SLOVENSKI STANDARD
SIST EN 50173-1:2008/oprAA:2008

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Informacijska tehnologija - Univerzalni sistemi pokabljenja - 1. del: Splošne zahteve

Information technology - Generic cabling systems - Part 1: General requirements

Informationstechnik - Anwendungsneutrale Kommunikationskabelanlagen - Teil 1: Allgemeine Anforderungen

Technologies de l'information - Systèmes de câblage générique - Partie 1: Exigences générales

Ta slovenski standard je istoveten z: **EN 50173-1:2007/prAA:2008**

ICS:

33.040.50	Vodi, zveze in tokokrogi	Lines, connections and circuits

SIST EN 50173-1:2008/oprAA:2008 **en**

EUROPEAN STANDARD

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English version

Information technology - Generic cabling systems - Part 1: General requirements

Technologies de l'information - Systèmes de câblage générique - Partie 1: Exigences générales

Informationstechnik - Anwendungsneutrale Kommunikationskabelanlagen - Teil 1: Allgemeine Anforderungen

This draft amendment prAA, if approved, will modify the European Standard EN 50173-1:2007; it is submitted to CENELEC members for CENELEC enquiry.
Deadline for CENELEC: 2008-11-14.

It has been drawn up by CLC/TC 215.

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

This draft amendment 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 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

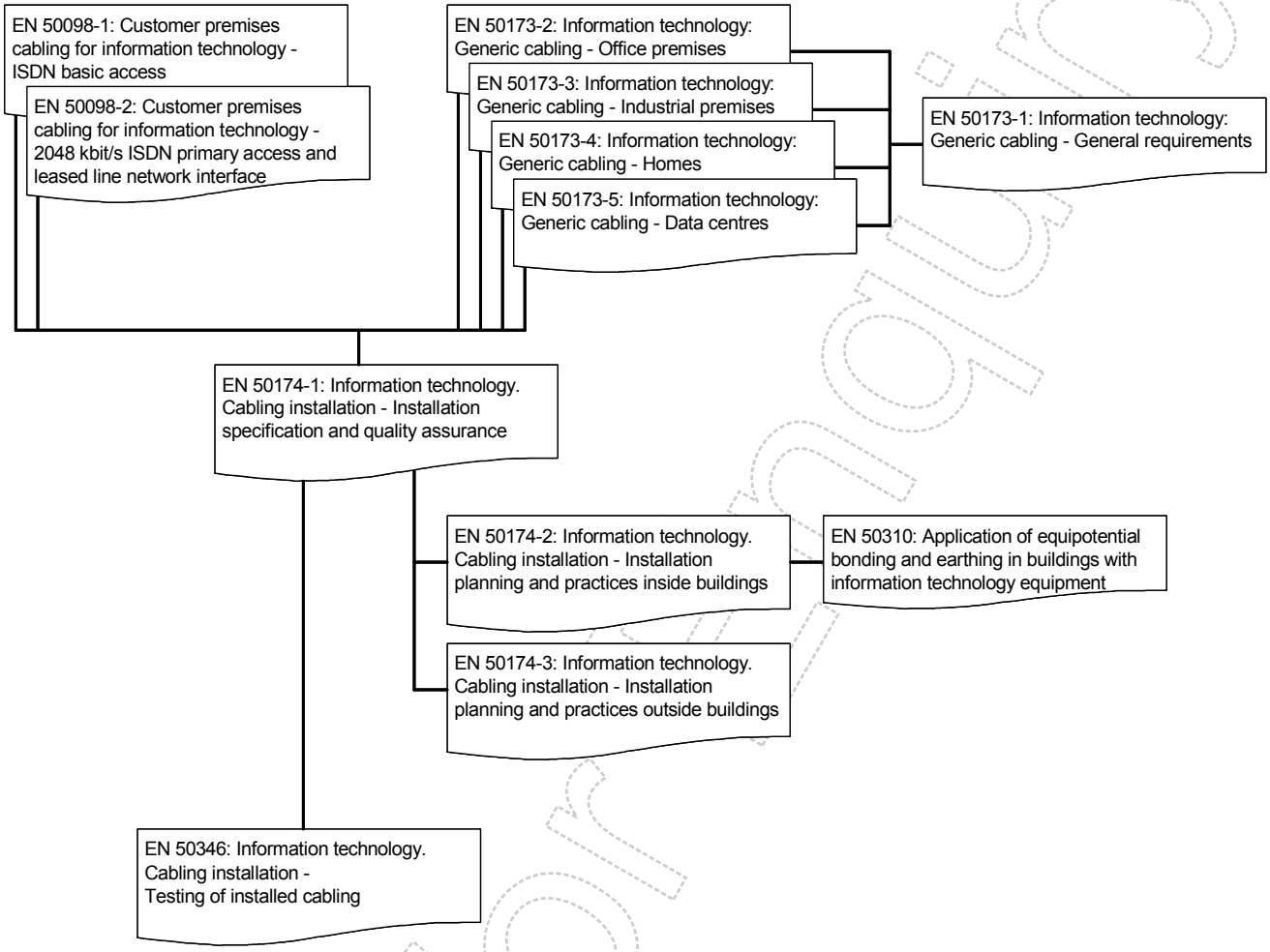
This draft amendment to the European Standard EN 50173-1:2007 was prepared by the Technical Committee CENELEC TC 215, Electrotechnical aspects of telecommunication equipment. It is submitted to the CENELEC members for CENELEC enquiry.

