भारतीय मानक **IS/IEC 61196-6 : 2021**

Indian Standard

समाक्ष संचार केबल

भाग 6 सीएटीवी ड्राप केबलों की अनुभागीय विशिष्टि

(पहला पुनरीक्षण)

Coaxial Communication Cables

Part 6 Sectional Specification for CATV Drop Cables

(First Revision)

ICS 33.120.10

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

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Wires, Cables, Waveguides & Accessories Sectional Committee, LITD 06

NATIONAL FOREWORD

This Indian Standard (Part 6) (First Revision) which is identical to IEC 61196-6 : 2021 'Coaxial communication cables — Part 6: Sectional specification for CATV drop cables' issued by the International Electrotechnical Commission (IEC) was adopted by the Bureau of Indian Standards on the recommendation of Wires, Cables, Waveguides & Accessories Sectional Committee and approval of the Electronics and Information Technology Division Council.

This standard was first published in 2009 and was identical to IEC 61196-6 : 2009. This revision has been brought out to align it with the latest version of IEC 61196-6 : 2021.

This edition includes the following significant technical changes with respect to the previous edition:

a) Extended scope; and
b) Revised sheath marking and labelling.

The text of IEC standard has been approved as suitable for publication an Indian Standard without deviations. Certain terminology 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 currentpractice is to use a point (.) as the decimal marker.

In this adopted draft standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
IEC 60068-1 : 2013 Environmental testing — Part 1: General and guidance	IS/IEC 60068-1 : 2013 Environmental testing: Part 1 General and guidance	Identical
IEC 60068-2-78 Environmental testing — Part 2-78: Tests — Test Cab: Damp heat, steady state	IS 9000 (Part 4) : 2020/IEC 60068-2-78 : 2012 Environmental testing: Part 4 Tests — Test cab: Damp heat, steady state (*second revision*)	Identical
IEC 60096-0-1 Radio frequency cables — Part 0-1: Guidelines to the design of detail specifications — Coaxial cables	IS/IEC 60096-0-1 : 2017 Radio frequency cables: Part 0 Guidelines to the design of detail specifications, Section 1 Coaxial cables	Identical
IEC 61196-1 : 2005 Coaxial communication cables — Part 1: Generic specification — General, definitions and requirements	IS/IEC 61196-1 : 2005 Coaxial communication cables: Part 1 Generic specification — General, definitions and requirements	Identical

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
IEC 61196-1-1 Coaxial communication cables — Part 1-1: Capability approval for coaxial cables	IS/IEC 61196-1-1 : 2007 Coaxial communication cables: Part 1 Coaxial cables, Section 1 Capability approval	Identical
IEC 61196-1-101 Coaxial communication cables — Part 1-101: Electrical test methods — Test for conductor d.c. resistance of cable	IS/IEC 61196-1-101 : 2005 Coaxial communication cables: Part 1-101 Electrical test methods — Test for conductor d.c. resistance of cable	Identical
IEC 61196-1-102 Coaxial communication cables — Part 1-102: Electrical test methods – Test for insulation resistance of cable dielectric	IS/IEC 61196-1-102: 2005 Coaxial communication cables: Part 1 - 102 electrical test methods - Test for insulation resistance of cable dielectric	Identical
IEC 61196-1-105 Coaxial communication cables — Part 1-105:Electrical test methods — Test for withstand voltage of cable dielectric	IS/IEC 61196-1-105 : 2005 Coaxial communication cables: Part 1-105 Electrical test methods — Test for withstand voltage of cable dielectric	Identical
IEC 61196-1-106 Coaxial communication cables — Part 1-106: Electrical test methods — Test for withstand voltage of cable sheath	IS/IEC 61196-1-106 : 2008 Coaxial communication cables Part 1-106 Electrical test methods — Test for withstand voltage of cable sheath	Identical
IEC 61196-1-108 Coaxial communication cables — Part 1-108:Electrical test methods — Test for characteristic impedance, phase and group delay, electrical length and propagation velocity	IS/IEC 61196-1-108 : 2005 Coaxial communication cables: Part 1-108 electrical test methods — Test for characteristic impedance, phase and group delay, electrical length and propagation velocity	Identical
IEC 61196-1-112 Coaxial communication cables — Part 1-112:Electrical test methods — Test for return loss (uniformity of impedance)	IS/IEC 61196-1-112 : 2006 Coaxial communication cables: Part 1-112 Electrical test methods — Test for return loss (uniformity of impedance)	Identical
IEC 61196-1-113 Coaxial communication cables — Part 1-113: Electrical test methods — Testfor attenuation constant	IS/IEC 61196-1-113 : 2018 Coaxial communication cables Part 1-113 Electrical test methods — Test for attenuation constant	Identical
IEC 61196-1-115 Coaxial communication cables — Part 1-115: Electrical test methods — Test for regularity of impedance (pulse/step function return loss)	IS/IEC 61196-1-115 : 2006 Coaxial communication cables: Part 1-115 Electrical test methods — Test for regularity of impedance (pulse/ step function return loss)	Identical
IEC 61196-1-201 Coaxial communication cables — Part 1-201: Environmental test methods — Test for cold bend performance of cable	IS/IEC 61196-1-201 : 2009 Coaxial communication cables: Part 1-201 Environmental test methods — Test for cold bend performance of cable	Identical
IEC 61196-1-203 Coaxial communication cables — Part 1-203: Environmental test methods — Test for water	IS/IEC 61196-1-203 : 2007 Coaxial communication cables: Part 1-203 Environmental test methods — Test for water penetration of cable	Identical

