SLOVENSKI STANDARD
SIST EN 50441-4:2012

01-maj-2012

Kabli za notranjo stanovanjsko telekomunikacijsko montažo - 4. del: Kabli za frekvence do 1200 MHz - 4. stopnja

Cables for indoor residential telecommunication installations - Part 4: Cables up to 1 200 MHz - Grade 4

Innenkabel für Telekommunikationseinrichtungen im Wohnbereich - Teil 4: Kabel bis 1 200 MHz - Klasse 4

Câbles pour les installations résidentielles de télécommunications en intérieur - Partie 4: Câbles jusqu'à 1 200 MHz - Classe 4

Ta slovenski standard je istoveten z: **EN 50441-4:2012**

ICS:

33.120.10 Koaksialni kabli. Valovodi Coaxial cables. Waveguides

SIST EN 50441-4:2012 **en**

EUROPEAN STANDARD

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EN 50441-4

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ICS 33.120.10

English version

Cables for indoor residential telecommunication installations - Part 4: Cables up to 1 200 MHz - Grade 3

Câbles pour les installations résidentielles de télécommunications en intérieur - Partie 4: Câbles jusqu'à 1 200 MHz - Classe 3

Innenkabel für Telekommunikationseinrichtungen im Wohnbereich - Teil 4: Kabel bis 1 200 MHz - Klasse 3

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

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Foreword

This document (EN 50441-4:2012) has been prepared by SC 46XC, "Multicore, multipair and quad data communication cables", of CLC/ TC 46X, "Communication cables".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2013-01-23
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2015-01-23

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

1 Scope

This European Standard specifies the constructional details and performance requirements for cables for installation in indoor residential cabling systems characterized up to 1 200 MHz. Cables in this European Standard are based on the common design rules specified in EN 50290-2-1 and are specifically intended for supporting ICT and BCT applications (telephone, computer and TV services) as specified in EN 50173-4.

The cables covered in this European Standard are intended to operate with voltages and currents normally encountered in communication systems. These cables are not intended to be used in conjunction with low impedance sources, for example, the electrical power supply of public utility mains.

Cables covered in this European Standard may however be subjected to voltages of not more than 300 V a.c or 450 V d.c and comply with the requirements of the Low Voltage Directive.

The maximum current rating per conductor is 3 A/mm² unless otherwise specified in the relevant detail specification.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50173-1 *Information technology – Generic cabling systems - Part 1: General requirements*

EN 50289-1-2 *Communication cables – Specifications for test methods - Part 1-2: Electrical test methods – DC resistance*

EN 50289-1-3 *Communication cables – Specifications for test methods – Part 1-3: Electrical test methods – Dielectric strength*

EN 50289-1-4 *Communication cables – Specifications for test methods – Part 1-4: Electrical test methods – Insulation resistance*

EN 50289-1-6 *Communication cables – Specifications for test methods – Part 1-6: Electrical test methods – Electromagnetic performance*

EN 50289-1-7 *Communication cables – Specifications for test methods – Part 1-7: Electrical test methods – Velocity of propagation*

EN 50289-1-8 *Communication cables – Specifications for test methods – Part 1-8: Electrical test methods – Attenuation*

EN 50289-1-9 *Communication cables – Specifications for test methods – Part 1-9: Electrical test methods – Unbalance attenuation (longitudinal conversion loss, longitudinal conversion transfer loss)*

EN 50289-1-10 *Communication cables – Specifications for test methods – Part 1-10: Electrical test methods – Crosstalk*

EN 50289-1-11 *Communication cables – Specifications for test methods – Part 1-11: Electrical test methods – Characteristic impedance, input impedance, return loss*

EN 50289-3-7 *Communication cables – Specifications for test methods – Part 3-7: Mechanical test methods – Abrasion resistance of the cable sheath*

EN 50289-3-9 *Communication cables – Specifications for test methods – Part 3-9: Mechanical test methods – Bending tests*

EN 50289-3-17 *Communication cables – Specifications for test methods – Part 3-17: Mechanical test methods – Adhesion of dielectric and sheath*

EN 50290-2-1:2005	*Communication cables – Part 2-1: Common design rules and construction*
EN 50290-2-22	*Communication cables – Part 2-22: Common design rules and construction – PVC sheathing compounds*
EN 50290-2-23	*Communication cables – Part 2-23: Common design rules and construction – PE insulation*
EN 50290-2-27	*Communication cables – Part 2-27: Common design rules and construction – Halogen free flame retardant thermoplastic sheathing compounds*
EN 60332-1-2	*Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame* (IEC 60332-1-2)
EN 60794-1-2	*Optical fibre cables – Part 1-2: Generic specification – Basic optical cable test procedures* (IEC 60794-1-2)
EN 60811-1-1	*Insulating and sheathing materials of electric and optical cables – Common test methods – Part 1-1: General application – Measurement of thickness and overall dimensions – Tests for determining the mechanical properties* (IEC 60811-1-1)
HD 402 S2:1984	*Standard colours for insulation for low-frequency cables and wires* (IEC 60304:1982)

3 Quality control

Not applicable.

