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Information technology - Generic cabling systems - Part 4: Homes

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 50173-4:2018 sisaldab Euroopa standardi EN 50173-4:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 50173-4:2018 consists of the English text of the European standard EN 50173-4:2018.
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English Version

Information technology - Generic cabling systems - Part 4: Homes

Technologies de l'information - Systèmes de câblage
générique - Partie 4: Locaux d'habitation

Informationstechnik - Anwendungsneutrale
Kommunikationskabelanlagen - Teil 4: Wohnungen

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Contents

European foreword	6
Introduction	8
1 Scope and conformance	11
1.1 Scope	11
1.2 Conformance	11
2 Normative references	12
3 Terms, definitions and abbreviations	13
3.1 Terms and definitions	13
3.2 Abbreviations	14
4 Structure of the generic cabling system in a home	14
4.1 General	14
4.2 Functional elements	14
4.3 Structure and hierarchy	14
4.4 Cabling subsystems	16
4.4.1 Home cabling subsystems	16
4.4.2 Associated cabling subsystems	17
4.5 Design objectives	18
4.5.1 General	18
4.5.2 Primary home cabling	18
4.5.3 Secondary home cabling	19
4.5.4 Network access cabling	19
4.6 Accommodation of functional elements	19
4.6.1 General	19
4.6.2 Application outlets	20
4.6.3 Distributors	20
4.6.4 Cables	20
4.7 Interfaces	20
4.7.1 Equipment interfaces (EIs) and test interfaces (TIs)	20
4.7.2 Channels and links	22
4.8 Dimensioning and configuration	22
4.8.1 Distributors	22
4.8.2 Cables	23
4.8.3 Connecting hardware	24
4.8.4 Equipment cords	24
4.8.5 Application outlets	24
4.8.6 External network interfaces	25
5 Requirements for channels in homes	26

5.1	General	26
5.2	Environmental performance	26
5.3	Transmission performance	26
5.3.1	General	26
5.3.2	Channel construction	26
5.3.3	Balanced cabling	27
5.3.4	Coaxial cabling	27
5.3.5	Optical fibre cabling channels	27
6	Reference implementations in homes	28
6.1	General	28
6.2	Balanced cabling channels	28
6.2.1	General	28
6.2.2	Component choice	28
6.2.3	Dimensions	29
6.3	Optical fibre cabling	30
6.3.1	General	30
6.3.2	Component choice	31
6.3.3	Dimensions	31
6.4	Coaxial cabling	32
7	Requirements for cables in homes	32
7.1	General	32
7.2	Balanced cables of Category 5, 6, 6A, 7, 7A, 8.1, 8.2 and BCT-B	32
7.2.1	General	32
7.2.2	Cables of Category 5, 6, 6A, 7, 7A, 8.1 and 8.2	32
7.2.3	Cables of Category BCT-B	33
7.3	Optical fibre cables of Category OM3, OM4, OM5, OS1a and OS2	33
7.4	Coaxial cables of Category BCT-C	33
8	Requirements for connecting hardware in homes	33
8.1	General requirements	33
8.2	Balanced connecting hardware	33
8.2.1	General requirements	33
8.2.2	Electrical, mechanical and environmental performance	33
8.3	Optical fibre connecting hardware	34
8.3.1	General requirements	34
8.3.2	Connecting hardware for optical fibres	34
8.4	Coaxial connecting hardware of Category BCT-C	34
8.4.1	General	34
8.4.2	Broadcast Outlet	34