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
penetration of cable		
IEC 61196-1-206 Coaxial communication cables — Part 1-206: Environmental test methods — Climatic sequence	IS/IEC 61196-1-206 : 2005 Coaxial communication cables Part 1-206 Environmental test methods — Climatic sequence	Identical
IEC 61196-1-301 Coaxial communication cables — Part 1-301: Mechanical test methods — Test for ovality	IS/IEC 61196-1-301 : 2005 Coaxial communication cables: Part 1-301 Mechanical test methods — Test for ovality	Identical
IEC 61196-1-302 Coaxial communication cables — Part 1-302: Mechanical test methods — Test for eccentricity	IS/IEC 61196-1-302 : 2005 Coaxial Communication cables: Part 1-302 Mechanical test methods — Test for eccentricity	Identical
IEC 61196-1-308 Coaxial communication cables — Part 1-308: Mechanical test methods — Test for tensile strength and elongation for copper-clad metals	IS/IEC 61196-1-308 : 2012 Coaxial communication cables: Part 1-308 Mechanical test methods — Test for tensile strength and elongation for copper-clad metals (*first revision*)	Identical
IEC 61196-1-310 Coaxial communication cables — Part 1-310: Mechanical test methods — Test for torsion characteristics of copper-clad metals	IS/IEC 61196-1-310: 2005 Coaxial communication cables: Part 1-310 Mechanical test methods — Test for torsion characteristics of copper-clad metals	Identical
IEC 61196-1-313 Coaxial communication cables — Part 1-313: Mechanical test methods – Adhesion of dielectric and sheath	IS/IEC 61196-1-313 : 2009 Coaxial communication cables Part 1-313 Mechanical test methods — Adhesion of dielectric and sheath	Identical
IEC 61196-1-314 : 2015 Coaxial communication cables — Part 1-314: Mechanical test methods — Test for bending	IS/IEC 61196-1-314: 2015 Coaxial communication cables Part 1-314 Mechanical Test Methods — Test for Bending	Identical
IEC 61196-1-316 Coaxial communication cables — Part 1-316: Mechanical test methods — Test of maximum pulling force of cable	IS/IEC 61196-1-316 : 2005 Coaxial communication cables: Part 1-316 Mechanical test methods — Test of maximum pulling force of cable	Identical
IEC 61196-1-324 Coaxial communication cables — Part 1-324: Mechanical test methods — Test for abrasion resistance of cable	IS/IEC 61196-1-324 : 2006 Coaxial communication cables: Part 1-324 Mechanical test methods — Test for abrasion resistance of cable	Identical
IEC 62153-4-3 Metallic communication cable test methods — Part 4-3: Electromagnetic compatibility (EMC) — Surface transfer impedance — Triaxial method	IS/IEC 62153-4-3 : 2013 Metallic communication cable test methods: Part 4 Electromagnetic compatibility (EMC), Section 3 Surface transfer impedance — Triaxial method	Identical
IEC 62153-4-4 Metallic communication cable test methods — Part 4-4:	IS/IEC 62153-4-4 : 2015 Metallic communication cable test methods: Part 4 Electromagnetic	Identical

