



SLOVENSKI STANDARD

SIST EN 50169:1996

01-maj-1996

Sectional specification for backbone cables, riser and campus, with a common overall screen for use in digital communication

Sectional specification for backbone cables, riser and campus, with a common overall screen for use in digital communication

Rahmenspezifikation für Verteilerkabel (Gebäude-Verbindungskabel und Steigekabel) mit gemeinsamem Schirm für digitale Kommunikation

Spécification intermédiaire de câbles avec écran extérieur pour transmissions numériques destinés aux câblages, verticaux et campus

<https://standards.iteh.ai/catalog/standards/sist/42145fc6-f82f-4870-803b-529a089daa9f/sist-en-50169-1996>

Ta slovenski standard je istoveten z: **EN 50169:1994**

ICS:

33.120.01	Komponente in pribor na splošno	Components and accessories in general
-----------	---------------------------------	---------------------------------------

SIST EN 50169:1996

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 50169:1996

<https://standards.iteh.ai/catalog/standards/sist/42145fc6-f82f-4870-803b-529a089daa9f/sist-en-50169-1996>

EUROPEAN STANDARD

EN 50169

NORME EUROPEENNE

EUROPÄISCHE NORM

October 1994

ICS 29.060.20

Descriptors: Backbone cables, campus and riser, digital communication

ENGLISH VERSION

Sectional specification for backbone cables, riser and campus, with a common overall screen for use in digital communication

Spécification intermédiaire de câbles avec écran extérieur pour transmissions numériques destinés aux câblages, verticaux et campus

Bauart-Spezifikation für Verteilerkabel (Gebäude-Verbindungskabel und Steigekabel) mit gemeinsamen Schirm für digitale Kommunikation

iTeh STANDARD PREVIEW

(standards.iteh.ai)

This European Standard was approved by CENELEC on 1994-07-05. 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. <https://standards.iteh.ai/catalog/standards/sist/42145fc6-f82f-4870-803b-529a089daa9f/sist-en-50169-1996>

Up-to-date list 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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 CENELEC Subcommittee SC 46XC, Multicore, Multipair and Quad Data communication cables.

It was submitted to the CENELEC Unique Acceptance Procedure (UAP) in November 1993 and was approved by CENELEC as EN 50169 on 1994-07-05.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1995-07-15
- latest date of withdrawal of conflicting national standards (dow) 1995-07-15

Wherever this standard refers to "Generic Specification", HD 608 S1:1992 is meant.

NOTE: This HD 608 will be updated into a European Standard.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 50169:1996](https://standards.iteh.ai/catalog/standards/sist/42145fc6-f82f-4870-803b-529a089daa9f/sist-en-50169-1996)

<https://standards.iteh.ai/catalog/standards/sist/42145fc6-f82f-4870-803b-529a089daa9f/sist-en-50169-1996>

CONTENTS

	Page
1. GUIDE TO USE	5
1.1 Scope	5
1.2 Introduction	5
1.3 Installation considerations	5
1.4 Object	5
2. DEFINITIONS AND REQUIREMENTS	5
2.1 General	5
2.2 Reference publications	5
2.3 Definitions	6
2.4 Materials and cable construction	6
2.4.1 General	6
2.4.2 Cable construction	6
2.4.3 Conductor	6
2.4.4 Insulation	6
2.4.5 Cable element	6
2.4.6 Screening of the cable element	6
2.4.7 Colour code of insulation	6
2.4.8 Cable make-up	7
2.4.9 Screening of the cable core	7
2.4.10 Sheath	7
2.4.11 Colour of sheath	7
2.4.12 Identification	7
2.4.13 Finished cable	7
2.4.14 Cable overall diameter	7
3. CHARACTERISTICS AND REQUIREMENTS	7
3.1 General	7
3.2 Electrical tests	8
3.2.1 Conductor resistance	8
3.2.2 Resistance unbalance	8
3.2.3 Dielectric strength	8
3.2.4 Insulation resistance	8
3.2.5 Mutual capacitance	8
3.2.6 Capacitance unbalance	8
3.2.7 Transfer impedance	8
3.3 Transmission characteristics	8
3.3.1 Velocity of propagation	8
3.3.2 Attenuation	9
3.3.3 Unbalance attenuation	9
3.3.4 Near-end crosstalk	9
3.3.5 Far-end crosstalk	9
3.3.6 Characteristics impedance	10
3.3.7 Structural Return Loss (SRL)	10
3.3.8 Longitudinal to Differential Conversion Loss (LCL)	10
3.4 Mechanical and dimension characteristics and requirements	10
3.4.1 Dimensional requirements	10
3.4.2 Elongation at break of conductors	10
3.4.3 Elongation and tensile strength at break of the insulation	10
3.4.4 Elongation and tensile strength at break of sheath	10
3.4.5 Crushing of the cable	10
3.4.6 Impact of the cable	10
3.4.7 Repeated bending of the cable	10
3.4.8 Tensile performance of the cable	10

