
Multi-element metallic cables used in analogue and digital communication and control - Part 3-2: Sectional specification for unshielded cables characterized up to 100 MHz - Work area and patch cord cables

Multi-element metallic cables used in analogue and digital communication and control -- Part 3-2: Sectional specification for unshielded cables characterized up to 100 MHz - Work area and patch cord cables

Mehradrige metallische Daten- und Kontrollkabel für analoge und digitale Übertragung -- Teil 3-2: Rahmenspezifikation für ungeschirmte Kabel bis 100 MHz - Geräteanschlußkabel und Schaltkabel

[SIST EN 50288-3-2:2002](https://standards.iteh.ai/catalog/standards/sist/1213099a-1b58-461e-8314-1213099a-1b58-461e-8314)

Câbles métalliques à éléments multiples utilisés pour les transmissions et les commandes analogiques et numériques -- Partie 3-2: Spécification intermédiaire pour les câbles non blindés pour applications jusqu'à 100 MHz - Câbles de zone de travail et de brassage

Ta slovenski standard je istoveten z: EN 50288-3-2:2001

ICS:

33.120.20 žarnice in kablovi Wires and symmetrical cables

SIST EN 50288-3-2:2002**en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 50288-3-2:2002

<https://standards.iteh.ai/catalog/standards/sist/1213099a-1b58-461e-8314-d628a23eb1fb/sist-en-50288-3-2-2002>

EUROPEAN STANDARD

EN 50288-3-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2001

ICS 33.120.20

English version

Multi-element metallic cables used in analogue and digital communication and control
Part 3-2: Sectional specification for unshielded cables characterized up to 100 MHz -
Work area and patch cord cables

Câbles métalliques à éléments multiples utilisés pour les transmissions et les commandes analogiques et numériques

Partie 3-2: Spécification intermédiaire pour les câbles non blindés pour applications jusqu'à 100 MHz -

Câbles de zone de travail et de brassage

Mehradrige metallische Daten- und Kontrollkabel für analoge und digitale Übertragung

Teil 3-2: Rahmenspezifikation für ungeschirmte Kabel bis 100 MHz - Geräteanschlußkabel und Schaltkabel

<https://standards.iteh.ai/catalog/standards/sist/1213099a-1b58-461e-8314-d628a23eb1fb/sist-en-50288-3-2-2002>

This European Standard was approved by CENELEC on 1999-10-01. 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, Czech Republic, 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 SC 46XC, Multicore, Multipair and Quad Data communication cables, of 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 50288-3-2 on 1999-10-01.

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) 2001-09-01
- latest date by which national standards conflicting with the EN have to be withdrawn (dow) 2002-10-01

This part 3-2 is to be used in conjunction with EN 50288-1.

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 50288-3-2:2002

<https://standards.iteh.ai/catalog/standards/sist/1213099a-1b58-461e-8314-d628a23eb1fb/sist-en-50288-3-2-2002>

Contents

1	Scope	4
2	Normative references	4
3	Definitions	4
4	Cable construction	4
4.1	Conductor.....	4
4.2	Insulation	4
4.3	Cabling elements.....	5
4.4	Identification of cabling elements	5
4.5	Screening of cabling elements	5
4.6	Cable make-up	5
4.7	Filling compound	5
4.8	Interstitial fillers.....	5
4.9	Screening of the cable core.....	5
4.10	Moisture barriers.....	5
4.11	Wrapping layers	5
4.12	Sheath.....	5
5	Tests and requirements for completed cables	5
5.1	Electrical tests	6
5.2	Mechanical tests.....	7
5.3	Environmental tests	7
5.4	Fire performance tests.....	7

STANDARD PREVIEW

(standards.iteh.ai)

SIST EN 50288-3-2:2002

https://standards.iteh.ai/catalog/standards/sist-en-50288-3-2-2002

1 Scope

This sectional specification covers unscreened cables, characterised up to 100 MHz, intended for work area cables to connect a telecommunications outlet to the terminal equipment and for patch cord cables to establish connections on a patch panel as defined in EN 50173. Work area cables may also be used as patch cord cables in any distributor of a generic building wiring system to interconnect with equipment or to cross-connect between cabling systems.

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

This sectional specification is to be read in conjunction with EN 50288-1, the generic specification for multi-element metallic cables used in analogue and digital communication and control, which contains the essential provisions for its application.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 50173	Information technology - Generic cabling systems
IEC 60189-2	Low-frequency cables and wires with PVC insulation and PVC sheath Part 2: Cables in pairs, triples, quads and quintuples for inside installations
IEC 60344	Guide to the calculation of resistance of plain and coated copper conductors of low-frequency cables and wires

3 Definitions

For the purposes of this European Standard, the definitions given in 50288-1 apply.

4 Cable construction

4.1 Conductor

The conductor shall be solid or stranded and meet the requirements of 4.1 of EN 50288-1. The stranded conductor shall consist of seven wires each with a nominal diameter of $\geq 0,12$ mm to $\leq 0,21$ mm. The conductor shall be plain or metal coated.

4.2 Insulation

The insulation shall be either:

- polyolefin (polyethylene or polypropylene to the relevant parts of EN 50290-2), or
- low smoke zero halogen thermoplastic material to the relevant part of EN 50290-2.

The insulation shall meet the requirements of 4.2 of EN 50288-1.

4.3 Cabling elements

The cable element shall be a pair or a quad.