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
Electromagnetic compatibility (EMC) — Test method for measuring of the screening attenuation as up to and above 3 GHz, triaxial method	compatibility (EMC), Section 4 Test method for measuring of the screening attenuation a_s up to and above 3 GHz, triaxial method	
IEC 62230 Electric cables — Spark-test method	IS 10810 (Part 44) : 1984 Method of test for cables: Part 44 Spark test	Technically Equivalent

The Committee has reviewed the provisions of the following International Standard referred in this adopted draft standard and has decided that it is acceptable for use in conjunction with this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments)applies:

International Standard	*Title*
IEC 60811-605	Electric and optical fibre cables — Test methods for non-metallic materials — Part 605: Physical tests — Measurement of carbon black and/or mineral filler in polyethylene compounds
IEC 61196-1-209	Coaxial communication cables — Part 1-209: Environmental test methods —Thermal cycling
IEC 61196-1-212	Coaxial communication cables — Part 1-212: Environmental test methods — UV stability
IEC 61196-1-317	Coaxial communication cables — Part 1-317: Mechanical test methods — Test for crush resistance of cable
IEC 62153-1-1	Metallic communication cables test methods — Part 1-1: Electrical — Measurement of the pulse/step return loss in the frequencydomain using the Inverse discrete fourier (IDFT)

For the purpose of deciding whether a particular requirement of this standard is complied withthe 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 off 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.

CONTENTS

Indian Standard

COAXIAL COMMUNICATION CABLES

PART 6 SECTIONAL SPECIFICATION FOR CATV DROP CABLES

(First Revision)

1 Scope

This part of IEC 61196 applies to coaxial communications cables. It specifies the requirements for CATV drop cables for analogue and digital one and two way signal transmission, e.g. for cable networks for television signals, sound signals, interactive services, surveillance & control systems, and satellite television receiving systems according to the requirements of IEC 60728-1, IEC 60728-1-1, IEC 60728-101, IEC 60728-10, ISO/IEC 11801-1 and ISO/IEC 11801-4. This also includes the transmission of BCT signals provided by a CATV, MATV or SMATV cable network.

The operating frequency is from 5 MHz to 1 000 MHz or from 5 MHz to 3 000 MHz.

Operating temperature is between −40 °C and +70 °C.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-1:2013, *Environmental testing − Part 1: General and guidance*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60096-0-1, *Radio frequency cables – Part 0-1: Guidelines to the design of detail specifications – Coaxial cables*

IEC 60811-605, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 605: Physical tests – Measurement of carbon black and/or mineral filler in polyethylene compounds*

IEC 61196-1:2005, *Coaxial communication cables – Part 1: Generic specification – General, definitions and requirements*

IEC 61196-1-1, *Coaxial communication cables – Part 1-1: Capability approval for coaxial cables*

IEC 61196-1-101, *Coaxial communication cables – Part 1-101: Electrical test methods – Test for conductor d.c. resistance of cable*

IEC 61196-1-102, *Coaxial communication cables – Part 1-102: Electrical test methods – Test for insulation resistance of cable dielectric*

IEC 61196-1-105, *Coaxial communication cables – Part 1-105: Electrical test methods – Test for withstand voltage of cable dielectric*

IEC 61196-1-106, *Coaxial communication cables – Part 1-106: Electrical test methods – Test for withstand voltage of cable sheath*

IEC 61196-1-108, *Coaxial communication cables – Part 1-108: Electrical test methods – Test for characteristic impedance, phase and group delay, electrical length and propagation velocity*

IEC 61196-1-112, *Coaxial communication cables – Part 1-112: Electrical test methods – Test for return loss (uniformity of impedance)*

IEC 61196-1-113, *Coaxial communication cables – Part 1-113: Electrical test methods – Test for attenuation constant*