8.4.3	Connecting hardware at other locations	34
9	Requirements for cords and jumpers in homes	35
9.1	Jumpers	35
9.2	Balanced cords of Category 5, 6, 6A, 7, 7A, 8.1, 8.2 and BCT-B	35
9.2.1	General	35
9.2.2	Additional requirements for certain cords	35
9.3	Optical fibre cords of Category OM3, OM4, OM5, OS1a and OS2	35
9.4	Coaxial cords of Category BCT-C	35
Annex A (normative) Link performance limits		36
A.1	General	36
A.2	Balanced cabling	36
A.3	Coaxial cabling	36
A.4	Optical fibre cabling	36
Annex B (informative) Application-specific bct outlets and baluns		37
B.1	TV outlets for coaxial cabling	37
B.1.1	Double outlet	37
B.1.2	Triple outlet	37
B.2	Baluns for tv applications using 100 ω balanced cabling channels	37
B.2.1	General	37
B.2.2	Impedance matching balun (100 Ω /75 Ω)	37
B.2.3	Impedance matching and frequency splitting balun	37
Annex C (informative) Application-specific networks for audio/video applications		38
C.1	General	38
C.2	Antenna-fed networks	38
C.3	Cable networks (CATV-, MATV- and SMATV-networks and individual receiving networks)	38
C.3.1	System performance of cable networks	38
C.3.2	Safety requirements for cable networks	38
C.3.3	EMC requirements for equipment and for cable networks	38
Annex D (informative) A-deviations		40
Bibliography		42
Figures		
Figure 1	— Schematic relationship between the EN 50173 series and other relevant standards	8
Figure 2	— Structure of the generic cabling system in a home	15
Figure 3	— Hierarchical topology of a generic cabling system in support of ICT and/or BCT applications	15
Figure 4	— Examples of interconnection of primary home and network access cabling	17
Figure 5	— Network access cabling in premises containing one or more homes	18
Figure 6	— Accommodation of functional elements	20
Figure 7	— Equipment and test interfaces in support of ICT and BCT applications	21
Figure 8	— Channels and permanent links within a home	23

Figure 9 — Reference implementations for ICT and BCT channels (PHD/SHD to TO/BO).....	29
Figure 10 — Primary/secondary home cabling channels.....	31
Tables	
Table 1 — Contextual relationship between EN 50173 series and other standards relevant for information technology cabling systems	9
Table 2 — Maximum channel lengths for reference implementations of ICT and BCT channels	23
Table 3 — Channel length equations	30

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European foreword

This document (EN 50173-4:2018) has been prepared by the Technical Committee CENELEC TC 215 "Electrotechnical aspects of telecommunication equipment" in cooperation with the Technical Committee CENELEC TC 209 "Cable networks for television signals, sound signals and interactive services".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-03-19
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2021-03-19

This document supersedes the text of EN 50173-4:2007 + A1:2010 + A2:2012.

The European Standards EN 50173:1995 and EN 50173-1:2002 have been developed to enable the application-independent cabling to support ICT applications in office premises. Their basic principles, however, are applicable to other types of applications and in other types of premises.

TC 215 has decided to establish relevant European Standards which address the specific requirements of these premises. In order to point out the commonalities of these cabling design standards, these EN are published as individual parts of the series EN 50173, thus also acknowledging that standards users recognize the designation "EN 50173" as a synonym for generic cabling design.

At the time of publication of this European Standard, series EN 50173 comprises the following standards:

EN 50173-1	Information technology — Generic cabling systems — Part 1: General requirements
EN 50173-2	Information technology — Generic cabling systems — Part 2: Office spaces
EN 50173-3	Information technology — Generic cabling systems — Part 3: Industrial spaces
EN 50173-4	Information technology — Generic cabling systems — Part 4: Homes
EN 50173-5	Information technology — Generic cabling systems — Part 5: Data centre spaces
EN 50173-6	Information technology — Generic cabling systems — Part 6: Distributed building services

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This edition of EN 50173-4:

- a) introduces new components 8.1 and 8.2 for balanced cabling to support new channel Classes I and II as well as optical fibre cabling (OM5) as defined in EN 50173-1:2018;
- b) revises the functional elements in Clause 4;
- c) clarifies the relation of generic home cabling systems to the network access cabling subsystem in Clause 4;
- d) introduces relevant design objectives for home cabling systems;
- e) introduces cable sharing requirements;
- f) removes CCCB cabling and relevant component requirements;

- g) removes Annex B of the previous edition;
- h) aligns the document structure across the EN 50173 series and updates the document both technically and editorially.

