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Information technology - Cabling installation -- Part 1: Installation specification and quality assurance

Informationstechnik - Installation von Kommunikationsverkabelung -- Teil 1: Installationsspezifikation und Qualitätssicherung

Technologies de l'information - Installation de câblages -- Partie 1: Installation spécification et assurance qualité

Ta slovenski standard je istoveten z: **EN 50174-1:2009**

ICS:

33.040.50	Vodi, zveze in tokokrogi	Lines, connections and circuits
35.110	Omreževanje	Networking

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EUROPEAN STANDARD

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EN 50174-1

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English version

Information technology - Cabling installation - Part 1: Installation specification and quality assurance

Technologies de l'information - Installation de câblages - Partie 1: Spécification de l'installation et assurance de la qualité

Informationstechnik - Installation von Kommunikationsverkabelung - Teil 1: Installationsspezifikation und Qualitätssicherung

This European Standard was approved by CENELEC on 2009-05-01. 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, 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

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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 50174-1 on 2009-05-01.

This European Standard supersedes EN 50174-1:2000.

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)	2010-05-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-05-01

EN 50174 comprises three parts. All three parts support the specification, implementation and operation of information technology cabling. There are specific requirements for cabling systems that are in accordance with the design requirements of the EN 50173 series. However, the three parts also apply to cabling systems of any design including those in accordance with standards such as EN 50098-1 or EN 50098-2.

This part, EN 50174-1, is concerned with specification, quality assurance, documentation and administration of information technology cabling to be installed, together with its subsequent operation and maintenance. It sets out the responsibilities of information technology cabling installers and premises owners or appointed representatives separately, and is intended to be referenced in relevant contracts.

It does not cover those aspects of installation associated with the transmission of signals in free space between transmitters, receivers or their associated antenna systems (e.g. wireless, radio, microwave or satellite).

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Introduction

The importance of services delivered by information technology cabling infrastructure is similar to that of utilities such as heating, lighting and electricity supplies. As with those utilities, interruptions to service can have a 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.

There are four phases in the successful implementation of information technology cabling. These are:

a) design;

b) specification – the detailed requirement for the cabling, including the planning of its accommodation and associated building services addressing specific environments (e.g. electromagnetic) together with the quality assurance requirements to be applied;

c) installation – in accordance with the requirements of the specification;

d) operation – the management of connectivity and the maintenance of transmission performance during the life of the cabling.

This European Standard is in three parts and addresses the specification, installation and operational aspects. The EN 50173 series and other application standards cover design issues.

EN 50174-1 is used during the specification phase. It addresses the:

– installation specification, quality assurance documentation and procedures;

– documentation and administration;

– operation and maintenance.

This part, EN 50174-2 and EN 50174-3 are intended to be used by the personnel directly involved in the planning aspects (of the specification phase) and installation phase. EN 50174-2 is applicable inside buildings and EN 50174-3 is applicable outside buildings.

This European Standard is also relevant to:

- architects, building designers and builders;
- main contractors;
- designers, suppliers, installers, inspectors (auditors), maintainers and owners of information technology cabling;
- public network providers and local service providers;
- end users.

The requirements and recommendations of Clause 4 are primarily for owners of premises housing information technology systems. The owners may delegate selected responsibilities to designers, specifiers, operators and maintainers of installed information technology cabling.

The requirements and recommendations of Clause 5 are primarily for the installers of information technology cabling.

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

1) this and other parts of the EN 50174 series;

2) generic cabling design (EN 50173 series);

3) application dependent cabling design (e.g. EN 50098 series);

4) testing of installed cabling (EN 50346);

5) equipotential bonding requirements (EN 50310).

