

Information technology — Generic cabling systems —

Part 4: Homes

ICS 33.040.50

National foreword

This British Standard is the UK implementation of EN 50173-4:2007+A2:2012, incorporating corrigendum May 2011. It supersedes BS EN 50173-4:2007+A1:2010, which will be withdrawn on 12 November 2015.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CENELEC text carry the number of the CENELEC amendment. For example, text altered by CENELEC amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee TCT/7, Telecommunications — Installation requirements.

A list of organizations represented on this committee can be obtained on request to its secretary.

In addition to the requirements listed in subclause 1.2, conformance to BS EN 50173-4:2007 also requires the application of BS 6701.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 August 2007

© The British Standards Institution 2013. Published by BSI Standards Limited 2013

ISBN 978 0 580 75513 2

Amendments/corrigenda issued since publication

Date	Comments
30 April 2011	Implementation of CENELEC amendment A1:2010
30 September 2011	Implementation of CENELEC corrigendum May 2011: modification of Figures 13 and 14
30 April 2013	Implementation of CENELEC amendment A2:2012

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

This European Standard was approved by CENELEC on 2007-04-11. 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

This European Standard was 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 text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50173-4 on 2007-04-11.

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) 2008-05-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2010-05-01

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 premises
EN 50173-3	Information technology – Generic cabling systems – Part 3: Industrial premises
EN 50173-4	Information technology – Generic cabling systems – Part 4: Homes
EN 50173-5	Information technology – Generic cabling systems – Part 5: Data centres
 EN 50173-6	Information technology – Generic cabling systems – Part 6: Distributed building services 

This standard, EN 50173-4, is based upon but is not identical to ISO/IEC 15018:2004, Information technology - Generic cabling for homes.

Foreword to amendment A1

This amendment was prepared by the Technical Committee CENELEC TC 215, *Electrotechnical aspects of telecommunication equipment*.

The text of the draft was submitted to the formal vote and was approved by CENELEC as amendment A1 to EN 50173-4:2007 on 2010-12-01.

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

The following dates were fixed:

- latest date by which the amendment has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2011-12-01
- latest date by which the national standards conflicting
with the amendment have to be withdrawn (dow) 2013-12-01

This standard introduces several changes in order to align the standard with the changes resulting from the introduction of new Channel classes and component Categories in EN 50173-1:2011. Furthermore, it introduces several technical changes to requirements for BCT cabling in Clauses 6 and 7.

For the convenience of the reader of this standard, the pertinent tables are reproduced in total, with grey shading of new table cells. Where modifications to text apply to single expressions or a few words only, this is indicated by underlining.

Foreword to amendment A2

This document (EN 50173-4:2007/A2:2012) has been prepared by CLC/TC 215 "Electrotechnical aspects of telecommunication equipment".

The following dates are fixed:

- latest date by which this document has to be implemented (dop) 2013-11-12
at national level by publication of an identical national
standard or by endorsement
- latest date by which the national standards conflicting with (dow) 2015-11-12
this document have to be withdrawn

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 document introduces optical fibre cabling support within homes. In addition, several editorial improvements have been introduced.

This page deliberately set blank

Contents

Introduction	7
1 Scope and conformance	11
1.1 Scope	11
1.2 Conformance	11
2 Normative references	12
3 Definitions and abbreviations	13
3.1 Definitions	13
3.2 Abbreviations	14
4 Structure of the generic cabling system to support ICT and/or BCT applications in homes.	15
4.1 General	15
4.2 Functional elements	15
4.3 General structure and hierarchy for ICT and BCT cabling	15
4.4 Cabling subsystems for ICT and BCT applications	17
4.5 Accommodation of functional elements	17
4.6 Interfaces	18
4.7 Dimensioning and configuring	20
5 Cabling structure to support CCCB applications in homes	24
5.1 General	24
5.2 Functional elements	24
5.3 Cabling structure for CCCB applications	24
5.4 Cabling subsystems for CCCB applications	26
5.5 Accommodation of functional elements	26
5.6 Interfaces	26
5.7 Dimensioning and configuring	28
6 Channel performance in homes	30
6.1 General	30
6.2 Environmental performance	30
6.3 Transmission performance	30
7 Reference implementations in homes	34
7.1 General	34
7.2 Dimensions for ICT and BCT channels	34
7.3 Dimensions for CCCB channels	37