IEC 61196-1-115, *Coaxial communication cables – Part 1-115: Electrical test methods – Test for regularity of impedance (pulse/step function return loss)*

IEC 61196-1-201, *Coaxial communication cables – Part 1-201: Environmental test methods – Test for cold bend performance of cable*

IEC 61196-1-203, *Coaxial communication cables – Part 1-203: Environmental test methods – Test for water penetration of cable*

IEC 61196-1-206, *Coaxial communication cables – Part 1-206: Environmental test methods – Climatic sequence*

IEC 61196-1-209, *Coaxial communication cables – Part 1-209: Environmental test methods – Thermal cycling*

IEC 61196-1-212, *Coaxial communication cables – Part 1-212: Environmental test methods – UV stability*

IEC 61196-1-301, *Coaxial communication cables – Part 1-301: Mechanical test methods – Test for ovality*

IEC 61196-1-302, *Coaxial communication cables – Part 1-302: Mechanical test methods – Test for eccentricity*

IEC 61196-1-308, *Coaxial communication cables – Part 1-308: Mechanical test methods – Test for tensile strength and elongation for copper-clad metals*

IEC 61196-1-310, *Coaxial communication cables − Part 1-310: Mechanical test methods − Test for torsion characteristics of copper-clad metals*

IEC 61196-1-313, *Coaxial communication cables – Part 1-313: Mechanical test methods – Adhesion of dielectric and sheath*

IEC 61196-1-314:2015, *Coaxial communication cables – Part 1-314: Mechanical test methods – Test for bending*

IEC 61196-1-316, *Coaxial communication cables – Part 1-316: Mechanical test methods – Test of maximum pulling force of cable*

IEC 61196-1-317, *Coaxial communication cables – Part 1-317: Mechanical test methods – Test for crush resistance of cable*

IEC 61196-1-324, *Coaxial communication cables – Part 1-324: Mechanical test methods – Test for abrasion resistance of cable*

IEC 62153-1-1, *Metallic communication cables test methods − Part 1-1: Electrical − Measurement of the pulse/step return loss in the frequency domain using the Inverse Discrete Fourier (IDFT)*

IEC 62153-4-3, *Metallic communication cable test methods – Part 4-3: Electromagnetic compatibility (EMC) – Surface transfer impedance – Triaxial method*

IEC 62153-4-4, *Metallic communication cable test methods – Part 4-4: Electromagnetic compatibility (EMC) – Test method for measuring of the screening attenuation as up to and above 3 GHz, triaxial method*

IEC 62230, *Electric cables – Spark-test method*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61196-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Materials and cable construction

4.1 Cable construction

The cable construction shall be in accordance with 4.2 to 4.6 of this document and the requirements stated in the relevant detail specification.

4.2 Inner conductor

4.2.1 Conductor material

IEC 61196-1: 2005, Subclause 4.4.1 applies. The conductor material shall be stated in the relevant detail specification.

4.2.2 Conductor construction

The conductor shall consist of a single wire or tube.

IEC 61196-1:2005, Subclause 4.4 applies.

The nominal diameter of the inner conductor and tolerance shall be stated in the relevant detail specification.

The maximum allowable tolerance is ± 0,03 mm.

4.3 Dielectric

IEC 61196-1:2005, Subclause 4.5 applies.

The type, nominal diameter and tolerance along with the ovality and eccentricity of the dielectric shall be stated in the relevant detail specification.

The maximum allowable tolerance of the diameter is ±0,15 mm. The maximum allowable values for ovality and eccentricity are given in 7.4, Table 4 of this document.

If the tape of the outer conductor is bonded to the dielectric, the measurement shall be made over this tape.

4.4 Outer conductor or screen

The construction and material of the outer conductor or screen shall be as stated in the relevant detail specification. The construction shall be in accordance with IEC 61196-1:2005, Subclause 4.6.1 f) or 4.6.1 g).

The nominal diameter of the outer conductor or screen shall be stated in the relevant detail specification.

The maximum allowable tolerance of the diameter is ±0,20 mm.