This draft introduces, among others, new channel classes E_A and F_A, resulting in an amendment of many tables in Clause 5. For convenience of the reader of this draft, the pertinent tables are reproduced in total, with light grey shading of new rows and (or) lines. Comments are to be addressed to these grey rows and (or) lines only. Furthermore, the draft contains changes resulting from liaison between CLC/TC 215 and CLC/TC 209 regarding residential cabling.

Line numbers have been added to ease the commenting during CENELEC enquiry; they will be suppressed in the definitive version of the document.

12 ***Introduction***

13 **Replace** Figure 1 **by:**



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15 NOTE CLC/TC 215 has also produced a Technical Report CLC/TR 50173-99-1 “Cabling guidelines in support of 10 GBASE-T”.

16 **Figure 1 – Schematic relationship between the EN 50173 series and other relevant standards**

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18 **Replace** Table 1 **by:**

19 **Table 1 – Contextual relationship between EN 50173 series and other relevant standards**

Building design phase	Generic cabling design phase	Specification phase	Installation phase	Operation phase
EN 50310 5.2: Common bonding network (CBN) within a building 6.3: AC distribution system and bonding of the protective conductor (TN-S)	**EN 50173 series except EN 50173-4** 4: Structure 5: Channel performance 7: Cable requirements 8: Connecting hardware requirements 9: Requirements for cords and jumpers Annex A: Link performance limits **and EN 50173-4** 4 and 5: Structure 6: Channel performance 8: Cable requirements 9: Connecting hardware requirements 10: Requirements for cords and jumpers Annex A: Link performance limits	**EN 50174-1** 4 Requirements for specifying installations of information technology cabling 5: Requirements for installers of information technology cabling **Planning phase** **EN 50174-2** 4: Requirements for planning installations of information technology cabling 6: Segregation of metallic information technology cabling and mains power cabling 7: Mains power and lightning protection **and EN 50174-3** **and** (for equipotential bonding) **EN 50310** 5.2: Common bonding network (CBN) within a building 6.3: AC distribution system and bonding of the protective conductor (TN-S)	**EN 50174-2** 5: Requirements for the installation of information technology cabling 6: Segregation of metallic information technology cabling and mains power cabling **and EN 50174-3** **and** (for equipotential bonding) **EN 50310** 5.2: Common bonding network (CBN) within a building 6.3: AC distribution system and bonding of the protective conductor (TN-S) **and EN 50346** 4: General requirements 5: Test parameters for balanced cabling 6: Test parameters for optical fibre cabling	**EN 50174-1** 4 Requirements for specifying installations of information technology cabling

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2 Normative references

Replace EN 61196-3 **by**:

EN 50117-X, *Coaxial cables – Part X*

Amend EN 60793-2-10 to read:

EN 60793-2-10:2007, *Optical fibres – Part 2-10: Product specifications – Sectional specification for category A1 multimode fibres (IEC 60793-2-10:2007)*

Add the following references:

ISO/IEC TR 29106, *Information technology - Generic cabling - Introduction to the MICE environmental classification*

CLC/TR 50173-99-1, *Cabling guidelines in support of 10 GBASE-T*

3.1 Definitions

Add the following definitions and **renumber** the existing definitions accordingly:

3.1.2
alien (exogenous) crosstalk
signal coupling from a disturbing pair of a channel to a disturbed pair of another channel

NOTE This also applies to the signal coupling from a disturbing pair within a permanent link or component, used to create a channel, to a disturbed pair within a permanent link or component, used to create another channel.

3.1.3
alien (exogenous) far-end crosstalk loss (AFEXT)
signal isolation between a disturbing pair of a channel and a disturbed pair of another channel, measured at the far-end

NOTE This also applies to the measurement of the signal isolation between a disturbing pair within a permanent link or component, used to create a channel, and a disturbed pair within a permanent link or component, used to create another channel.