3.5	Environmental Characteristics	10
3.5.1	Shrinkage of insulation	10
3.5.2	Wrapping of insulation after thermal ageing	10
3.5.3	Bending of insulation at low temperature	11
3.5.4	Elongation and tensile strength at break of the sheath after ageing	11
3.5.5	Sheath pressure test at high temperature	11
3.5.6	Cold bend of the cable	11
3.5.7	Heat shock	11
3.5.9	Flame propagation characteristics of bunched cables	11
3.5.10	Acid gas evolution	11
3.5.11	Smoke generation	11
3.5.12	Toxic gas emission	11
4.	QUALITY ASSESSMENT PROCEDURES	11
ANNEX A	Attenuation and NEXT (informative)	12

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 50169:1996](https://standards.iteh.ai/catalog/standards/sist/42145fc6-f82f-4870-803b-529a089daa9f/sist-en-50169-1996)

<https://standards.iteh.ai/catalog/standards/sist/42145fc6-f82f-4870-803b-529a089daa9f/sist-en-50169-1996>

1 GUIDE TO USE

1.1 Scope

This standard refers to HD 608 S1:1992, Generic specification for symmetrical pair/quad or multicore cables for digital communications. It covers individually screened or unscreened pair(s) or quad(s) in cables for vertical shafts or vertically between floors (riser backbone cables) or in horizontal between buildings (campus backbone cables). In the same cable both screened and unscreened elements may be used. When installed vertically extra strength requirements may be applicable and are defined in the detail specifications. The cables shall be provided with a common overall screen. These cables are suitable for different communication systems to which reference is made in the detail specifications.

The cables covered by this specification are intended to operate with voltages and currents normally adopted for communication systems. These cables shall not be connected to low impedance sources, for example, the public mains electricity supply.

1.2 Introduction

See Generic Specification.

1.3 Installation considerations

See Generic Specification.

1.4 Object

The cables specified in this standard shall meet the requirements of the Generic Specification. This sectional specification may be supplemented with specific specifications given additional information if required by a particular application (e.g. regarding safety and reliability conditions.).

2 DEFINITIONS AND REQUIREMENTS

2.1 General

See Generic Specification.

2.2 Reference publications

Add to 2.2.1 of the Generic Specification:

HD 602	Test on gases evolved during the combustion of materials from cables - Part 2: Determination of degree of acidity (corrosivity) of gases by measuring pH and conductivity (IEC 754-2)
HD 606.1	Measurement of smoke density of electric cables under defined conditions Part 1: Test apparatus (IEC 1034-1 modified)
HD 606.2	Part 2: Test procedures and requirements (IEC 1034-2 modified)
HD 624	Materials used in communication cables
HD 623.3	Part 3: PE insulation
HD 624.4	Part 4: PE sheathing (in preparation)
HD 624.5	Part 5: Polypropylene insulation compounds (in preparation)
HD 624.6	Part 6: Halogen free flame-retardant insulation compounds (in preparation)
HD 624.7	Part 7: Halogen free flame-retardant thermoplastic sheathing compound
IEC 96-1	Radio frequency cables - Part 1: General requirements and measuring methods
IEC 189	Low-frequency cables and wires with PVC insulation and PVC sheath
IEC 344	Guide to the calculation of resistance of plain and coated copper conductors of low-frequency cables and wires

Add to 2.2.2 of the Generic Specification:

ITU G 117	Transmission aspects of unbalance about earth (definitions and methods)
-----------	---

Page 6
EN 50169:1994

2.3 Definitions

See Generic Specification.