8	Cable requirements in homes.....	38
8.1	General	38
8.2	Balanced cables	39
8.3	Coaxial cables	39
8.4	Optical fibre cables	39
9	Connecting hardware requirements in homes	40
9.1	General requirements	40
9.2	ICT connecting hardware	40
9.3	BCT connecting hardware	41
9.4	CCCB connecting hardware	42
A2 9.5	Optical fibre connecting hardware.....	42 A2
10	Requirements for cords and jumpers	42
Annex A (normative) Link performance limits		43
Annex B (informative) Applications and Associated Cabling		44
Annex C (informative) Application-specific BCT outlets and baluns		46
Annex D (informative) Application-specific networks for audio/video applications		47
A2	Annex E (informative) A-deviations	49 A2
Bibliography		50

Figures

Figure 1 - Schematic relationship between the EN 50173 series and other relevant standards	8
Figure 2 – Schematic of generic cabling within homes	10
Figure 3 - Structure of the generic cabling system in homes.....	16
Figure 4 - Hierarchical structure of a generic cabling system in support of ICT and BCT applications	16
Figure 5 - Equipment and test interfaces in support of ICT and BCT applications.....	18
Figure 6 - Channels and permanent links within the home.....	19
Figure 7 - Examples of interconnection of home and network access cabling.....	21
Figure 8 – Interconnection of home cabling	23
Figure 9 - Structure of the generic cabling system in support of CCCB applications	25
Figure 10 - Hierarchical structure of a generic cabling system in support of CCCB applications	25
Figure 11 - Equipment and test interfaces in support of CCCB applications	27
Figure 12 - Channels and permanent links for CCCB cabling	28
Figure 13 - Reference implementations for ICT and BCT channels (HD/SHD - TO/BO)	35
Figure 14 - Reference implementations for CCCB channels with HD or SHD	36
Figure 15 - Reference implementations for CCCB channels with HD and SHD	36
Figure 16 - Conductor assignment of EN 61169-2 (Type 9,52) and EN 61169-24 (Type F)	37
A2 Figure 17 - Conductor assignment of EN 61169-2 (Type 9,52) and EN 61169-24 (Type F)	41 A2

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	20
Table 3 - Different channels and their potential use	31
Table 4 - BCT channel levels	33
Table 5 - Channel length equations	34
Table 6 - Channel length equations for plastic optical fibre cabling	38
Table B.1 - Grouping of applications and cabling	44
Table B.2 - Characteristics of ICT, BCT and CCCB Cabling	45

Introduction

A2 This European Standard specifies generic cabling in homes, installed to support one or more of the following groups of applications and based upon balanced, coaxial and optical fibre cabling as appropriate: **A2**

- Information and Communications Technologies (ICT);
- Broadcast and Communications Technologies (BCT);
- Commands, Controls and Communications in Buildings (CCCB).

Other cabling media, used for the above applications, are not covered in this standard.

A2 Backbone cabling connecting individual homes within single premises is built according to the relevant standard (EN 50173-1, EN 50083 series and EN 60728 series). **A2**

Generic cabling realised according to this standard:

- i) allows deployment of a wide range of applications without changes to the fixed cabling infrastructure;
- ii) provides a platform to support moves, adds and changes of connectivity.

This European Standard, EN 50173-4, has been prepared to reflect the demands of generic cabling within homes and provides for each group of applications (ICT, BCT and CCCB):

- a) users with an application-independent generic cabling system;
- b) users with a flexible cabling scheme such that changes are both easy and economical;
- c) building professionals (for example, architects) with guidance for the design and dimensioning of home cabling according to the end-user needs or requirements (expressed or assumed);
- d) industry and applications standardisation bodies (e.g. ITU-T, ISO/IEC JTC 1/SC 6, ISO/IEC JTC 1/SC 25/WG1, IEC/TC 100, CLC/TC 205, CLC/TC 209, ETSI) with a cabling system that supports current products and provides a basis for future product development in application standardization;
- e) users, designers, and manufacturers of application-specific cabling systems with advice on interfacing to this generic cabling;
- f) suppliers of cabling components and installers of cabling with relevant requirements;
- g) service providers with a distribution system for their services.

This European Standard specifies multi-vendor cabling, and is related to:

- the associated standard covering general requirements for generic cabling within premises (EN 50173-1);
- standards for cabling components developed by Technical Committees of CENELEC and/or IEC;
- standards for the quality assurance and installation of information technology cabling (series EN 50174) and testing of installed cabling (EN 50346);
- applications developed by the technical bodies of IEC (including the subcommittees of ISO/IEC JTC 1), CENELEC and study groups of ITU-T.