3.1.4
alien (exogenous) near-end crosstalk loss (ANEXT)
signal isolation between a disturbing pair of a channel and a disturbed pair of another channel, measured at the near-end

NOTE This also applies to the measurement of signal isolation between a disturbing pair within a permanent link or component, used to create a channel, and a disturbed pair within a permanent link or component, used to create another channel.

3.1.6
attenuation to alien (exogenous) crosstalk ratio at the far-end (AACR-F)
difference, in dB, between the alien far-end crosstalk loss from a disturbing pair of a channel and the insertion loss of a disturbed pair in another channel

NOTE This also applies to the calculation using the alien far-end crosstalk loss from a disturbing pair within a permanent link or component, used to create a channel, and the insertion loss of a disturbed pair within a permanent link or component, used to create another channel.

3.1.7
attenuation to alien (exogenous) crosstalk ratio at the near-end (AACR-N)
difference, in dB, between the alien near-end crosstalk loss from a disturbing pair of a channel and the insertion loss of a disturbed pair in another channel

NOTE This also applies to the calculation using the alien near-end crosstalk loss from a disturbing pair within a permanent link or component, used to create a channel, and the insertion loss of a disturbed pair within a permanent link or component, used to create another channel.

3.1.8
attenuation to crosstalk ratio at the far-end (ACR-F)
difference, in dB, between the far-end crosstalk loss from a disturbing pair of a channel and the insertion loss of a disturbed pair of the same channel

NOTE This also applies to the calculation using the far-end crosstalk loss from a disturbing pair within a permanent link or component, used to create a channel, and the insertion loss of a disturbed pair within the permanent link or component, of the same channel.

3.1.9
attenuation to crosstalk ratio at the near-end (ACR-N)
difference, in dB, between the near-end crosstalk loss from a disturbing pair of a channel and the insertion loss of a disturbed pair of the same channel

NOTE This also applies to the calculation using the near-end crosstalk loss from a disturbing pair within a permanent link or component, used to create a channel, and the insertion loss of a disturbed pair within the permanent link or component, of the same channel.

3.1.10
average alien (exogenous) near-end crosstalk loss
calculated average of the alien near-end crosstalk loss of the pairs of a disturbed channel

NOTE This also applies to the calculation using the pairs within a permanent link, used to create a channel.

3.1.11
average power sum alien (exogenous) near-end crosstalk loss
calculated average of the power sum alien near-end crosstalk loss of the pairs of a disturbed channel

NOTE This also applies to the calculation using the pairs within a permanent link used to create a channel.

3.1.12
average power sum attenuation to alien (exogenous) crosstalk ratio far-end
calculated average of the power sum attenuation to alien crosstalk ratio at the far-end of the pairs of a disturbed channel

NOTE This also applies to the calculation using the pairs within a permanent link used to create a channel.

Replace definition 3.1.26 (renumbered 3.1.36) **by**:

3.1.36
external network interface
termination point providing external network demarcation

Add the following definitions and **renumber** the existing definitions accordingly:

3.1.57
power sum alien (exogenous) far-end crosstalk loss (PSAFEXT)
power sum of the signal isolation between multiple disturbing pairs of one or more channels and a disturbed pair of another channel, measured at the far-end

NOTE This also applies to the calculation using the multiple disturbing pairs within one or more permanent links or components and a disturbed pair within a permanent link or component, used to create another channel.

3.1.58
power sum alien (exogenous) near-end crosstalk loss (PSANEXT)
power sum of the signal isolation between multiple disturbing pairs of one or more channels and a disturbed pair of another channel, measured at the near-end

NOTE This also applies to the calculation using the multiple disturbing pairs within one or more permanent links or components and a disturbed pair within a permanent link or component, used to create another channel.

3.1.59
power sum attenuation to alien (exogenous) crosstalk ratio at the far-end (PSAACR-F)
difference, in dB, between the power sum alien far-end crosstalk loss from multiple disturbing pairs of one or more channels and the insertion loss of a disturbed pair in another channel

NOTE This also applies to the calculation using the multiple disturbing pairs within one or more permanent links or components and the insertion loss of a disturbed pair within a permanent link or component, used to create another channel.

3.1.60
power sum attenuation to alien (exogenous) crosstalk ratio at the near-end(PSAACR-N)
difference, in dB, between the power sum alien near-end crosstalk loss from multiple disturbing pairs of one or more channels and the insertion loss of a disturbed pair in another channel

NOTE This also applies to the calculation using the multiple disturbing pairs within one or more permanent links or components and the insertion loss of a disturbed pair within a permanent link or component, used to create another channel.