4.5 Sheath

IEC 61196-1:2005, Subclause 4.7, as amended by the following, applies:

Cables without an outer sheath shall not be subject to 4.5 of this document.

The outer sheath of the cable shall be a thermoplastic material as specified in the relevant detail specification.

The nominal sheath thickness shall be stated in the relevant detail specification.

The nominal diameter of the sheath shall be stated in the relevant detail specification.

The maximum allowable tolerance of the diameter is ±0,25 mm. The maximum allowable values for ovality and eccentricity are given in 7.4, Table 4 of this document.

For aerial cables or cables intended for outdoor applications utilising a black polyethylene sheath, the carbon black content shall be as stated in Table 4.

For other sheath material and colours of cables for outdoor use, the cable shall pass the UV stability test. (A relevant test procedure is under consideration.)

The messenger type shall be specified in the relevant detail specification and shall include as a minimum the following criteria: type and material, tensile strength, corrosion properties and elongation.

4.6 Completed cable

The overall nominal completed cable dimensions shall be stated in the detail specification.

5 Standard ratings and characteristics

The ratings and characteristics applicable to each cable shall be specified herein or in the relevant detail specification.

6 Identification and marking

6.1 Cable identification

IEC 61196-1:2005, Subclause 6.1 applies.

6.2 Sheath marking

Unless otherwise specified in the detail specification, sheath marking shall be achieved as a non-degradable print containing the following minimum information:

- a number giving the nominal characteristic impedance of the cable in ohms, "75",
- a number that corresponds to the approximate dielectric outer diameter in mm, for example, the nominal dielectric diameter 3,66 mm shall be expressed by "4",
- a letter that corresponds to the different outer conductor construction types,
- letters that correspond to the different inner conductor types,
- letters that correspond to the different outer conductor construction types,
- letters that correspond to the different outer conductor materials,
- a designation of the different screening classes,
- the number of the IEC standard (61196-6-x),
- the name of the supplier,
- the length of cable.

EXAMPLE: 75-4T-BC-ALT/BC/ALT-A – <xxx> − IEC 61196-6-3

More detailed information is given in Annex A.

6.3 Labelling

Unless otherwise specified in the detail specification, drums or coils shall be provided with a label with a non-degradable print containing the following minimum information:

- a number giving the nominal characteristic impedance of the cable in ohms, "75",
- a number that corresponds to the approximate dielectric outer diameter in mm; for example, the nominal dielectric diameter 3,66 mm shall be expressed by "4",
- a letter that corresponds to the different outer conductor construction types, see A.1.2,
- letters that correspond to the different inner conductor types, see A.1.2,
- letters that correspond to the different outer conductor construction types, see A.1.2,
- letters that correspond to the different outer conductor materials, see A.1.2,
- a designation of the different screening classes, see A.1.2,
- the name of the supplier,
- the number of the IEC standard (61196-6-x),
- the batch part number.

More detailed information is given in Annex A.

EXAMPLE: 75-4T-BC-ALT/BC/ALT-A – <xxx> − IEC 61196-6-3 − 03/04 543 m

7 Tests for completed cables

7.1 General

When tested in accordance with the IEC 61196-1-x series, the requirements given below shall apply.

Unless otherwise specified, all measurements shall be carried out under standard atmospheric conditions for testing in accordance with IEC 60068-1:2013, Clause 5.

Applicable test methods shall be in accordance with the IEC 61196-1-x series and the IEC 62153-4-x series unless otherwise specified.

The operational frequency range of the cable shall be specified in the relevant detail specification as either 5 MHz to 1 000 MHz or 5 MHz to 3 000 MHz and tested accordingly.

7.2 Electrical testing of the finished cable

7.2.1 Low-frequency and DC electrical measurements

Low-frequency and DC electrical measurements are described in Table 1.