A number of ICT, BCT and CCCB applications have been analysed to determine the requirements for a generic cabling (see EN 50173-1:2011, Annex F) and to specify the minimum performance of channels given in Clause 6. These requirements, together with the logical and physical models described in Clauses 4 and 5, have been used to develop the transmission requirements for cabling components and to stipulate their arrangement into generic cabling systems.

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) application dependent cabling design (e.g. EN 50098 series);
- 3) installation (EN 50174 series);
- 4) testing of installed cabling (EN 50346);
- 5) equipotential bonding requirements (EN 50310).

Figure 2 indicates the multi-layer approach specified in this standard in order to deliver ICT, BCT and CCCB applications within homes.

A1 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*. **A1**

A2 - 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* **A2**

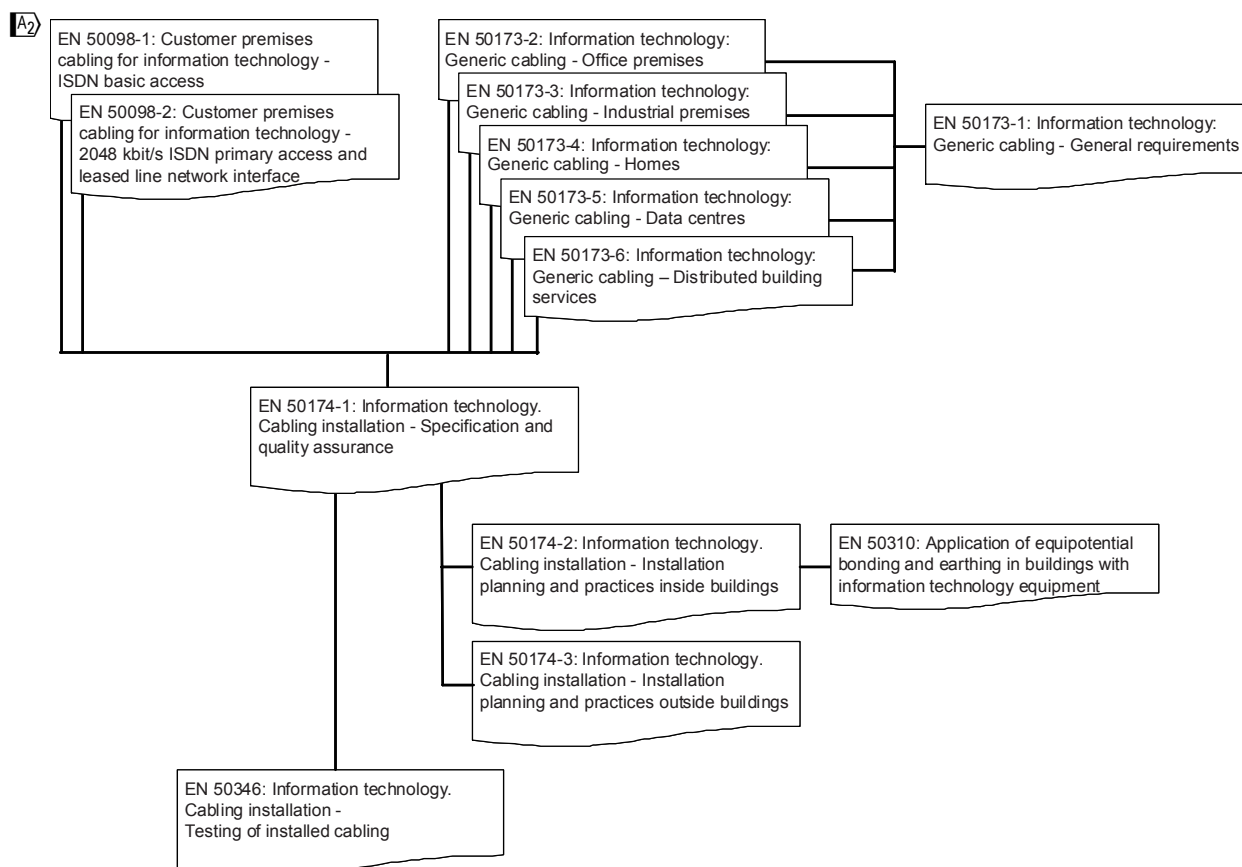


Figure 1 - Schematic relationship between the EN 50173 series and other relevant standards **A2**

