectional Committee and approval of the Electrotechnical Division Council.

This standard was first published as IS 1885 (Part 30) : 1971 'Electrotechnical vocabulary: Part 30 Overhead transmission and distribution of electrical energy' based on IEC 60050-25 : 1965. IEC 60050-25 : 1965 was later withdrawn and IEC 60050-601:1985 was published to cover the requirement of electrotechnical vocabulary on overhead transmission and distribution of electrical energy.

This revision has been undertaken to take into consideration the developments that have taken place subsequently and also to align with the latest version of IEC 60050-601 : 1985.

The text of IEC standard has been approved as suitable for publication as an Indian Standard without deviations. Certain terminologies and conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'; and
- b) Comma (,) has been used as a decimal marker, while in Indian Standards the current practice is to use a point (.) as the decimal marker.

Only the English language text has been retained while adopting it in this Indian Standard, and as such, the page numbers given here are not the same as in the IEC Publication.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding of numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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Indian Standard

ELECTROTECHNICAL VOCABULARY
PART 30 OVERHEAD TRANSMISSION AND DISTRIBUTION OF
ELECTRICAL ENERGY
(*First Revision*)

CHAPTER 601: GENERATION, TRANSMISSION AND DISTRIBUTION
OF ELECTRICITY — GENERAL
SECTION 601-01 — FUNDAMENTAL TERMS

Preliminary remark

The term “network” can in some countries and some situations be preferred to the term “system”. In many cases the terms are synonymous. Therefore, for the purposes of the definitions in this chapter, the term “system” has been used throughout for simplicity but “network” can be substituted according to the context or common usage or as defined herewith.

601-01-01 **electrical power system electricity supply system** (in a broad sense)

All installations and plant provided for the purpose of generating, transmitting and distributing electricity.

601-01-02 **electrical power system electrical power network**

Particular installations, substations, lines or cables for the transmission and distribution of electricity.

Note. — The boundaries of the different parts of this network are defined by appropriate criteria such as geographical situation ownership voltage etc

601-01-03 **alternating current system a.c. system**

An electrical system fed by alternating voltage.

601-01-04 **direct current system d.c. system**

An electrical system fed by unidirectional voltage.

601-01-05 **power frequency**

Conventionally, the values of frequency used in the electricity supply systems.

601-01-06 **generation of electricity**

A process whereby electrical energy is obtained from some other form of energy.

601-01-07 **conversion of electricity**

The changing of the characteristics of the form and frequency of voltage and current by means of a converter.

601-01-08	transformation of electricity The transfer of electricity through a power transformer.
601-01-09	transmission of electricity The transfer in bulk of electricity, from generating stations to areas of consumption.
601-01-10	distribution of electricity The transfer of electricity to consumers within an area of consumption.
601-01-11	interconnection (of power systems) A single or multiple transmission link between transmission systems enabling electricity to be exchanged between these systems by means of circuits and/or transformers.
601-01-12	interconnected systems Systems connected together by means of one or more interconnection links. <i>Note.</i> — This term is also used in the singular for a system whose elements are interconnected.
601-01-13	asynchronous link An interconnection between two a.c. systems operating at independent frequencies.
601-01-14	short-circuit power The product of the current in the short circuit at a point of a system and a conventional voltage, generally the operating voltage.
601-01-15	load in a system <ol style="list-style-type: none">1) The active, reactive or apparent power generated, transmitted or distributed within a system.2) The power demanded by a group of consumers classified according to their particulars, and characteristics, e.g. heating load, daytime reactive load, etc.
601-01-16	peak load Maximum value of load during a given period of time, e.g. a day, a month, a year.
601-01-17	load curve
courbe de charge	Graphical representation of the observed or expected variation of load as a function of time.
601-01-18	load duration curve A curve showing the duration, within a specified period of time, when the load equalled or exceeded a given value.
601-01-19	active energy The electrical energy transformable into some other form of energy.
601-01-20	reactive energy In an a.c. system, the captive electrical energy exchanged continuously between the different electrical and magnetic fields associated with the operation of the electrical system and of all the connected apparatus.