3.1.61
power sum attenuation to crosstalk ratio at the far-end (PSACR-F)
difference, in dB, between the power sum far-end crosstalk loss from multiple disturbing pairs of a channel and the insertion loss of a disturbed pair in the same channel

NOTE This also applies to the calculation using the multiple disturbing pairs within one or more permanent links or components, used to create a channel, and the insertion loss of a disturbed pair within a permanent link or component, of the same channel.

3.1.62
power sum attenuation to crosstalk ratio at the near-end (PSACR-N)
difference, in dB, between the power sum near-end crosstalk loss from multiple disturbing pairs of a channel and the insertion loss of a disturbed pair in the same channel

NOTE This also applies to the calculation using the multiple disturbing pairs within one or more permanent links or components, used to create a channel, and the insertion loss of a disturbed pair within a permanent link or component, of the same channel.

3.2 Abbreviations

Replace ACR and PSACR **by**:

ACR-N	Attenuation to crosstalk ratio at the near-end
PSACR-N	Power sum attenuation to crosstalk ratio at the near-end

Delete ELFEXT and PSELFEXT.

Add the following abbreviations:

AACR-F	Attenuation to alien (exogenous) crosstalk ratio at the far-end
ACR-F	Attenuation to crosstalk ratio at the far-end
AFEXT	Alien (exogenous) far-end crosstalk loss
ANEXT	Alien (exogenous) near-end crosstalk loss
FEXT	Far-end crosstalk loss
α	Insertion loss
α_{avg}	Average insertion loss
PSAACR-F	Power sum attenuation to alien (exogenous) crosstalk ratio at the far-end

PSAACR-F$_{avg}$	Average power sum attenuation to alien (exogenous) crosstalk ratio at the far-end
PSACR-F	Power sum attenuation to crosstalk ratio at the far-end
PSAFEXT	Power sum alien (exogenous) far-end crosstalk loss
PSAFEXT$_{norm}$	Normalised power sum alien (exogenous) far-end crosstalk loss
PSANEXT	Power sum alien (exogenous) near-end crosstalk loss
PSANEXT$_{avg}$	Average power sum alien (exogenous) near-end crosstalk loss

5.1.2 Environmental classifications

Replace in the 2nd paragraph “Annex G” **by** “ISO/IEC TR 29106”.

5.2.2.1 General

Replace the 1st and 2nd paragraphs **by**:

This standard specifies the following classes for balanced cabling:

a) Class A: specified up to 0,1 MHz;
b) Class B: specified up to 1 MHz;
c) Class C: specified up to 16 MHz;
d) Class D: specified up to 100 MHz;
e) Class E: specified up to 250 MHz;
f) Class E_A: specified up to 500 MHz;
g) Class F: specified up to 600 MHz;
h) Class F_A: specified up to 1 000 MHz.

A Class A channel is specified so that it will provide the minimum transmission performance to support Class A applications. Similarly, Class B, C, D, E, E_A, F and F_A channels provide the transmission performance to support Class B, C, D, E, E_A, F and F_A applications respectively. Channels of a given class will support all applications of a lower class. Class A is regarded as the lowest class.

5.2.2.2 Return loss

Replace the 1st paragraph **by**:

The variation of the input impedance of a channel is characterised by the return loss. The return loss parameter is applicable to Classes C, D, E, E_A, F, F_A and BCT-B only. The return loss for each pair of a channel shall meet the limits computed, to one decimal place, using the formulae of Table 4. The limits shown in Table 5 are derived from the formulae at key frequencies only.

159 **Replace** Table 4 and Table 5 **by**:

160 **Table 4 – Formulae for return loss limits for a channel**

Class	Frequency MHz	Minimum return loss dB
C	$1 \le f \le 16$	15,0
D	$1 \le f < 20$	17,0
	$20 \le f \le 100$	$30 - 10 \times \lg f$
E	$1 \le f < 10$	19,0
	$10 \le f < 40$	$24 - 5 \times \lg f$
	$40 \le f \le 250$	$32 - 10 \times \lg f$
E_A	$1 \le f < 10$	19,0
	$10 \le f < 40$	$24 - 5 \times \lg f$
	$40 \le f < 398,1$	$32 - 10 \times \lg f$
	$398,1 \le f \le 500$	6,0
F	$1 \le f < 10$	19,0
	$10 \le f < 40$	$24 - 5 \times \lg f$
	$40 \le f < 251,2$	$32 - 10 \times \lg f$
	$251,2 \le f \le 600$	8,0
F_A	$1 \le f < 10$	19,0
	$10 \le f < 40$	$24 - 5 \times \lg f$
	$40 \le f < 251,2$	$32 - 10 \times \lg f$
	$251,2 \le f < 631$	8,0
	$631 \le f \le 1\,000$	$36 - 10 \times \lg f$
BCT-B	$4 \le f < 10$	19,0
	$10 \le f < 100$	$24 - 5 \times \lg f$
	$100 \le f < 251,2$	$29 - 7,5 \times \lg f$
	$251,2 \le f < 600$	$17,2 - 2,6 \times \lg f$
	$600 \le f \le 1\,000$	$35 - 9 \times \lg f$

