SLOVENSKI STANDARD
oSIST prEN 50407-2:2012

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Večparni kabli za dostopovna telekomunikacijska omrežja z velikimi bitnimi hitrostmi - 2. del: Večparni/četverčni kabli za napeljavo v jaških večstanovanjskih enot pri izvajanju univerzalne storitve, xDSL in aplikacij do prenosnih hitrosti 100 Mbit po IP

Multi-pair cables used in high bite rate digital access telecommunication networks - Part 2: Indoor multi-pair/quad cables for installation in Multi Dwelling Units shaft supporting universal services, xDSL and applications up to 100 MBits over IP

Vielpaarige Kabel für digitale Telekommunikationsnetzwerke mit hoher Bitrate - Teil 2: Vielpaarige Kabel/Viererkabel zur Installation in Mehrfamilienhäusern für universelle Dienste, xDSL und Anwendungen bis zu 100 MBits über Internetprotokoll (IP)

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Multi-pair cables used in high bite rate digital access telecommunication networks - Part 2: Indoor multi-pair/quad cables for installation in Multi Dwelling Units shaft supporting universal services, xDSL and applications up to 100 MBits over IP

To be completed

Vielpaarige Kabel für digitale Telekommunikationsnetzwerke mit hoher Bitrate - Teil 2: Vielpaarige Kabel/Viererkabel zur Installation in Mehrfamilienhäusern für universelle Dienste, xDSL und Anwendungen bis zu 100 MBits über Internetprotokoll (IP)

This draft European Standard is submitted to CENELEC members for CENELEC enquiry. Deadline for CENELEC: 2012-09-21.

It has been drawn up by CLC/SC 46XC.

If this draft becomes a European Standard, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CENELEC in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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CENELEC

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

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61 # Foreword

62 This document [prEN 50407-2] has been prepared by CLC/SC 46XC "Multicore, multipair and quad
63 data communication cables".
64
65 This document is currently submitted to the Enquiry.
66
67 This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment
68 Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC)"
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73 1 Scope

74 This European Standard defines indoor multi-pair/quad cables for installation in Multi Dwelling
75 units shaft supporting universal services, xDSL and applications up to 100 MBits over IP, their
76 relative definitions and requirements.

77 NOTE Higher bit rate applications need cables specified in a relevant part of EN 50406 or EN 50288 series.

78 It covers cables, with an overall screen, with performances up to 100 MHz, to be used in
79 indoor networks intended to connect the broadband outside plant to the individual customer
80 dwelling with a maximum recommended length of connection of 100 m.

81 The electrical, environmental, mechanical and transmission performance characteristics of the
82 cables, related to their reference test methods, are detailed.

83 2 Normative references

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

EN 10002-1		Tensile testing of metallic materials Part 1: method of test at ambient temperature
EN 50290	series	Communication cables *(Basic reference standards)*
EN 50289	series	Communication cables - Specifications for test methods *(Basic reference standards)*
EN 60068/ HD 323	series	Environmental testing (IEC 60068 series)
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)
IEC 60028	1925	International standard of resistance for copper

88 3 Terms, definitions and abbreviations

89 3.1 Terms and definitions

90 For the purposes of this document, the terms and definitions of EN 50290-1-2:2004 apply.

3.2 Abbreviations

For the purposes of this document, the following abbreviations apply.

ADSL	Asymmetric Digital Subscriber Lines
ATM	Asynchronous Transfer Mode
DSL	Digital Subscriber Line
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
FSAN	Full Service Access Network
HDSL	High-bit-rate Digital Subscriber Lines
ISDN	Integrated Digital Services Network
ISDN-BRA	ISDN-Basic Rate Access
ISDN-PRA	ISDN-Primary Rate Access
Mbps	Mega-bits per second
TBD	To be determined
VDSL	Very-high-bit-rate Digital Subscriber Lines
XDSL	Generic term referring to all DSL, ISDN, HDSL, ADSL, VDSL, etc.

4 General information

4.1 General cable description

These cables are designed for indoor high bit rate telecommunication networks. They have an overall screen.

High bit rate applications targeted in this specification involve frequencies up to 100 MHz. To restrict emission and to ensure satisfactory electromagnetic immunity, these cables include an overall screen.

These cables contain from four pairs up to 100 pairs (ffs) that can be either in pairs or quads.

4.2 Environment and product safety requirement

Safety local and regional regulation (e.g. Low Voltage European directive and other relevant directives) is assumed to be met by these cables.

4.3 Testing

According to the EN 60068 (HD 323), for all test procedures described in this section, the test conditions shall be the standard atmospheric conditions – (23 ± 5) °C and 20 % -70 % Relative Humidity –, unless otherwise stated. All measured and computed values are to be rounded to the number of decimal places given in the corresponding requirement or objective.

The parameters specified in this standard may be affected by measurement uncertainty arising either from measurement errors or calibration errors due to a lack of suitable standards. Acceptance criteria shall be interpreted with respect to this consideration.

5 Requirements for conductor

5.1 Construction and dimensions

The conductor shall consist of annealed copper, uniform in quality and free from defects. The properties of the copper shall be in accordance with IEC 60028.

The conductor shall be solid, circular in section. Normally the conductor should be drawn in one piece. Joints in the conductor are permitted, provided that the tensile strength of a joint is not less than 85 % of the un-jointed solid conductor.

The diameter of the conductor shall be 0,5 mm nominal.

5.2 Mechanical requirements

The conductor elongation at break shall be tested according to EN 10002-1 and shall be better than 15 %.

5.3 Electrical requirements

5.3.1 Conductor resistance

While measured in accordance with EN 50289-1-2, the conductor resistance shall meet the computed values when using EN 50290-2-1:2005, 12.1.

5.3.2 Conductor resistance unbalance

While measured in accordance with EN 50289-1-2, the conductor resistance unbalance shall be maximum 2 %.

6 Requirements for insulation

6.1 Construction material and dimensions

6.1.1 Construction

Conductor insulation shall be composed of solid, cellular or composite (e.g. foam skin) polyolefin that comply with the relevant part of EN 50290-2-23.

The insulated conductors shall be coloured for identification. Colours shall correspond reasonably with the standard colours shown in HD 402.

6.1.2 Colour code

The colour code shall be agreed between the customer and the manufacturer.

6.2 Mechanical requirements

Shrinkage of insulation shall be checked against EN 50290-2-23. The shrinkage shall be less than 5 %.

6.3 Electrical requirements

6.3.1 Insulation resistance

Insulation resistance EN 50289-1-4 5 000 Mohm.km under 500 V d.c.

6.3.2 Dielectric strength

Dielectric strength shall be tested according to EN 50289-1-3. The test shall be conducted with 1 kV d.c. or 700 V a.c. for 2 s.

7 Requirements for cable element

7.1 Construction and dimensions

The cable element is

- a pair consisting of two insulated conductors twisted together and designated wire "a" and wire "b", or
- a quad consisting of four insulated conductors twisted together and designated wire "a", wire "c", wire "b" and wire "d" in order of rotation.

7.2 Screening of the cable element

Where a screen is required over the pair or assembly of pairs (quads….), to improve the external and internal immunity, it may consist of the following:

a) an aluminium tape laminated to a plastic tape;

b) an aluminium tape laminated to a plastic tape and a metal-coated or plain copper drain wire whereby the metal tape is in contact with the drain wire.

A protective wrapping may be applied under or/and over the screen.

7.3 Spare cable elements

The cable may be equipped with spare pairs or quads in accordance with the basic cable structure.

The number of spare cable elements is depending upon agreement between the customer and the supplier.