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 series except EN 50173-4	EN 50174-1		EN 50174-1
6. Bonding networks	4: Structure 5: Channel performance 7: Cable requirements 8: Connecting hardware requirements 9: Requirements for cords and jumpers A: Link performance limits	4: Requirements for specifying installations of information technology cabling 5: Requirements for installers of information technology cabling		4: Requirements for specifying installations of information technology cabling
		Planning phase		
	and EN 50173-4	EN 50174-2	EN 50174-2	
	4 and 5: Structure 6: Channel performance 8: Cable requirements 9: Connecting hardware requirements 10: Requirements for cords and jumpers A: Link performance limits	4: Requirements for planning installations of information technology cabling 6: Segregation of metallic information technology cabling and power supply cabling 7: Electricity distribution systems and lightning protection	5: Requirements for the installation of information technology cabling 6: Segregation of metallic information technology cabling and power supply cabling 8: Office (commercial) premises 9: Industrial premises 10: Homes 11: Data centres	
		and EN 50174-3	and EN 50174-3	
		and (for equipotential bonding) EN 50310	and (for equipotential bonding) EN 50310	
			and EN 50346 4: General requirements 5: Test parameters for balanced cabling 6: Test parameters for optical fibre cabling	

A1

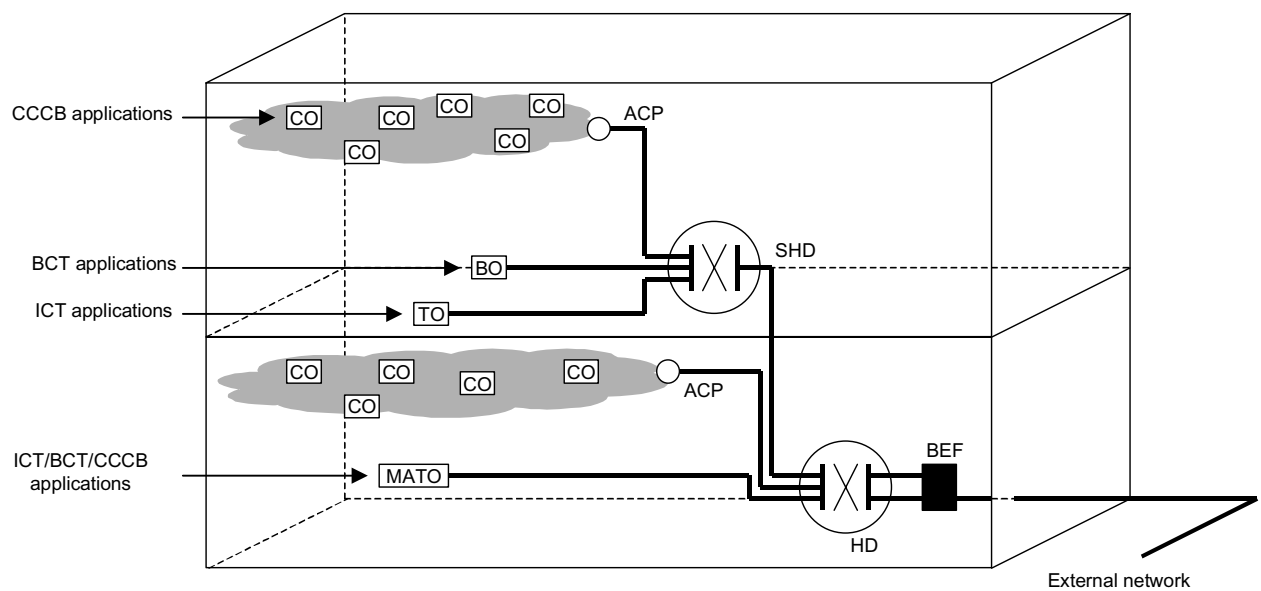


Figure 2 – Schematic of generic cabling within a home

1 Scope and conformance

1.1 Scope

A2 This European Standard specifies generic cabling in homes, installed to support one or more of the following groups of applications and based upon balanced, coaxial and optical fibre cabling as appropriate: **A2**

- 1) Information and Communications Technologies (ICT);
- 2) Broadcast and Communications Technologies (BCT);
- 3) Commands, Controls and Communications in Buildings (CCCB).

A home may contain one or more buildings or may be within a building that contains more than one home.

This European Standard is based upon and references the requirements of EN 50173-1. In addition to the requirements of EN 50173-1, this European Standard specifies the following aspects of generic home cabling:

- a) structure and topology;
- b) minimum configuration;
- c) performance requirements for permanent links and channels¹⁾;
- d) density and location of connection points;
- e) interfaces to application-specific equipment and external networks;
- f) coexistence with other building services.