- 601-01-21** **nominal voltage of a system**
A suitable approximate value of voltage used to designate or identify a system.
- 601-01-22** **operating voltage** (in a system)
The value of the voltage under normal conditions, at a given instant and a given point of the system.
Note. — This value may be expected, estimated or measured.
- 601-01-23 [24]** **highest [lowest] voltage of a system**
The highest [lowest] value of operating voltage which occurs under normal operating conditions at any time and any point in the system.
Note. — Transient overvoltages due e.g. to switching operations and abnormal temporary variations of voltage, are not taken into account.
- 601-01-25** **voltage level**
One of the nominal voltage values used in a given system.
- 601-01-26** **low voltage** (abbreviation: LV)
A set of voltage levels used for the distribution of electricity and whose upper limit is generally accepted to be 1 000 V a.c.
- 601-01-27** **high voltage** (abbreviation: HV)
1) In a general sense, the set of voltage levels in excess of low voltage.
2) In a restrictive sense, the set of upper voltage levels used in power systems for bulk transmission of electricity
- 601-01-28** **medium voltage** (abbreviation: MV)
(not used in the UK in this sense, nor in Australia)
Any set of voltage levels lying between low and high voltage.
Note. — The boundaries between medium and high voltage levels overlap and depend on local circumstances and history or common usage. Nevertheless the band 30 kV to 100 kV frequently contains the accepted boundary
- 601-01-29** **phase to phase voltage line to line voltage** (USA)
The voltage between phases.
- 601-01-30** **phase to neutral voltage**
line to neutral voltage (USA)
The voltage between a phase in a polyphase system and the neutral point.
- 601-01-31** **phase to earth voltage**
line to ground voltage (USA)
The voltage between phase and earth.
- 601-01-32** **neutral point displacement voltage** The voltage between the real or virtual neutral point and the earth.

SECTION 601-02 — SYSTEM CONFIGURATION

- 601-02-01** **system diagram**
A topological representation of a system in which the information content depends on a specific re-quirement.
- 601-02-02** **system operational diagram**
A system diagram representing a particular operational condition.
- 601-02-03** **three-phase system diagram**
A diagram of a three-phase system in which all phase and neutral con-ductors are each represented by separate lines.
- 601-02-04** **single-line diagram**
A system diagram in which the poly-phase links are represented by their equivalent single line.
- 601-02-05** **system pattern**
A repetitive arrangement of the nodes in a system and their connec-tions, e.g. feeder, ring, mesh, etc.
- 601-02-06** **system configuration**
A permanent or temporary group-ing of similar or dissimilar in-dividual system patterns.
- 601-02-07** **link in a system**
A branch between two nodes of a system.

Note. — It generally comprises a line, a transformer or a connection between two adjacent busbars.
- 601-02-08** **feeder**
An electric line originating at a main substation and supplying one or more secondary substations.

Note. — The term “feeder” former-ly used in French is depe -cated.
- 601-02-09** **single feeder**
radial feeder
An electric line supplied from one end only.
- 601-02-10** **branch line**
spur

An electric line connected to a main line at a point on its route.
Note. — A branch line which is a inal circuit is called a spur.
- 601-02-11** **tapped line**
teed line

A main line to which branch lines are connected.
- 601-02-12** **supply service**
line connection

A branch line from the distribution system to supply a consumer’s in-stallation.

- 601-02-13** **ring feeder loop** (deprecated in this sense)
- An arrangement of electric lines forming a complete ring and supplied only from a single source.
- Note.* — A ring can be operated open or closed
- 601-02-14** **mesh** (of a system)
- An arrangement of electric lines forming a closed loop and supplied from several supply sources.
- 601-02-15** **radial system**
- A system or part of a system consisting of single feeders supplied from a single source of supply.
- 601-02-16** **tree'd system**
- A modified radial system to which spurs have been added.
- 601-02-17** **meshed system**
- A system or part of system consisting of multiple meshes.
- 601-02-18** **single supply**
- A supply given to a load by one circuit only.
- 601-02-19** **duplicate supply**
- A supply to a load by two circuits which are considered to be independent of each other in terms of security supply.
- 601-02-20** **stand-by supply**
- A supply which can be used when the normal supply becomes unavailable or inadequate.
- 601-02-21** **tapped (tee off) substation**
- A single supply substation fed from a single branch line.
- 601-02-22** **neutral point in a polyphase system**
- The common point of the n -windings in a star-connected equipment such as a power transformer, or an earthing transformer.
- 601-02-23** **neutral point connection**
- The means of electrical connection of the neutral point to earth.
- 601-02-24** **isolated neutral system**
- A system where the neutral point is not intentionally connected to earth, except for high impedance connections for protection or measurement purposes.