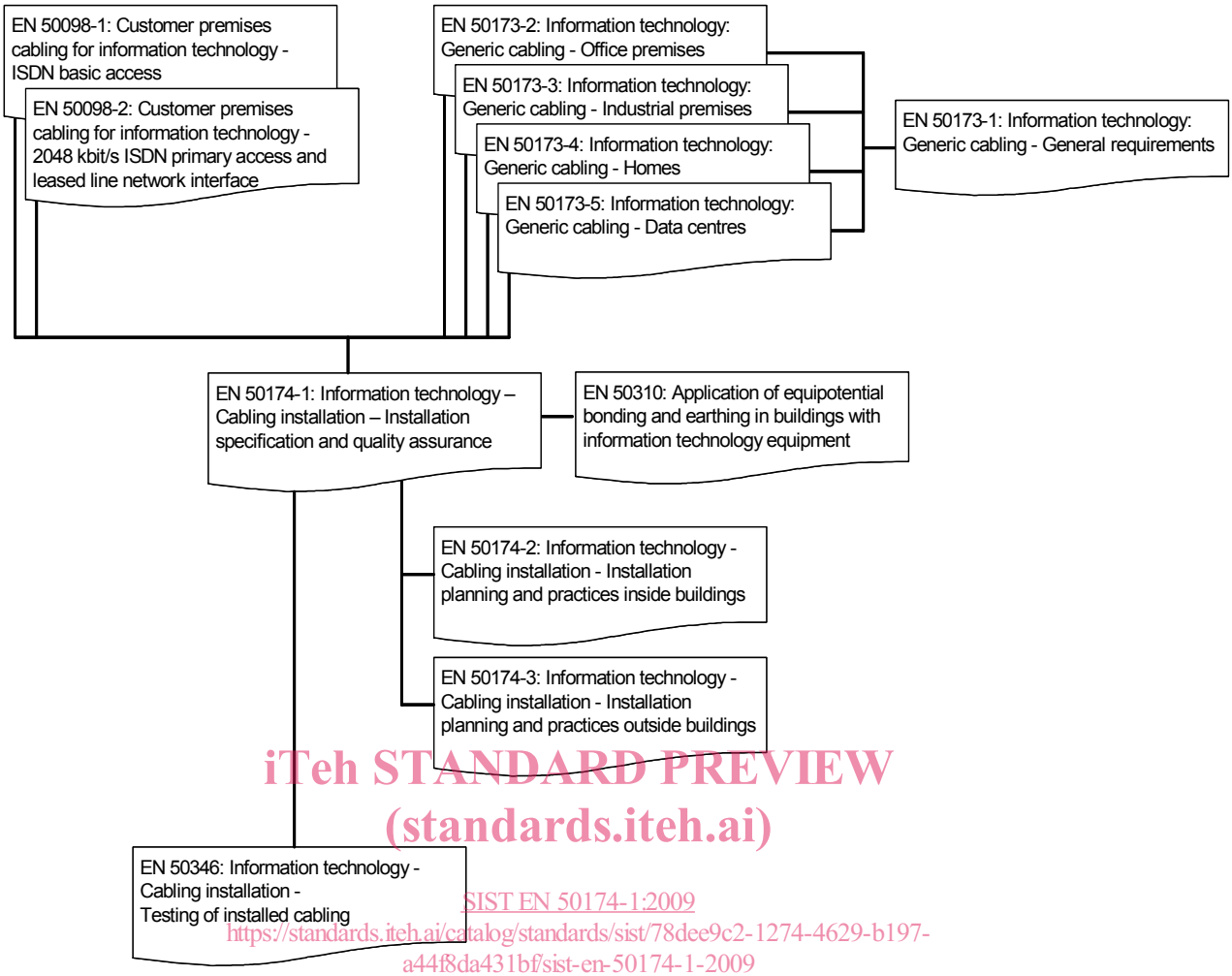

Figure 1 – Schematic relationship between the EN 50174 series and other relevant standards

Table 1 – Contextual relationship between EN 50174 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 **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 50174-1** 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: Electricity distribution systems 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

1 Scope and conformance

1.1 Scope

This European Standard specifies requirements for the following aspects of information technology cabling:

a) installation specification, quality assurance documentation and procedures;

b) documentation and administration;

c) operation and maintenance.

This European Standard is applicable to all types of information technology cabling including generic cabling systems designed in accordance with the EN 50173 series.

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.

1.2 Conformance

For a cabling installation to conform to this European Standard:

a) the specification of the installation shall meet the requirements of Clause 4;

NOTE The requirements and recommendations of Clause 4 are primarily for owners of premises housing information technology systems. The owners may delegate selected responsibilities to designers, specifiers, operators and maintainers of installed information technology cabling. The party responsible for demonstrating conformance should be clearly stated in the appropriate section of the documentation.

b) the installer shall meet the requirements of Clause 5;

c) the equipotential bonding system within the premises shall be in accordance with EN 50310;

d) where a lightning protection system is required, it shall conform to the “integrated lightning protection system” according to EN 62305-4;

e) other lightning protection systems, including the “isolated lightning protection system” according to EN 62305-3 are allowed provided that specific restrictions are applied both to the implementation of the information technology cabling and the requirements of EN 50310 as agreed between the planners of the lightning protection system and the information technology cabling;

f) local regulations, including safety, shall be met.

