Irish Standard
I.S. EN 50173-5:2007

Information technology - Generic cabling systems -- Part 5: Data centres

I.S. EN 50173-5:2007

Incorporating amendments/corrigenda issued since publication:

EN 50173-5:2007/A1:2010
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-5:2007/A1:2010/AC:2011
EN 50173-5:2007/A2:2012

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Údarás um Chaighdeáin Náisiúnta na hÉireann

Corrigendum to EN 50173-5:2007/A1:2010

English version

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Replace all occurences of EN 50173-1:2007 and EN 50173-1:201X, respectively, **with** EN 50173-1:2011.

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May 2011

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I.S. EN 50173-5:2007

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50173-5/A2

November 2012

ICS 33.040.50

English version

Information technology - Generic cabling systems - Part 5: Data centres

Technologies de l'information - Systèmes de câblage générique - Partie 5: Centres de données

Informationstechnik - Anwendungsneutrale Kommunikationskabelanlagen - Teil 5: Rechenzentren

This amendment A2 modifies the European Standard EN 50173-5:2007; it was approved by CENELEC on 2012-11-12. 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.

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This amendment 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 50173-5:2007/A2:2012 E

Foreword

This document (EN 50173-5:2007/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 at national level by publication of an identical national standard or by endorsement (dop) 2013-11-12
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2015-11-12

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 the intermediate distribution cabling subsystem as a new functional element to the topology of generic cabling in data centres.

Foreword

Add the following after EN 50173-5:

EN 50173-6 Information technology – Generic cabling systems – Part 6: Distributed building services

Introduction

Replace Figure 1 by the following figure:

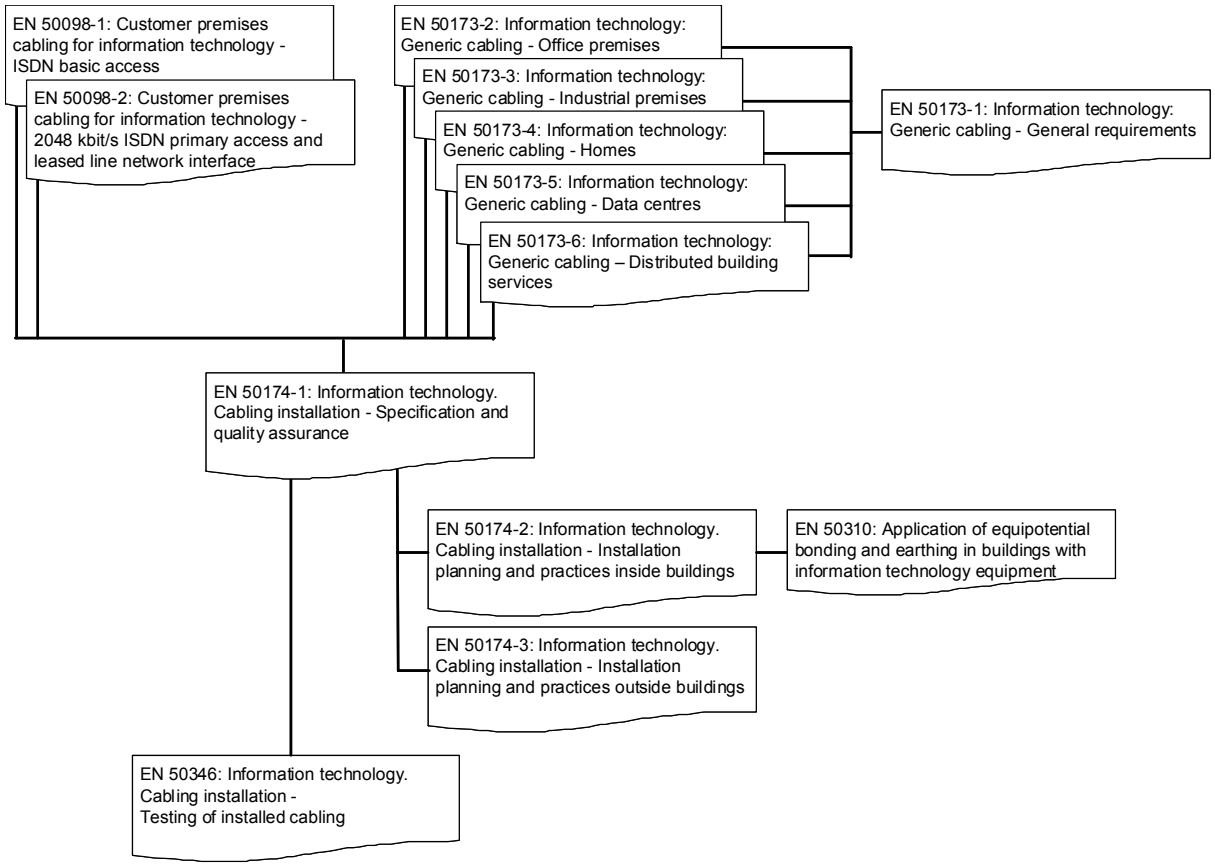

Figure 1 - Schematic relationship between the EN 50173 series and other relevant standards

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50173-5/A1

December 2010

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English version

Information technology - Generic cabling systems - Part 5: Data centres

Technologies de l'information - Systèmes de câblage générique - Partie 5: Centres de données

Informationstechnik - Anwendungsneutrale Kommunikationskabelanlagen - Teil 5: Rechenzentren

This amendment A1 modifies the European Standard EN 50173-5:2007; it was approved by CENELEC on 2010-12-01. 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.

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CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 50173-5:2007/A1:2010 E

Foreword

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 50173-5:2007 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 50173-1:201X. Furthermore it introduces a new normative annex on the use of high density optical fibre connecting hardware.

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.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50173-5

May 2007

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English version

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Technologies de l'information - Systèmes de câblage générique - Partie 5: Centres de données

Informationstechnik - Anwendungsneutrale Kommunikationskabelanlagen - Teil 5: Rechenzentren

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.

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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

Ref. No. EN 50173-5:2007 E

Foreword

This European Standard 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 EN 50173-5 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

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Introduction

The importance of the information technology cabling infrastructure is similar to that of other utilities such as heating, lighting and electricity supplies. As with other utilities, interruptions to service can have serious impact. Poor quality of service due to lack of planning, use of inappropriate components, incorrect installation, poor administration or inadequate support can threaten an organisation's effectiveness.

Cabling within data centres comprises both application-specific and multipurpose networks that are mission-critical to the enterprise. Generic cabling designs in accordance with the EN 50173 series have supported the development of high data rate applications based upon a defined cabling model. This European standard recognizes the benefit of generic cabling to provision multiple services and to connect large quantities of equipment within the limited space of data centre premises, and is to be used in conjunction with EN 50173-1.

This European Standard, EN 50173-5, provides:

a) users with an application independent generic cabling system and an open market for cabling components;

b) requirements for infrastructures that support critical applications within data centres;

c) a flexible cabling scheme such that modifications are both easy and economical;

d) a scaleable structure to support expansion with minimum operational disruption;

e) building professionals (for example, architects) with guidance allowing the accommodation of cabling before specific requirements are known; i.e. in the initial planning either for construction or refurbishment;

f) industry and standardisation bodies with a cabling system which supports current products and provides a basis for future product development and applications standardisation.

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 committees of IEC (including the subcommittees of ISO/IEC JTC 1) and study groups of ITU-T.

It is anticipated that the generic cabling system meeting the requirements of this European Standard will have a life expectancy in excess of ten years.

