SLOVENSKI STANDARD

SIST EN 50407-1:2004

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Večparni kabli, uporabljeni v telekomunikacijskih omrežjih z visokimi bitnimi hitrostmi z digitalnim dostopom - 1. del: Zunanji kabli

Multi-pair cables used in high bit rate digital access telecommunication networks – Part 1: Outdoor cables

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ICS 33.120.10

Referenčna številka
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50407-1

June 2004

ICS 33.120.10

English version

Multi-pair cables used in high bit rate digital access telecommunication networks Part 1: Outdoor cables

Câbles multi-paires de l'utilisateur final utilisés dans les réseaux d'accès numériques de télécommunication à haut-débits
Partie 1: Câbles extérieurs

Vielpaarige Kabel für digitale Telekommunikationsnetzwerke mit hoher Bitrate
Teil 1: Außenkabel

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists 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 Central Secretariat has the same status as the official versions.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 46X, Communication cables.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50407-1 on 2004-02-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2005-02-01

- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2007-02-01

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1 Scope

This European Standard defines outdoor multi-pair cables for use in high bit rate digital telecommunication networks with their relative definitions and requirements.

It covers water tight cables, with an overall screen, for applications up to 10 MHz, to be used in outdoor networks (for example in the subscriber access loop).

The electrical, mechanical, transmission performance characteristics of the screened cables, related to their reference test methods, are detailed.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 50289	series	Communication cables - Specifications for test methods *(Basic reference standards)*
EN 50290	series	Communication cables *(Basic reference standards)*
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)
EN 60811-1-2	1995	Insulating and sheathing materials of electric cables - Common test methods - Part 1-2: General application - Thermal ageing methods (IEC 60811-1-2:1985 + corrigendum May 1986 + A1:1989)
HD 402		Standard colours for insulation for low-frequency cables and wires (IEC 60304)
IEC 60028	1925	International standard of resistance for copper

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3 Terminology and abbreviations

3.1 Terminology

For the purpose of this European Standard, the definitions of EN 50290-1-2 apply.

3.2 Abbreviations

ADSL	Asymmetric Digital Subscriber Lines
ATM	Asynchronous Transfer Mode
DSL	Digital Subcriber 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 DSLs, ISDN, HDSL, ADSL, VDSL, etc.

4 General information

4.1 General cable description

These cables are designed for outdoor telecommunication networks, therefore they are water-tight cables.

Since these cables are specifically designed for new, various existing and emerging, telecommunication applications that involve high frequency spectrum up to 10 MHz, they include an overall screen to improve the electromagnetic behaviour.

These cables contain from one pair up to 600 pairs that can be either in pairs or quads.

4.2 Environment and product safety requirement

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4.3 Testing

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For all test procedures described in this subclause, 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.

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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 between 0,4 mm to 0,8 mm.

5.2 Mechanical requirements

The conductor elongation at break shall be tested according to EN 50289-3-2 and shall be minimum 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, Subclause 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.

The insulation shall be continuous, having a thickness as uniform as possible. The minimum thickness of the insulation shall be measured in accordance with the method specified in EN 60811-1-1, Subclause 8.2.

The insulation shall be applied to fit closely to the conductor. The stripping properties of the insulation shall be checked in accordance with the method specified in EN 60811-1-1, Subclause 8.1. It shall be possible to strip the insulation from the conductor easily and without damage to the insulation or the conductor.

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When required 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

When tested according to EN 50289-1-4, the insulation resistance shall be at least 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.