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 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 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 50310, *Application of equipotential bonding and earthing in buildings with information technology equipment*

EN 50346, *Information technology – Cabling installation – Testing of installed cabling*

EN 60332-1-2, *Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame* (IEC 60332-1-2)

EN 62305-4, *Protection against lightning – Part 4: Electrical and electronic systems within structures* (IEC 62305-4)

HD 384/HD 60364 (series), *Low-voltage electrical installations* (IEC 60364 series, mod.)

IEC 60050-151:2001, *International Electrotechnical Vocabulary – Chapter 151: Electrical and magnetic devices*

IEC 60050-161:1990, *International Electrotechnical Vocabulary – Chapter 161: Electromagnetic compatibility*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

Where the cabling is designed in accordance with standards in the EN 50173 series, the additional definitions of those standards are applicable.

NOTE As far as possible definitions of series IEC 60050 have been used; reference to these standards is indicated in square brackets.

3.1.1
acceptance test of installed cabling
contractual test to prove to the customer that the installed cabling meets specific conditions of its specification

[derived from IEC 60050-151:2001, 151-16-23]

3.1.2
array connector
an optical fibre connector containing a single ferrule with multiple terminated fibres arranged in a line or a series of lines

3.1.3
building entrance facility
space that provides all necessary mechanical and electrical services for the entry of cables into a building

[EN 50173-1:2007, 3.1.6, modified]

3.1.4
cabinet
enclosed construction for housing closures and other information technology equipment

3.1.5
cable element
smallest construction unit in a cable

NOTE 1 A cable element may have a screen.

NOTE 2 A pair, a quad, a single isolated lead with coaxial screen and a single optical fibre are examples of a cable element.

[EN 50173-1:2007, 3.1.9, modified]

3.1.6
cable management system
system used for the support and/or containment, retention, protection of all types of cables, information and communication lines, electrical power distribution conductors and their associated accessories (includes ducts and tubes housing, or intended to house, blown information technology cables and/or cable elements)

3.1.7
cabling component
any product associated with the cabling installation including cables, connecting hardware, closures, cabinets, frames, racks and pathway systems together with components used to provide earth connections for the cabling installation

3.1.8
closure
fixture or fitting of either open or closed construction intended to contain connecting hardware

3.1.9
draw-box
space in a pathway that allows the routing of cables during the cable installation process

3.1.10
electrostatic discharge
transfer of electric charge between bodies of different electrostatic potential in proximity or through direct contact

[IEC 60050-161:1990, 161-01-22]

3.1.11
electromagnetic disturbance
any electromagnetic phenomenon which may degrade the performance of a device, equipment or system, or adversely affect living or inert matter

NOTE An electromagnetic disturbance may be an electromagnetic noise, an unwanted signal or a change in the propagation medium itself.

[IEC 60050-161:1990, 161-01-05]

3.1.12
frame
rack
open construction for housing closures and other information technology equipment

3.1.13
identifier
unique item of information to distinguish a specific component of the cabling installation

3.1.14
information technology
telecommunications
branch of technology concerned with the transmission, emission and reception of signs, signals, writing, images and sounds; that is, information of any nature by cable, radio, optical or other electromagnetic systems

[EN 50173-1:2007, 3.1.50, modified]

3.1.15
information technology equipment
active or passive equipment necessary to deliver a specific application

NOTE Examples include hubs, switches, routers, adapters.

3.1.16
installer
person installing cabling components

NOTE No design functions are assumed.

3.1.17
jumper
one or more cable elements without connectors used to make a connection between terminated cables

3.1.18
label
means of marking a specific component of the information technology infrastructure with its identifier and (optionally) other information and intended to be fixed to, or be part of, the component

3.1.19
minimum bend radius during installation
minimum radius as specified by the cable manufacturer, supplier or in accordance with the relevant product standard to which a cable or cable element is allowed to be subjected during installation

3.1.20
minimum bend radius during operation – static
minimum radius as specified by the cable manufacturer, supplier or in accordance with the relevant product standard to which a cable or cable element is allowed to be subjected following installation and fixed in its final operating position

3.1.21
minimum bend radius during operation – dynamic
minimum radius as specified by the cable manufacturer, supplier or in accordance with the relevant product standard to which a cable or cable element is allowed to be subjected under conditions where the cable or cable element is subject to movement

3.1.22
pathway
defined route for cables between termination points

3.1.23
pathway system
cable management system, or other area or volume defined by markings

3.1.24
record
collection of information about, or related to, a specific element of the information technology infrastructure

3.1.25
scope of work
the detailed definition of the tasks involved in an installation or particular phase of an installation

3.1.26
service loop
excess length of cable or cable element(s)

3.1.27
space
specified volume

NOTE Examples include room, maintenance hole or part thereof, housing closures and/or other information technology equipment.