4 Cable construction

4.1 Conductors

4.1.1 Conductor construction

Conductor construction shall be in accordance with EN 50290-2-1:2005, 4.1.

NOTE Constructions with ‘‘Copper Clad’’ conductors do not meet the requirements.

4.1.2 Conductor type

The conductor shall be a solid wire of annealed copper with a minimum diameter of 0,5 mm in accordance with EN 50290-2-1.

NOTE Diameters < 0,5 mm and > 0,65 mm may cause problems with connecting hardware. Diameters larger than 0,8 mm could cause connectorisation problems.

4.2 Insulation

4.2.1 Insulation material

The insulation shall be polyethylene in accordance with EN 50290-2-23. Other materials may be used providing that they do not affect compliance with this European Standard and any local regulations (e.g. Environmental Directives).

4.2.2 Thickness of the insulation

The thickness of the insulation shall be compatible with the electrical requirements as defined in Clause 7.

4.2.3 Colour of the insulated conductor

The colour of insulation shall be a reasonable match to HD 402 S2:1984.

4.3 Cable element

The cable element shall be a pair or a quad.

The lay length shall be in accordance with EN 50290-2-1.

4.4 Screening of the cable element

Not specified but might be required to meet local regulation for EMC performance.

4.5 Cabling

The cables shall have at least 4 pairs or 2 quads. The core of the cable shall comply with the requirements specified in 7.4 and 7.5.

4.6 Spare pairs

Not applicable.

4.7 Colour code

The colour code shall be given in the detail specification; it should take into account the local practices as well as international recognised codes.

The colours shall be easily identifiable.

4.8 Screening and wrapping of the core

4.8.1 Core wrapping

The cable core shall be wrapped with one or more non-hydroscopic synthetic tapes. The synthetic tape shall be applied helically or longitudinally with an overlap of a minimum of 10 %.

4.8.2 Screen

The cable core may be screened, when screened in accordance with EN 50290-2-1.

Where a braid is applied, the minimum coverage (mainly for mechanical reasons) shall be 60 %. Where the screen is a metallised foil and a braid, this minimum coverage shall be 30 %. The method of calculating the coverage is described in EN 50290-2-1.

4.9 Sheath

4.9.1 Sheath material

The sheath shall be of a thermoplastic compound according to EN 50290-2-27 or EN 50290-2-22.

4.9.2 Sheath construction

Unless otherwise specified the colour of the sheath shall be cream. The sheath shall be applied to fit closely to the core of the cable but it shall be possible to strip the cable over 20 cm without removing foils or damaging conductors.

The sheath shall be cylindrical and its external aspect shall not reveal the core profile.

The ovality of the finished cable shall be not greater than 0,16.

4.9.3 Thickness of the sheath

The minimum thickness of the sheath shall be equal to or greater than 0,5 mm when measured in accordance with EN 60811-1-1.

4.10 Ripcord

A ripcord shall be laid under the sheath.

4.11 Overall diameter

For installation practices and connectorisation the recommended outer diameter is given in Table 1.

Table 1 – Recommended outer diameter of the sheath

Number of pairs	Maximal outer diameter mm	Minimum thickness of the sheath mm
4	8,0	0,50

NOTE In case of installation by stapling other diameters may be required (see 5.4.7.3).

4.12 Identification

4.12.1 General

Identification shall be provided either by sheath marking or by identification thread.

4.12.2 Sheath marking

Unless otherwise specified by the customer the cable may be marked as follows.

Sheath marking shall be either by a non-degradable print or embossing and shall contain the following minimum information:

- designation of cable including the numbering of the relevant standard;
- reaction to fire classification (ffs);
- name of supplier;
- metric marking.

4.12.3 Identification thread

Where a cable is not identified by sheath marking there shall be an alternative means of identification (e.g. identification thread laid under the sheath, identification tape, printing on the core wrapping, etc.).

Identification shall contain the following minimum information:

- designation of cable including the numbering of the relevant standard;
- reaction to fire classification;
- name of supplier.

4.13 Delivery length

4.13.1 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:

- designation of cable including the numbering of the relevant standard;
- reaction to fire classification;
- name of supplier;
- batch part number;
- length of cable.

EXAMPLE EN 50XXX – £££ – 03/00 – 543 m.