Table 1 – Low-frequency and DC electrical measurements

No.	IEC test procedure	Parameter	Requirements/remarks
7.2.1.1	61196-1-101	Conductor resistance	Applicable, value in accordance with the detail specification
7.2.1.2	61196-1-102	Insulation resistance	≥ 10^4 MΩ × km
7.2.1.3	61196-1-105	Withstand voltage of dielectric	2 kV DC or 1,5 kV AC for 1 min, unless otherwise specified in the relevant detail specification
7.2.1.4	61196-1-106	Withstand voltage of sheath	3,5 kV DC or 2,5 kV AC, unless otherwise specified in the relevant detail specification
7.2.1.5	60096-0-1	Current carrying capacity	May be specified for information purposes in the relevant detail specification
7.2.1.6	IEC 62230	Spark test	2,5 kV AC, or 3,75 kV DC, or pulse, or 3,5 kV h.f.

7.2.2 High-frequency electrical and transmission measurements

High-frequency electrical and transmission measurements are described in Table 2.

Table 2 – High-frequency electrical and transmission measurements

No.	IEC test procedure	Parameter	Requirements/remarks
7.2.2.1	61196-1-108	Characteristic impedance	75 Ω ± 3 Ω
7.2.2.2	61196-1-108	Relative propagation velocity (velocity ratio)	May be specified for information purposes only in the detail specification
7.2.2.3	61196-1-112	Return loss	RL: ≥ 20 dB from 5 MHz to 1 000 MHz; ≥ 18 dB from 1 000 MHz to 2 000 MHz; ≥ 16 dB from 2 000 MHz to 3 000 MHz The measurement inaccuracy $a_{r,f}$ shall be < 1 dB
7.2.2.4	61196-1-113	Attenuation constant	The cable shall comply at any frequency with the formula $a \cdot \sqrt{f} + b \cdot f + c$. In case of copper clad conductor material, a term $d / \sqrt{f}$ should be added, to match the curve at low frequencies. The coefficients a, b, c and d shall be given in the relevant detail specification as well as the discrete values at 200 MHz and 800 MHz
7.2.2.5	61196-1-115	Regularity of impedance	Perform on both ends of tested cable Regularity ≥ 40 dB resp ≤ 1 % Test procedure: IEC 61196-1-115, (time domain) or IEC 62153-1-1 (transformation from frequency domain into time domain by IDFT)
7.2.2.6	62153-4-3	Transfer impedance [a]	Screening Class A+: ≤ 2,5 mΩ/m from 5 MHz to 30 MHz Screening Class A: ≤ 5 mΩ/m from 5 MHz to 30 MHz Screening Class B: ≤ 15 mΩ/m from 5 MHz to 30 MHz Screening Class C:[b] ≤ 50 mΩ/m from 5 MHz to 30 MHz Test procedure according to IEC 62153-4-3, triaxial method, after completion of the flexure test according to IEC 61196-1-314:2015, 8.3.3, Procedure 2: Radius = 10 × cable diameter Tension = as specified in 7.3.10 Speed =/< 1 m/s cycles = 1 (one move forward and back)

No.	IEC test procedure	Parameter	Requirements/remarks
7.2.2.7	62153-4-4	Screening attenuation [a]	Screening Class A+: ≥ 95 dB from 30 MHz to 1 000 MHz; ≥ 85 dB from 1 000 MHz to 2 000 MHz; ≥ 75 dB from 2 000 MHz to 3 000 MHz Screening Class A: ≥ 85 dB from 30 MHz to 1 000 MHz; ≥ 75 dB from 1 000 MHz to 2 000 MHz; ≥ 65 dB from 2 000 MHz to 3 000 MHz Screening Class B: ≥ 75 dB from 30 MHz to 1 000 MHz; ≥ 65 dB from 1 000 MHz to 2 000 MHz; ≥ 55 dB from 2 000 MHz to 3 000 MHz Screening Class C:[b] ≥ 75 dB from 30 MHz to 1 000 MHz; ≥ 65 dB from 1 000 MHz to 2 000 MHz; ≥ 55 dB from 2 000 MHz to 3 000 MHz Test procedure according to IEC 62153-4-4 (triaxial method) after completion of the flexure test according to IEC 61196-1-314:2015, 8.3.3, Procedure 2: Radius = 10 × cable diameter Tension = as specified in 7.3.10 Speed =/< 1 m/s cycles = 1 (one move forward and back)

[a] Screening classification is determined by the minimum class obtained in transfer impedance and screening attenuation.

[b] Class C cables are not intended for applications operating below 30 MHz.