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

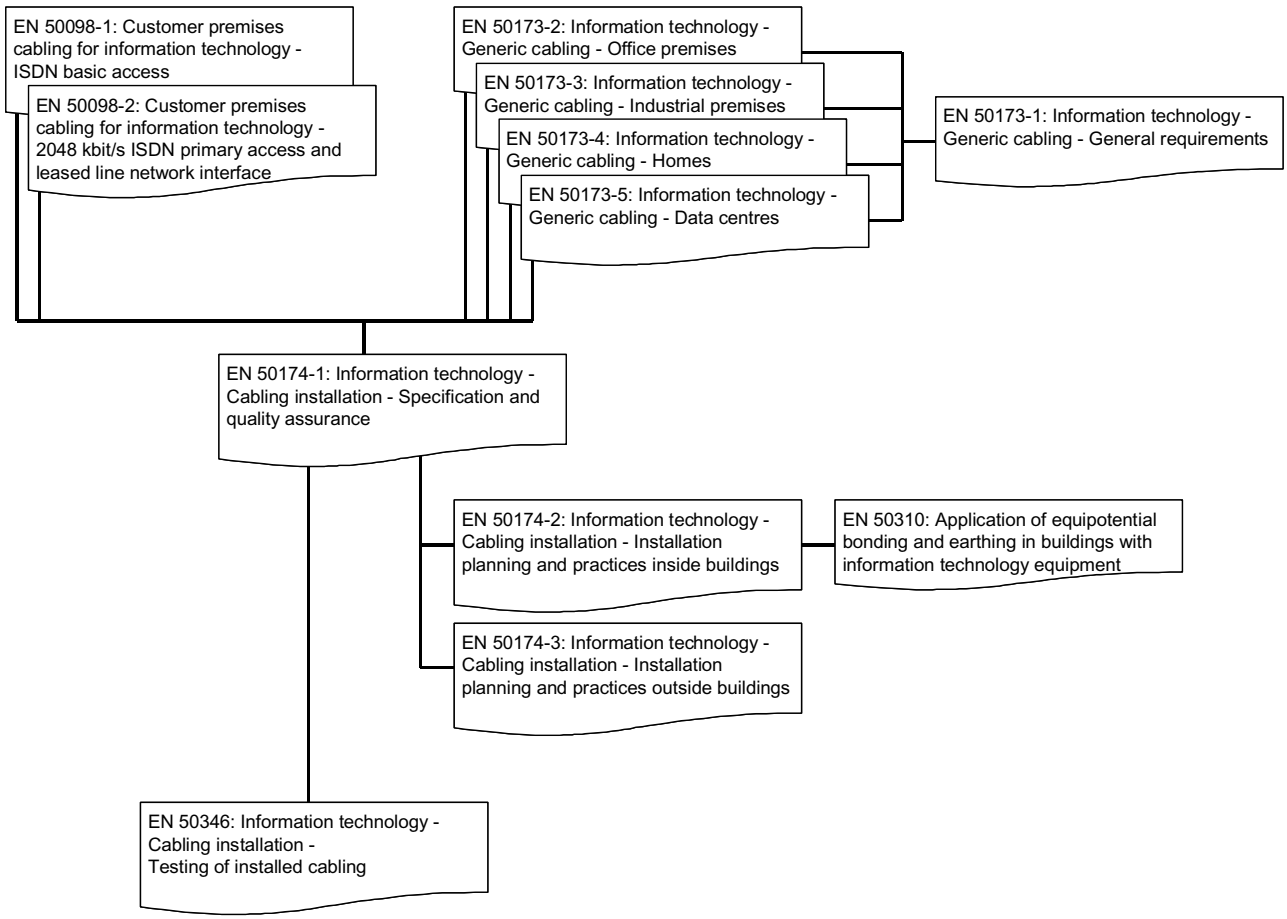
1) this and other parts of the EN 50173 series;

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).



NOTE For the purposes of the standards in the EN 50173 and EN 50174 series the term “information technology” includes ICT, BCT and CCCB applications.