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Introduction

The importance of cabling infrastructure is similar to that of other fundamental utilities such as water and energy supply and interruptions to the services provided over that infrastructure can have a serious impact. A lack of design foresight, the use of inappropriate components, incorrect installation, poor administration or inadequate support can threaten quality of service and have commercial consequences for all types of users.

This standard specifies generic cabling within a single home.

The home can contain one or more buildings or can be within a building which contains more than one home (e.g. one home in a multi-dwelling building).

The campus or backbone cabling connecting individual homes within multi-tenant premises is specified according to the relevant standard (for instance EN 50173-1 or EN 60728 series).

Generic cabling for distributed building services in homes is specified in EN 50173-6 which addresses all of the above premises and spaces within them.

Figure 1 and Table 1 show the schematic and contextual relationships between the standards produced by TC 215 for information technology cabling, namely:

- 1) this and other parts of the EN 50173 series;
- 2) installation (EN 50174 series);
- 3) bonding (EN 50310).

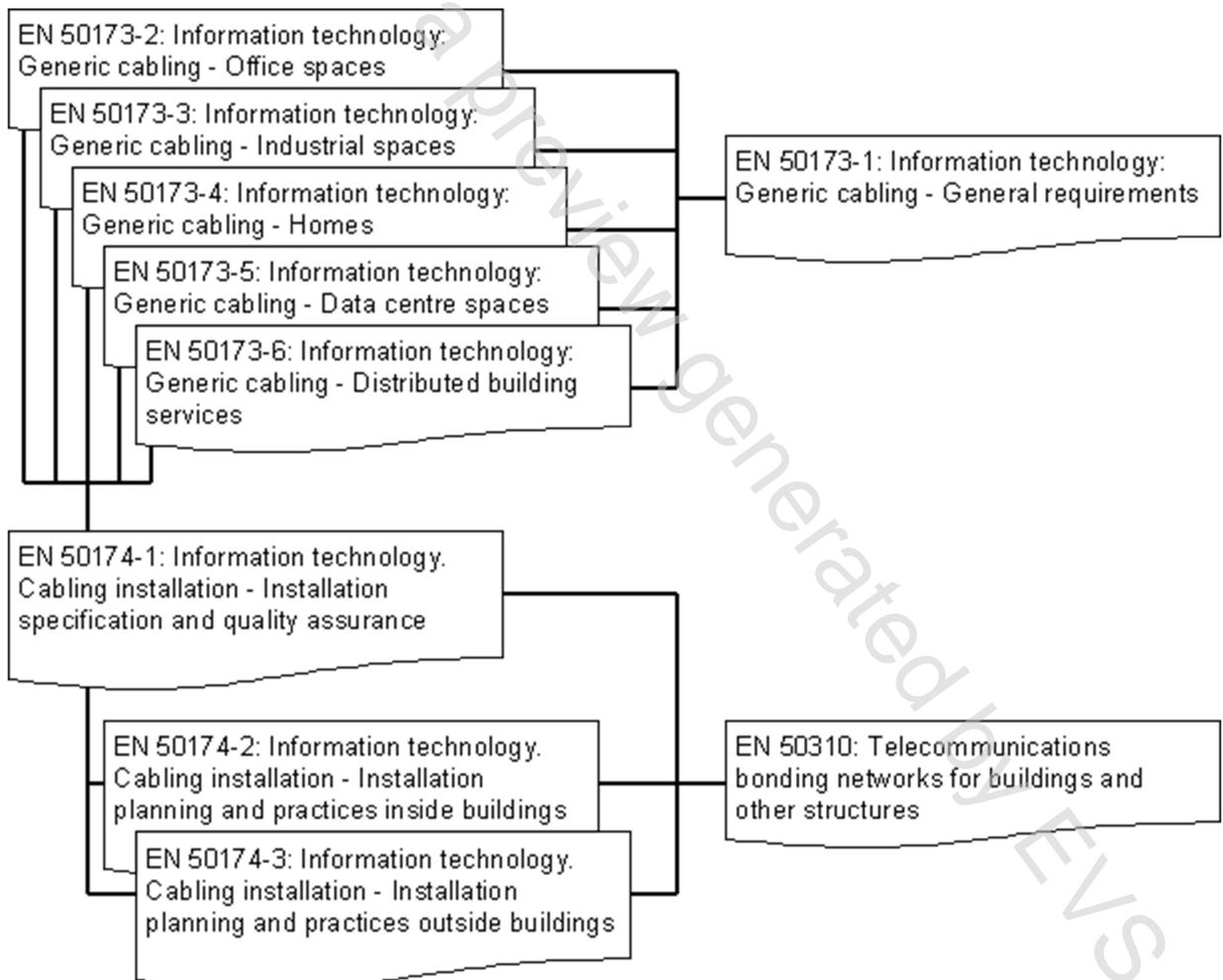


Figure 1 — Schematic relationship between the EN 50173 series and other relevant standards

Table 1 — Contextual relationship between EN 50173 series and other standards relevant for information technology cabling systems

Building design phase	Generic cabling design phase	Specification phase	Installation phase	Operation phase
EN 50310	EN 50173-2	EN 50174-1	EN 50174-2 EN 50174-3 EN 50310	EN 50174-1
	EN 50173-3 EN 50173-4 EN 50173-5 EN 50173-6 (these ENs reference general requirements of EN 50173-1)	Planning phase EN 50174-2 EN 50174-3 EN 50310		

In addition, a number of Technical Reports have been developed to support or extend the application of these standards, including:

- CLC/TR 50173-99-1, *Cabling guidelines in support of 10 GBASE-T*;
- CLC/TR 50173-99-2, *Information technology — Implementation of BCT applications using cabling in accordance with EN 50173-4*;
- CLC/TR 50173-99-3, *Information technology — Generic cabling systems — Part 99-3: Home cabling infrastructures up to 50 m in length to support simultaneous and non simultaneous provision of applications*.

In addition, a number of cabling design standards have been developed using components of EN 50173-1 (e.g. EN 50098 series and EN 50700).

The generic cabling specified by this standard provides users with:

- an application independent system capable of supporting a wide range of applications in a range of installation and operating environments;
- a flexible scheme such that modifications are both easy and economical;
- a multi-vendor supply chain within an open market for cabling components.

In addition this standard provides:

- a) relevant industry professionals with guidance allowing the accommodation of cabling before specific requirements are known; i.e. in the initial planning either for construction or refurbishment and for further deployment as the requirements of areas are defined;
- b) industry and standardization bodies with a cabling system which supports current products and provides a basis for future product development and applications standardization.

Applications addressed in this standard include those developed by the Technical Committees of IEC (including the subcommittees of ISO/IEC JTC 1) and study groups of ITU-T as used to support the following services:

- Information and Communications Technologies (ICT);
- Broadcast and Communications Technologies (BCT).

This standard provides guidance where cabling is designed to support only one of the services listed above.

Physical layer requirements for the applications listed in EN 50173-1:2018, Annex F, have been analysed to determine their compatibility with the cabling performance specified in this standard and, together with statistics concerning premises geography from different countries and the models described in Clause 4, have been used to develop the requirements for cabling components and to stipulate their arrangement into cabling systems.

As a result, this standard:

- a) specifies a structure for generic cabling supporting a wide variety of applications including, but not restricted to, those in EN 50173-1:2018, Annex F;
- b) adopts balanced cabling channel and link Classes D, E, E_A, F, F_A and BCT-B specified in EN 50173-1;
- c) adopts coaxial cabling channel and link Classes BCT-C specified in EN 50173-1;
- d) adopts optical fibre cabling channel and link requirements specified in EN 50173-1;
- e) adopts component requirements, specified in EN 50173-1, and specifies cabling implementations that ensures performance of links and of channels meeting the requirements of a specified group (e.g. Class) of applications.

Life expectancy of generic cabling systems can vary depending on environmental conditions, supported applications, aging of materials used in cables, and other factors such as access to pathways (campus pathways are more difficult to access than building pathways).