7.3 Environmental testing of the finished cable

Environmental testing of the finished cable is given in Table 3.

Table 3 – Environmental testing of the finished cable

No.	IEC test procedure	Parameter	Requirements/remarks
7.3.1	61196-1-201	Cold bend performance	Test method A or B as specified in the relevant detail specification. The test temperature shall be stated in the relevant detail specification. No physical damages of conductors, dielectric and sheaths.
7.3.2	61196-1-203	Water penetration	When required, in accordance with the relevant detail specification
7.3.3	61196-1-206	Climatic sequence	T_A = –40 °C; T_B = +70 °C; t_1 = 24 h, unless otherwise specified in the detail specification. No. of cycles: 3 Influenced mechanical and electrical characteristics shall be as specified in the relevant detail specification.
7.3.4	60068-2-78	Damp heat (steady state)	Influenced mechanical and electrical characteristics shall be as specified in the relevant detail specification.
7.3.5	61196-1-212	Ultraviolet stability of the sheath or jacket	Applicable to cables for outdoor or other applications which are subjected to UV radiation and do not fulfil the requirement of Subclause 4.5 of this document regarding the carbon black content of the sheath or jacket. – no visual cracks – magnitude of change in elongation ≤ 20 % after 720 h – magnitude of change in tensile strength ≤ 20 % after 720 h
7.3.6	61196-1-209	Thermal cycling	Transmission characteristics shall remain within the specified limits procedure (under consideration)

7.4 Tests for mechanical characteristics of the finished cable

Mechanical testing of the finished cable is given in Table 4.

Table 4 – Tests for mechanical characteristics of the finished cable

No.	IEC test procedure	Parameter	Requirements/remarks
7.4.1	61196-1-301	Dielectric	≤ 7 %
7.4.2	61196-1-301	Ovality of sheath	≤ 7 %
7.4.3	61196-1-302	Eccentricity of dielectric	≤ 10 %
7.4.4	61196-1-302	Eccentricity of sheath	≤ 10 %
7.4.5	60811-605	Carbon black content	≥ 2 % (where applicable)
7.4.6	61196-1-308	Tensile strength and elongation of the copper or copper-clad aluminium inner conductor	Shall be in accordance IEC 61196-1:2005. Subclause 4.4.1
7.4.7	61196-1-310	Torsion test for copper-clad metals	Shall be in accordance with IEC 61196-1-310 if applicable
7.4.8	61196-1-313	Adhesion of the dielectric to inner conductor	Sample length = 50 mm. Pressure force F_a required to remove dielectric shall be 0,1 MPa ≤ F_a ≤ 1,0 MPa. Refer to footnotes a and b below.
7.4.9	61196-1-314	Bending characteristics	According to the detail specification
7.4.10	61196-1-316	Tensile strength of cable (longitudinal pull)	According to the detail specification
7.4.11	61196-1-317	Crush resistance of cable	Load = 700 N, applied for 2 min. After a 2 min recovery time, the maximum impedance irregularity shall be ≤ 1 %, when measured in accordance with IEC 61196-1-115. No physical damage of the sheath or jacket.
7.4.12	61196-1-324	Abrasion resistance	According to the detail specification

[a] The adhesion of the dielectric to the inner conductor, F_a is given in MPa by the following equation:

$$F_a = \frac{F}{\pi \cdot d \times l}$$

where

F is the force;

d is the diameter of inner conductor;

l is the length of the sample.

[b] Other values may be specified if special tools for preparing connector mounting are used (see relevant detail specification).

7.5 Fire performance test methods

When intended to be installed in buildings, these cables may fall under the requirements of local, regional or governmental regulations for the reaction to fire, for example the construction products directive (CPD).

Fire performance testing of the finished cable is given in Table 5.

Table 5 – Fire performance test methods (FFS)

No.	IEC test procedure	Parameter	Requirements/remarks
7.5.1		Flame propagation	
7.5.2		Acid gas emission	
7.5.3		Smoke generation	
7.5.4		Toxic gas emission	

8 Quality assessment

When specified in the sectional or detail specifications, quality procedures shall be in accordance with IEC 61196-1-1.