Safety (electrical safety and protection, optical power, fire, etc.) and electromagnetic compatibility (EMC) requirements are outside the scope of this European Standard and are covered by other standards and regulations. However, information given in this European Standard may be of assistance in meeting these standards and regulations.

NOTE 1 National regulations and local codes may preclude carrying certain services on the cabling specified in this standard.

NOTE 2 Test requirements in this standard are for system designers.

NOTE 3 The installation tests should be decided between supplier and customer or according to the relevant installation guide.

NOTE 4 Audio/video applications are traditionally supported by application-specific cabling implemented with cabling systems based on EN 50083 (see Annex D). Such cabling systems may co-exist with generic cabling specified by this European Standard.

1.2 Conformance

For a cabling system to conform to this European Standard:

- a) the cabling shall support ICT applications;
- b) the structure and configuration of cabling in support of ICT and BCT applications shall conform to the requirements of Clause 4;
- c) the structure and configuration of cabling in support of CCCB applications shall conform to the requirements of Clause 5;
- d) the interfaces to the cabling at the Multi-Application Telecommunications Outlet (MATO), Telecommunications Outlet (TO) and the Broadcast Outlet (BO) shall conform to the requirements of Clause 9 with respect to mating interfaces and performance;
- A1** e) connecting hardware at other places in the cabling structure shall meet the requirements specified in Clause 9; **A1**

¹⁾ This term, as defined in EN 50173-1, refers to the passive cabling between the interfaces described in Clauses 4 and 5. Differing definitions of the term "channel" as given in other standards are not applicable in this European Standard.

- f) the performance of channels shall conform to the requirements of Clause 6. This shall be achieved by one of the following:
- a channel design and implementation ensuring that the prescribed channel performance Class of Clause 6 is met;
 - A1 - attachment of appropriate components to a link design meeting the prescribed performance Class of Annex A. Channel performance shall be A2ensuredA2 where a channel is created by adding more than one one cord to either end of a link meeting the requirements of Annex A; A1
 - using the reference implementations of Clause 7 and compatible cabling components conforming to the requirements of Clauses 8, 9 and 10 based upon a statistical approach of performance modelling.
- g) local regulations concerning safety shall be met.

A1 In addition the requirements of the EN 50174 series of standards shall be met.

The test parameters to be measured and the sampling levels 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.

The treatment of measured results that fail to meet the requirements of this clause, or lie within the relevant measurement accuracy, shall be clearly documented within a quality plan as described in EN 50174-1. A1

Test methods to verify conformance with the channel and link requirements of Clause 6 and Annex A respectively are specified in EN 50346. A1 Text deleted A1

A1 Text deleted A1

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.

- A1 EN 50173-1:2011, *Information technology – Generic cabling systems – Part 1: General requirements* A1
- A1 EN 50174-1, *Information technology – Cabling installation – Part 1: Installation specification and quality assurance* A1
- 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 60603-7-7, *Connectors for electronic equipment – Part 7-7: Detail specification for 8-way, shielded, free and fixed connectors, for data transmission with frequencies up to 600 MHz (IEC 60603-7-7:2006)*
- A1 EN 60728-1:2008, *Cable networks for television signals, sound signals and interactive services – Part 1: System performance of forward paths (IEC 60728-1:2007)* A1
- A1 CLC/TR 50173-99-2, *Information technology – Implementation of BCT applications using cabling in accordance with EN 50173-4* A1

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 61076-3-104:2006)*

EN 61076-3-106:2006, *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 61076-3-106:2006)*

EN 61169-2, *Radio-frequency connectors – Part 2: Sectional specification – Radio frequency coaxial connectors of type 9,52 (IEC 61169-2:2001)*

EN 61169-24, *Radio-frequency connectors – Part 24: Sectional specification – Radio frequency coaxial connectors with screw coupling, typically for use in 75 ohm cable distribution systems (type F) (IEC 61169-24:2001)*

^{A2} 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)*^{A2}

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this European Standard, the following definitions apply in addition to those of EN 50173-1.

3.1.1

application outlet

a point at which equipment is connected to the generic cabling in support of ICT and/or BCT application

3.1.2

area connection point (ACP)

a point at which CCCB coverage area cabling is connected to area feeder cabling

3.1.3

area feeder cable

CCCB cable connecting the home distributor (or secondary home distributor, if present) to the area connection point

3.1.4

broadcast outlet (BO)

fixed connecting device where the BCT home cable terminates

NOTE The broadcast outlet provides an interface to the terminal equipment cabling for BCT applications

3.1.5

connector sharing

the ability of a connector to simultaneously accept multiple plugs in one socket such as 4 one-pair plugs in one 4 pair socket while maintaining the required performance; this may also be achieved by means of an external adapter

3.1.6

coverage area

area served by an area connection point

3.1.7

home

a physical structure used as a dwelling place, such as a house or an apartment

NOTE This may be an individual building, part of a larger building or more than one building.