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162 **Table 5 – Return loss limits for a channel at key frequencies**

Frequency MHz	Minimum return loss dB							
	0,1	**1,0**	**16,0**	**100,0**	**250,0**	**500,0**	**600,0**	**1 000,0**
Class C	N/A	15,0	15,0	N/A	N/A	N/A	N/A	N/A
Class D	N/A	17,0	17,0	10,0	N/A	N/A	N/A	N/A
Class E	N/A	19,0	18,0	12,0	8,0	N/A	N/A	N/A
Class E_A	N/A	19,0	18,0	12,0	8,0	6,0	N/A	N/A
Class F	N/A	19,0	18,0	12,0	8,0	8,0	8,0	N/A
Class F_A	N/A	19,0	18,0	12,0	8,0	8,0	8,0	6,0
Class BCT-B	N/A	19,0	18,0	14,0	11,0	10,2	10,0	8,0

163 ***5.2.2.3 Insertion loss***

164 **Replace** Table 6 and Table 7 **by**:

165 **Table 6 – Formulae for insertion loss limits for a channel**

Class	Frequency MHz	Maximum insertion loss dB
A	f = 0,1	16,0
B	f = 0,1	5,5
	f = 1	5,8
C	$1 \le f \le 16$	$1{,}05 \times \left(3{,}23 \times \sqrt{f}\right) + 4 \times 0{,}2$
D	$1 \le f \le 100$	$1{,}05 \times \left(1{,}910\ 8 \times \sqrt{f} + 0{,}022\ 2 \times f + 0{,}2/\sqrt{f}\right) + 4 \times 0{,}04 \times \sqrt{f}$, 4,0 min.
E	$1 \le f \le 250$	$1{,}05 \times \left(1{,}82 \times \sqrt{f} + 0{,}016\ 9 \times f + 0{,}25/\sqrt{f}\right) + 4 \times 0{,}02 \times \sqrt{f}$, 4,0 min.
E_A	$1 \le f \le 500$	$1{,}05 \times \left(1{,}82 \times \sqrt{f} + 0{,}009\ 1 \times f + 0{,}25/\sqrt{f}\right) + 4 \times 0{,}02 \times \sqrt{f}$, 4,0 min.
F	$1 \le f \le 600$	$1{,}05 \times \left(1{,}8 \times \sqrt{f} + 0{,}01 \times f + 0{,}2/\sqrt{f}\right) + 4 \times 0{,}02 \times \sqrt{f}$, 4,0 min.
F_A	$1 \le f \le 1\ 000$	$1{,}05 \times \left(1{,}8 \times \sqrt{f} + 0{,}005 \times f + 0{,}25/\sqrt{f}\right) + 4 \times 0{,}02 \times \sqrt{f}$, 4,0 min.
CCCB	f = 0,1	4,0
BCT-B-L	$1 \le f \le 1\ 000$	$0{,}139 \times \left(1{,}645 \times \sqrt{f} + 0{,}01 \times f + 0{,}25/\sqrt{f}\right) + 2 \times 0{,}02 \times \sqrt{f}$, 2,0 min.
BCT-B-M	$1 \le f \le 1\ 000$	$0{,}264 \times \left(1{,}645 \times \sqrt{f} + 0{,}01 \times f + 0{,}25/\sqrt{f}\right) + 2 \times 0{,}02 \times \sqrt{f}$, 2,0 min.
BCT-B-H	$1 \le f \le 1\ 000$	$0{,}514 \times \left(1{,}645 \times \sqrt{f} + 0{,}01 \times f + 0{,}25/\sqrt{f}\right) + 2 \times 0{,}02 \times \sqrt{f}$, 2,0 min.
NOTE Classes BCT-B-L, BCT-B-M and BCT-B-H introduce a slope between 47 MHz and 862 MHz of 7,2 dB, 12,8 dB and 24,1 dB respectively. See F.1 for supported applications.		

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