9 Delivery and storage

Delivery of cables shall be in accordance with IEC 61196-1:2005, Clause 9.

10 Fire performance test methods (FFS)

Fire performance tests are performed in accordance with local and/or national regulations.

NOTE IEC TR 62222 could be used if requested by local or national regulations.

Annex A
(normative)

Cable identification and marking

A.1 Cable identification

A.1.1 Type name

Cable type shall be identified by the following:

- a number giving the nominal characteristic impedance of the cable in ohms, "75",
- a number that corresponds to the approximate dielectric outer diameter in mm; for example, the nominal dielectric diameter 3,66 mm shall be expressed by "4",
- a letter that corresponds to the different outer conductor construction types, see A.1.2,
- a letter that corresponds to the different inner conductor types, see A.1.2,
- letters that correspond to the different outer conductor construction types, see A.1.2,
- letters that correspond to the different outer conductor materials, see A.1.2,
- a designation of the different screening classes, see A.1.2,
- the name of the supplier,
- the number of the IEC standard (61196-7).

A.1.2 Variants

The variant of cables should be identified by the following:

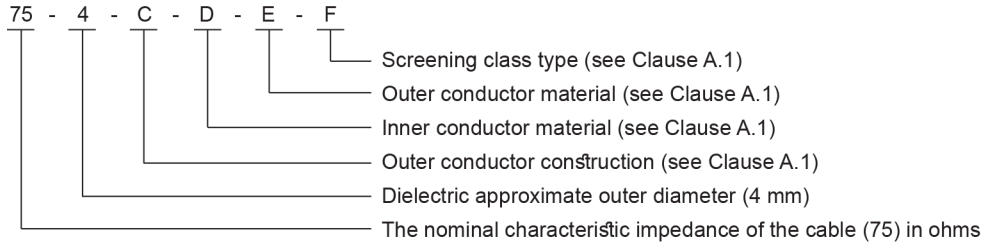
1) type name (75),
2) approximate dielectric outer diameter,
3) outer conductor construction distinguishing letters:
   S − Standard shield outer conductor (foil/braid)
   T − Tri-shield shield outer conductor (foil/braid/foil)
   Q − Quad-shield shield outer conductor (foil/braid/foil/braid)
4) inner conductor material
   BC − Bare copper
   CCS − Copper clad steel
5) outer conductor material
   a) ALT − Aluminium-polymeric laminated tape
   b) AL − Aluminium alloy wire
   c) TC − Tinned copper wire
   e.g. ALT/TC/ALT or ALT/AL/ALT/AL
6) screening class (same class for transfer impedance and screening attenuation)
   a) A+, A, B or C.

A.1.3 Screening classes

Screening classes of transfer impedance and screening attenuation shall be consistent. The lower class determines the screening class of the overall cable: e.g. if the transfer impedance fulfils the requirement of screening class B and the screening attenuation fulfils the requirement of screening class A, then the overall screening class of the cable is screening class B, not class A.

A.2 Cable marking

Cable marking consists of variants and IEC standard number, for example:



Example: 75-4T-BC-ALT/BC/ALT-A – <xxx> − IEC 61196-7

Bibliography

IEC 61196-1 (all parts), *Coaxial communication cables − Part 1: Electrical test methods*

IEC 62153-4 (all parts), *Metallic communication cable test methods − Part 4: Electromagnetic compatibility (EMC)*

IEC TR 62222, *Fire performance of communication cables installed in buildings*

IEC 60728-1, *Cable networks for television signals, sound signals and interactive services − Part 1: System performance of forward paths*

IEC 60728-1-1, *Cable networks for television signals, sound signals and interactive services − Part 1-1: RF cabling for two way home networks*

IEC 60728-10, *Cable networks for television signals, sound signals and interactive services − Part 10: System performance of return paths*

IEC 60728-101, *Cable networks for television signals, sound signals and interactive services − Part 101: System performance of forward paths loaded with digital channels only*

ISO/IEC 11801-1, *Information technology − Generic cabling for customer premises − Part 1: General requirements*

ISO/IEC 11801-4, *Information technology − Generic cabling for customer premises − Part 4: Single-tenant homes*

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Headquarters:

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