- 601-02-25** **solidly earthed (neutral) system**
A system whose neutral point(s) is (are) earthed directly.
- 601-02-26** **impedance earthed (neutral) system**
A system whose neutral point(s) is (are) earthed through impedances to limit earth fault currents.
- 601-02-27** **resonant earthed (neutral) system arc-suppression-coil-earth (neutral) system**
A system in which one or more neutral points are connected to earth through reactances which approximately compensate the capacitive component of a single-phase-to-earth fault current.

SECTION 601-03 — EQUIPMENT

Note:

General terms such as: *item, component, device, plant, equipment, installation*, are non-specifically electrical terms, the meaning of each depending on the context. There is no exact corresponding equivalence between the various languages.

- 601-03-01** **power station**
electrical generating station
An installation whose purpose is to generate electricity and which includes civil engineering works, energy conversion equipment and all the necessary ancillary equipment.
- 601-03-02** **substation (of a power system)**
A part of an electrical system, confined to a given area, mainly including ends of transmission or distribution lines, electrical switchgear and controlgear, buildings and transformers. A substation generally includes safety or control devices (for example protection).

Note. — The substation can be qualified according to the designation of the system of which it forms a part. Examples: transmission substation (transmission system), distribution substation, 400 kV or 20 kV substation.
- 601-03-03** **electric line**
An arrangement of conductors, insulating materials and accessories for transferring electricity between two points of a system.
- 601-03-04** **overhead line**
An electric line whose conductors are supported above ground, generally by means of insulators and appropriate supports.

Note. — Certain overhead lines may also be constructed with insulated conductors.

- 601-03-05** **underground cable**
An electric line with insulated conductors buried directly in the ground, or laid in cable ducts, pipes, troughs, etc.
Note. — The same expression is used to describe the item physically
- 601-03-06** **gas insulated line**
gas insulated circuit (deprecated) **GIC** (deprecated)
An electric line whose conductors are contained in a enclosure and insulated with a compressed gas.
- 601-03-07** **overhead system**
A system consisting essentially of overhead lines.
- 601-03-08** **underground system**
A system consisting essentially of underground cables.
- 601-03-09** **phase**
The designation of any conductor, bundle of conductors, terminal, winding or any other element of a polyphase system, which is intended to be energized under normal use.
- 601-03-10** **neutral**
The designation of any conductor, terminal or any element connected to the neutral point of a polyphase system.
- 601-03-11** **pole** (of an equipment)
In certain types of equipment such as switchgear, the part corresponding to one of the phases in a.c. or to one of the polarities in d.c.
Note. - According to the number of poles within the equipment, it is called: single-pole equipment, two-pole equipment, etc.
- 601-03-12** **pole** (of a d.c. system)
The designation of a conductor, terminal or any other element of a d.c. system which is likely to be energized under normal conditions; e.g. positive pole, negative pole.

SECTION 601-04 — HIGH-VOLTAGE D.C. SYSTEMS¹⁾

- 601-04-01** **high-voltage d.c. link HVDC link**
An installation for transmitting large quantities of electricity at high-voltage d.c., including the converter substations.
¹⁾ I E C Publication 633 contains detailed terminology for conversion systems and equipment used in HVDC transmission.

601-04-02

monopolar d.c. link

A link having only one energized pole whatever the means of return of the d.c. current.

601-04-03

bipolar d.c. link

A link having two poles normally operating at d.c. voltages of oppo-site polarity in relation to earth.

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This Indian Standard has been developed from Doc No.: ETD 01 (20012).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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