



Suure bitikiirusega telekommunikatsioonivõrkudes kasutatavad mitmepaarilised lõppkasutajakaablid.

Osa 2: Toru- ja maakaablid

End user multi-pair cables used in high bit rate telecommunication networks Part 2: Duct and buried cables

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 50406-2:2004 sisaldab Euroopa standardi EN 50406-2:2004 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 22.07.2004 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 30.06.2004.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 50406-2:2004 consists of the English text of the European standard EN 50406-2:2004.

This standard is ratified with the order of Estonian Centre for Standardisation dated 22.07.2004 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 30.06.2004.

The standard is available from Estonian standardisation organisation.

ICS 33.120.10

Võtmesõnad:

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

**End user multi-pair cables used
in high bit rate telecommunication networks
Part 2: Duct and buried cables**

Câbles multi-paires de l'utilisateur final
utilisés dans les réseaux
de télécommunication à hauts-débits
Partie 2: Câbles pour conduites
et enterrés

Vielpaarige Kabel für Endanwender
für Telekommunikationsnetzwerke
mit hoher Bitrate
Teil 2: Kabel für das Verlegen
in Kabelschächten und in Erdreich

This European Standard was approved by CENELEC on 2004-02-01. 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.

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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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 50406-2 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
-

Contents

1	Scope	5
2	Normative references	5
3	Terminology and abbreviations	5
3.1	Terminology	5
3.2	Abbreviations	5
4	General information	6
4.1	General cable description	6
4.2	Environment and product safety requirement	6
4.3	Testing	6
5	Requirements for conductor	6
5.1	Construction and dimensions	6
5.2	Mechanical requirements	6
5.3	Electrical requirements	7
5.3.1	Conductor resistance	7
5.3.2	Conductor resistance unbalance	7
6	Requirements for insulation	7
6.1	Construction material and dimensions	7
6.1.1	Construction	7
6.1.2	Colour code	7
6.2	Mechanical requirements	7
6.3	Electrical requirements	7
6.3.1	Insulation resistance	7
6.3.2	Dielectric strength	7
7	Requirements for cable element	8
7.1	Construction and dimensions	8
7.1.1	Screening of the cable element	8
7.1.2	Spare cable elements	8
8	Requirements for cable core	8
8.1	Design	8
8.1.1	General	8
8.1.2	Screen	8
8.1.3	Interstitial fillers	8
9	Requirements for filling compounds	9
10	Requirements for the screening of the cable core	9
11	Requirement for the armour	9
12	Requirements for the sheath	9
12.1	Colour of sheath	9
12.2	Mechanical requirements	9
13	Cable identification	10

14	Requirements for finished cable	10
14.1	Mechanical requirements	10
14.1.1	Bending	10
14.1.2	Impact	10
14.1.3	Tensile (under consideration)	10
14.1.4	Crush resistance	10
14.2	Environmental requirements	10
14.2.1	Temperature range	10
14.2.2	Cold bend	11
14.2.3	Fauna and mould proofing	11
14.2.4	Moisture barriers	11
15	Electrical requirements	11
15.1	Dielectric strength	11
15.2	Mutual capacitance	11
15.3	Capacitance unbalance	11
15.4	Velocity of propagation	11
15.5	Attenuation	12
15.6	Longitudinal Conversion Loss (LCL)	12
15.7	Near End Crosstalk (NEXT)	12
15.8	Equal Level Far-End Crosstalk (ELFEXT)	12
15.9	Power Sum (PS) of crosstalk losses	12
15.10	Mean impedance	12
15.11	Return loss	12
15.12	Coupling attenuation	13
15.13	Transfer impedance	13
15.14	Transmission properties	13
16	Product qualification requirements	13

1 Scope

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

It covers radially water blocked cables, with an overall screen, with performances up to 60 MHz, to be used in outdoor networks intended to connect the broadband outside plant to the individual customer premises with a maximum recommended length of connection of 1 km.

The electrical, environmental, mechanical and transmission performance characteristics of the 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 (<i>Basic reference standards</i>)
EN 50290	series	Communication cables (<i>Basic reference standards</i>)
EN 60811-1-1	1993	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 S2	1984	Standard colours for insulation for low-frequency cables and wires (IEC 60304:1982)
IEC 60028	1925	International standard of resistance for copper

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 Subscriber Line
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
FSAN	Full Service Access Network
HDSL	High-bit-rate Digital Subscriber Lines