3.1.8

home distributor (HD)

the distributor within a home where cables terminate

3.1.9

multi-application Telecommunications outlet (MATO)

grouping of telecommunications outlets and broadcast outlets, which may include one or several interfaces

NOTE A MATO may also include control outlets

3.1.10

pathway

facility dedicated to the placement of cable or area reserved for the placement of cable

3.1.11

remote power feeding

the supply of power different from mains power to application-specific equipment via cabling specified by this standard

3.1.12

secondary home distributor (SHD)

an optional distributor used to provide additional infrastructure flexibility and / or allocate transmission equipment between the home distributor and coverage areas (e. g. for homes with multiple floors)

3.1.13

telecommunications outlet (TO)

fixed connecting device where the ICT home cable terminates

NOTE The telecommunications outlet provides an interface to the terminal equipment cabling for ICT applications

3.1.14

terminal equipment

equipment (e.g. telephone handset) that provides user access to an application at an application outlet

3.1.15

terminal equipment cabling

cord and other devices connecting the telecommunications outlet or broadcast outlet to the terminal equipment

3.1.16

transmission equipment

active and passive equipment used to distribute applications from distributors to other distributors and to outlets

3.2 Abbreviations

For the purposes of this European Standard the following abbreviations apply in addition to those of EN 50173-1.

ACP	Area Connection Point
BEF	Building Entrance Facility
BO	Broadcast Outlet
CATV	Community Antenna Television
CCTV	Closed Circuit TV
CO	Control Outlet
ENI	External Network Interface
ffs	for further study
HBES	Home and Building Electronic System
HD	Home Distributor
MATO	Multi-application Telecommunications outlet

PS	Power source
SHD	Secondary Home Distributor
TE	Terminal equipment
TO	Telecommunications Outlet
TV	Television

4 Structure of the generic cabling system to support ICT and/or BCT applications in homes

4.1 General

This Clause identifies the functional elements of generic cabling to support ICT and/or BCT applications, describes how they are connected together to form subsystems and identifies the interfaces at which application-specific components are connected to the generic cabling infrastructure. Channels, created by connecting application-specific cabling components to the generic cabling, are used to support ICT and/or BCT applications. Applications listed in EN 50173-1:2011, Annex F, are supported by connecting active equipment at the external network interfaces, application outlets and the distributors.

NOTE The channels specified in Clause 6 do not support the simultaneous transmission of multiple applications, of the same or different application Classes, within a cable or at an interface to the generic cabling. The sharing of components by applications (to, for example, maximise the capacity of cable management systems) may require additional performance requirements and/or supplier instructions to be applied. These requirements are outside the scope of this standard.

4.2 Functional elements

The functional elements of generic cabling are as follows:

- a) home distributor (HD);
- b) home cable;
- c) secondary home distributor (SHD);
- d) secondary home cable;
- e) application outlet (MATO, TO or BO).

NOTE The SHD and secondary home cable are optional functional elements.

The type and number of functional elements used depends upon the type of premises and the application group(s) served. It is possible to combine multiple functional elements into a single element.

4.3 General structure and hierarchy for ICT and BCT cabling

Generic cabling systems to support ICT and/or BCT applications contain a maximum of two types of cabling subsystems: the home cabling subsystem and the secondary home cabling subsystem as shown in Figure 3.

The composition of the subsystems is described in 4.4.1 and 4.4.2. The functional elements of the cabling subsystems are connected to form a hierarchical structure as in Figure 4. Conformance to this standard does not require the presence of the secondary home cabling subsystem.

The distributors and the application outlets provide the means for configuring the cabling to support topologies in addition to those implemented by the installed cables.

Connection to application-specific equipment at the distributors generally adopts an interconnect approach (see EN 50173-1). Cabling designs that adopt a direct connection to the equipment at the distributors may be implemented in order to achieve the desired transmission performance but serve to restrict the flexibility of the infrastructure and are non-conformant with the requirements of this clause. Passive connections between cabling subsystems adopt either a cross-connect approach, by way of either patch cords or jumpers, or an interconnect approach.