With appropriate choice of components, generic cabling systems meeting the requirements of this standard are expected to have a life expectancy of at least ten years.

1 Scope and conformance

1.1 Scope

This standard specifies generic cabling for homes. A home can contain one or more buildings or can be within a building that contains more than one home.

It covers balanced cabling, optical fibre cabling, and coaxial cabling.

This standard specifies generic cabling for two groups of applications:

- Information and Communications Technologies (ICT);
- Broadcast and Communications Technologies (BCT).

This standard specifies directly or via reference to EN 50173-1 the:

- structure and minimum configuration for generic cabling within homes;
- interfaces at the telecommunications outlet (TO) and broadcast outlet (BO);
- performance requirements for cabling links and channels;
- implementation requirements and options;
- performance requirements for cabling components;
- conformance requirements and verification procedures.

This standard has taken into account requirements specified in application standards listed in EN 50173-1.

Safety and electromagnetic compatibility (EMC) requirements are outside the scope of this standard and are covered by other standards and regulations. However, information given in this standard can be of assistance in meeting these standards and regulations.

1.2 Conformance

For a cabling installation to conform to this standard the following applies.

- a) The configuration and structure shall conform to the requirements of Clause 4.
- b) Channels shall meet the requirements of Clause 5.

This shall be achieved by one of the following:

- 1) a channel design and implementation ensuring that the prescribed channel performance of Clause 5 is met;
 - 2) attachment of appropriate components to a permanent link design meeting the prescribed performance class of Annex A. Channel performance shall be ensured where a channel is created by adding more than one cord to either end of a link meeting the requirements of Annex A;
 - 3) for E₁ environments, using the reference implementations of Clause 6 and compatible cabling components conforming to the requirements of Clauses 7, 8 and 9 based upon a statistical approach of performance modelling.
- c) The interfaces to the cabling at the TO and BO shall conform to the requirements of Clause 8 with respect to mating interfaces and performance;

- d) Connecting hardware at other places in the cabling structure shall meet the performance requirements specified in Clause 8 independent of the interface used;
- e) The requirements of EN 50174 series standards and EN 50310 shall be met;
- f) Local regulations, including those concerning safety and EMC, shall be met.

This standard does not specify which tests and sampling levels should be adopted. Test methods to assess conformance with the channel and link requirements of Clause 5 and Annex A respectively are specified in EN 50173-1. The test parameters to be measured, the sampling levels and the treatment of measured results to be applied for a particular installation shall be defined in the installation specification and quality plans for that installation prepared in accordance with EN 50174-1.

In the absence of the channel, the conformance of the link shall be used to verify conformance with the standard.

Specifications marked “ffs” are preliminary specifications, and are not required for conformance to this standard.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

CLC/TR 50173-99-2, *Information technology — Implementation of BCT applications using cabling in accordance with EN 50173-4*

EN 50173-1:2018, *Information technology — Generic cabling systems — Part 1: General requirements*

EN 50174-1, *Information technology — Cabling installation — Part 1: Installation specification and quality assurance*

EN 50174-2, *Information technology — Cabling installation — Part 2: Installation planning and practices inside buildings*

EN 50174-3, *Information technology — Cabling installation — Part 3: Installation planning and practices outside buildings*

EN 60728-1, *Cable networks for television signals, sound signals and interactive services — Part 1: System performance of forward paths (IEC 60728-1)*

EN 61076-3-104, *Connectors for electronic equipment — Product requirements — Part 3-104: Detail specification for 8-way, shielded free and fixed connectors for data transmissions with frequencies up to 1 000 MHz (IEC 61076-3-104)*

EN 61076-3-106, *Connectors for electronic equipment — Product requirements — Part 3—106: Rectangular connectors — Detail specification for protective housings for use with 8-way shielded and unshielded connectors for industrial environments incorporating the IEC 60603-7 series interface (IEC 61076-3-106)*

EN 61754-20:2012, *Fibre optic interconnecting devices and passive components — Fibre optic connector interfaces — Part 20: Type LC connector family (IEC 61754-20:2012)*