4.4 Identification of cabling elements

Unless otherwise specified, the colour coding for identification is given in IEC 60189-2. The colours shall meet the requirements of 4.4 of EN 50288-1.

4.5 Screening of cabling elements

Not applicable

4.6 Cable make-up

The cable elements shall be laid up in concentric layer(s) or unit(s) to form the cable core.

4.7 Filling compound

Not applicable

4.8 Interstitial fillers

Where fillers are used they shall meet the requirements of 4.8 of EN 50288-1.

4.9 Screening of the cable core

Not applicable

4.10 Moisture barriers

Not applicable

4.11 Wrapping layers

Where wrapping layers are used they shall be in accordance with 4.11 of EN 50288-1.

4.12 Sheath

The sheath shall consist of low smoke halogen free flame retardant thermoplastic material in accordance with the relevant part of EN 50290-2.

The sheath shall meet the requirements of 4.12 of EN 50288-1.

5 Tests and requirements for completed cables

When tested as directed by EN 50288-1 the limits given in the tables of this standard shall apply.

5.1 Electrical tests

5.1.1 Low-frequency and d.c. electrical measurements

EN 50288-1 clause no.	Parameter	Requirement
5.1.1.1	Conductor loop resistance	The maximum value shall be calculated in accordance with IEC 60344 and shall be $\leq 45 \Omega/100 \text{ m}$
5.1.1.2	Conductor resistance unbalance	$\leq 3\%$
5.1.1.3	Dielectric strength conductor/conductor	1 kV d.c. or 700 V a.c. for 1 min or 2,5 kV d.c. or 1,7 kV a.c. for 2 sec.
5.1.1.4	Insulation resistance	$\geq 500 \text{ M}\Omega \text{ km}$
5.1.1.5	Mutual capacitance	No requirement specified
5.1.1.6	Capacitance unbalance to earth	$\leq 1600 \text{ pF/km}$

5.1.2 High-frequency electrical and transmission measurements

EN 50288-1 clause no.	Parameter	Requirement																		
5.1.2.1	Velocity of propagation	$\geq 0,60 \text{ c}$ at 1 Mhz $\geq 0,65 \text{ c}$ at 10 Mhz $\geq 0,65 \text{ c}$ at 100 MHz																		
5.1.2.2	Propagation delay difference (skew)	$\leq 40 \text{ ns}/100 \text{ m}$ at 100 MHz f.f.s																		
5.1.2.3	Attenuation ¹⁾	<table border="1"> <thead> <tr> <th>1</th> <th>4</th> <th>10</th> <th>16</th> <th>20</th> <th>31,25</th> <th>62,5</th> <th>100</th> <th>MHz</th> </tr> </thead> <tbody> <tr> <td>3,2</td> <td>6,5</td> <td>9,9</td> <td>12,3</td> <td>13,8</td> <td>17,7</td> <td>25,7</td> <td>33,0</td> <td>dB/100m</td> </tr> </tbody> </table>	1	4	10	16	20	31,25	62,5	100	MHz	3,2	6,5	9,9	12,3	13,8	17,7	25,7	33,0	dB/100m
1	4	10	16	20	31,25	62,5	100	MHz												
3,2	6,5	9,9	12,3	13,8	17,7	25,7	33,0	dB/100m												
5.1.2.4	Attenuation unbalance, near end (LCL)	$\geq 40 \text{ dB}$ at 1 Mhz $\geq 30 \text{ dB}$ at 10 Mhz f.f.s $\geq 20 \text{ dB}$ at 100 Mhz f.f.s																		
5.1.2.5	Near-end crosstalk ²⁾	<table border="1"> <thead> <tr> <th>1</th> <th>4</th> <th>10</th> <th>16</th> <th>20</th> <th>31,25</th> <th>62,5</th> <th>100</th> <th>MHz</th> </tr> </thead> <tbody> <tr> <td>62</td> <td>53</td> <td>47</td> <td>44</td> <td>42</td> <td>40</td> <td>35</td> <td>32</td> <td>dB</td> </tr> </tbody> </table>	1	4	10	16	20	31,25	62,5	100	MHz	62	53	47	44	42	40	35	32	dB
1	4	10	16	20	31,25	62,5	100	MHz												
62	53	47	44	42	40	35	32	dB												
5.1.2.6	Far-end crosstalk	Not applicable																		
5.1.2.7	Power sum (PS)	Not applicable																		
5.1.2.8	Characteristic impedance ³⁾	Input impedance, $(100 \pm 15) \Omega$ from 1 MHz to 100 MHz Mean impedance, $(100 \pm 10) \Omega$ from 10 MHz to 100 MHz																		
5.1.2.9	Return loss ³⁾	$\geq 23 \text{ dB}$ from 10 MHz to 100 MHz																		
5.1.2.10	Coupling attenuation	$\geq 40 \text{ dB}$ from 30 MHz to $\leq 100 \text{ MHz}$ f.f.s $[\geq 40 - 20\log_{10}(f/100)] \text{ dB}$ $>100 \text{ MHz}$ to 1000 MHz f.f.s																		
<p>1) The attenuation shall be better than or equal to a curve fitting the specified values over the whole frequency range.</p> <p>2) The near-end crosstalk shall be better or equal to a curve fitting the specified values over the whole frequency range.</p> <p>3) EITHER the input impedance shall be measured OR the mean impedance AND return loss shall be measured. For the measurement of return loss a test sample having a round trip loss $\geq 40 \text{ dB}$ at any measured frequency shall be used.</p>																				