2.4 Materials and cable construction

2.4.1 General

See Generic Specification.

2.4.2 Cable construction

See Generic Specification.

2.4.3 Conductor

The conductor shall consist of annealed copper.

The conductor shall be solid. The nominal diameter shall be between 0,5 mm and 0,8 mm.

The conductor shall be plain or metal coated.

2.4.4 Insulation

The conductor shall be insulated with a suitable thermoplastic material meeting the requirements specified in the relevant detail specification.

Materials are:

- Polyolefin (HD 624.3 and HD 624.5)
- Low smoke zero halogen thermoplastic material (HD 624.6)

The insulation may be solid or cellular with or without a solid dielectric skin. The insulation shall be continuous and shall have a thickness such that the completed cable meets the electrical requirements specified in the relevant detail specifications. The maximum overall diameter of the insulated conductor and conductor eccentricity shall be compatible with the method of conductor connection as specified in the relevant detail specification.

2.4.5 Cable element

The cable element shall be a pair or a quad. The maximum length of lay in the finished cable shall not exceed 150 mm.

NOTE: Forming the element with a variable lay, for example with SZ stranding, can lead to the infrequent but acceptable occurrence of the maximum lay being longer than specified.

2.4.6 Screening of the cable element

When required in the relevant specification a screen for the cabling element shall be provided. The screen shall be in accordance with subclause 2.4.6 of the Generic Specification.

Where a copper braid is used it shall have a minimum filling factor of 0,41 (65% coverage). Where a tape and braid screen is used the minimum filling factor of the braid shall be 0,16 (30% coverage). The filling factor is defined in the Generic Specification.

2.4.7 Colour code of insulation

The colour code shall be indicated in the relevant detail specification. The colours shall be readily identifiable and the shade of colour shall correspond reasonably with the standard colours shown in HD 402 (IEC 304).

2.4.8 Cable make-up

The cable elements shall be assembled into a core or into units which are further assembled to form the cable core.

Each unit shall be helically wrapped with a colour coded, non-hygroscopic binder. The colour code shall be indicated in the relevant detail specification. When required in the relevant detail specification a screen for the unit shall be provided. The screen shall be in accordance with subclause 2.4.9 of Generic Specification.

The core of the cable may be wrapped with a protective layer of non-hygroscopic material.

2.4.9 Screening of the cable core

The screen shall be in accordance with subclause 2.4.9 of the Generic Specification. Where a copper braid is used it shall have a minimum filling factor of 0,41 (65% coverage). Where a tape and braid screen is used the minimum filling factor of the braid shall be 0,16 (30% coverage). The filling factor is defined in the Generic Specification.

2.4.10 Sheath

The sheath material shall consist of a low smoke zero halogen thermoplastic material meeting the requirements specified in the relevant specification.

Materials are:

- Polyolefin for campus backbone cables (HD 624.4)
- Low smoke zero halogen thermoplastic material for building backbone cables (HD 624.7)

The sheath shall be continuous having a thickness as uniform as possible and with a value indicated in the relevant detail specification.

A non-metallic rip cord may be provided.

2.4.11 Colour of sheath

See Generic Specification.

2.4.12 Identification

Colour code preferable in accordance with IEC 189.

2.4.13 Finished cable

See Generic Specification.

2.4.14 Cable overall diameter

The overall diameter of the cable shall not exceed the value specified in the relevant detail specifications.

3 CHARACTERISTICS AND REQUIREMENTS

3.1 General

The relevant detail specification defines the performance criteria of a cable and shall indicate the limits required for tests which shall be selected from the following. The test methods shall be in accordance with the Generic Specification unless otherwise specified.

NOTE: For any cable not all the tests listed may be required.