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 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 A: Link performance limits	**EN 50174-1** 4: Requirements for installers 5: Requirements for premises owners		**EN 50174-1** 5: Requirements for premises owners
		Planning phase		
	and EN 50173-4 4 and 5: Structure 6: Channel performance 8: Cable requirements 9: Connecting hardware requirements 10: Requirements for cords and jumpers A: Link performance limits	**EN 50174-2** 5: Requirements for planning installations of information technology cabling 6: Segregation of metallic information technology and mains power cabling 7: Additional considerations **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** 4: Requirements for installers of information technology cabling 6: Segregation of metallic information technology 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	

1 Scope and conformance

1.1 Scope

This European Standard specifies generic cabling that supports a wide range of communications services for use within a data centre. It covers balanced cabling and optical fibre cabling.

This European Standard is based upon and references the requirements of EN 50173-1. This European Standard contains additional requirements that are appropriate to data centres in which the distance over which communications services have to be distributed is the maximum defined for backbone cabling implementations within EN 50173-1. The principles of this European Standard may also be applied to installations that do not fall within this range.

In addition to the requirements of EN 50173-1, this European Standard specifies:

a) a modified structure and configuration for generic cabling within data centres used to support existing and emerging applications;

b) implementation options to reflect the quantity of connections required in data centre infrastructures;

c) requirements that reflect the range of operating environments within data centres.

Safety (electrical safety and protection, fire, optical power 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.

1.2 Conformance

For a cabling system to conform to this European Standard:

a) the structure and configuration shall conform to the requirements of Clause 4;

b) connecting hardware in the cabling structure shall conform to the requirements of Clause 8.

c) the performance of channels shall conform to the transmission performance and environmental requirements of Clause 5. This shall be achieved by one of the following:

- a channel design and implementation ensuring that the prescribed channel performance Class is met;
- attachment of appropriate components to a link design meeting the prescribed performance Class of Annex A. Channel performance shall be assured where a channel is created by adding more than one cord to either end of a link meeting the requirements of Annex A;
- 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.

d) local regulations concerning safety shall be met.

In addition the following requirements of the EN 50174 series of standards shall be met:

e) installation specification and quality planning to address:

  - the test parameters to be measured;
  - the sampling levels to be applied;
  - the treatment of channels or links which fail to meet requirements or for which test results lie within the relevant measurement accuracy;

f) administration;

g) installation.

Test methods to verify conformance with the channel and link requirements of Clause 5 and Annex A respectively are specified in EN 50346. Neither this standard nor EN 50174-1 specifies the test and sampling levels to be adopted.

Specifications marked "ffs" (for further study) in EN 50173-1 are preliminary and are not required for conformance to this European Standard.

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.

EN 50173-1:2007, *Information technology – Generic cabling systems – Part 1: General requirements*

EN 50174-1, *Information technology – Cabling installation – Part 1: 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 50377-7-1, *Connector sets and interconnect components to be used in optical fibre communication systems – Product specifications – Part 7-1: Type LC-PC duplex terminated on IEC 60793-2 category A1a and A1b multimode fibre*

EN 50377-7-2, *Connector sets and interconnect components to be used in optical fibre communication systems – Product specifications – Part 7-2: LC-PC duplex terminated on IEC 60793-2 category B1.1 singlemode fibre*

EN 50377-7-3, *Connector sets and interconnect components to be used in optical fibre communication systems – Product specifications – Part 7-3: Type LC-APC duplex terminated on IEC 60793-2 category B1.1 singlemode fibre*

EN 50377-7-4, *Connector sets and interconnect components to be used in optical fibre communication systems – Product specifications – Part 7-4: LC-PC simplex terminated on IEC 60793-2 category B1.1 singlemode fibre*

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 61754-7, *Fibre optic connector interfaces – Part 7: Type MPO connector family (IEC 61754-7:2004)*

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
equipment outlet
fixed connecting device where the zone distribution cabling terminates. The equipment outlet provides the interface to the equipment cabling