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Information technology - Cabling installation - Part 1: Specification and quality assurance

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

Technologies de l'information - Installation de câblage - Partie 1: Planification de l'assurance de la qualité

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ICS:

35.110	Omreževanje	Networking

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EUROPEAN STANDARD

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ICS

Will supersede EN 50174-1:2000

English version

Information technology - Cabling installation - Part 1: Specification and quality assurance

Technologies de l'information - Installation de câblage - Partie 1: Planification de l'assurance de la qualité

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This draft European Standard is submitted to CENELEC members for CENELEC enquiry.
Deadline for CENELEC: 2007-12-21.

It has been drawn up by CLC/TC 215.

If this draft becomes a European Standard, 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.

This draft European Standard 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

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Foreword

This draft European Standard has been prepared by Technical Committee CENELEC/TC 215 „*Electrotechnical aspects of telecommunication equipment*". It is submitted to the CENELEC enquiry.

This European Standard will supersede EN 50174-1:2000.

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 of standards. 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 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).

Annexes designated "informative" are given for information only. In this standard, Annexes A and B are normative, Annexes C and D are informative.

To ease the commenting during the development of this draft line numbers have been included; they will be suppressed in the final document.

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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 of standards 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).

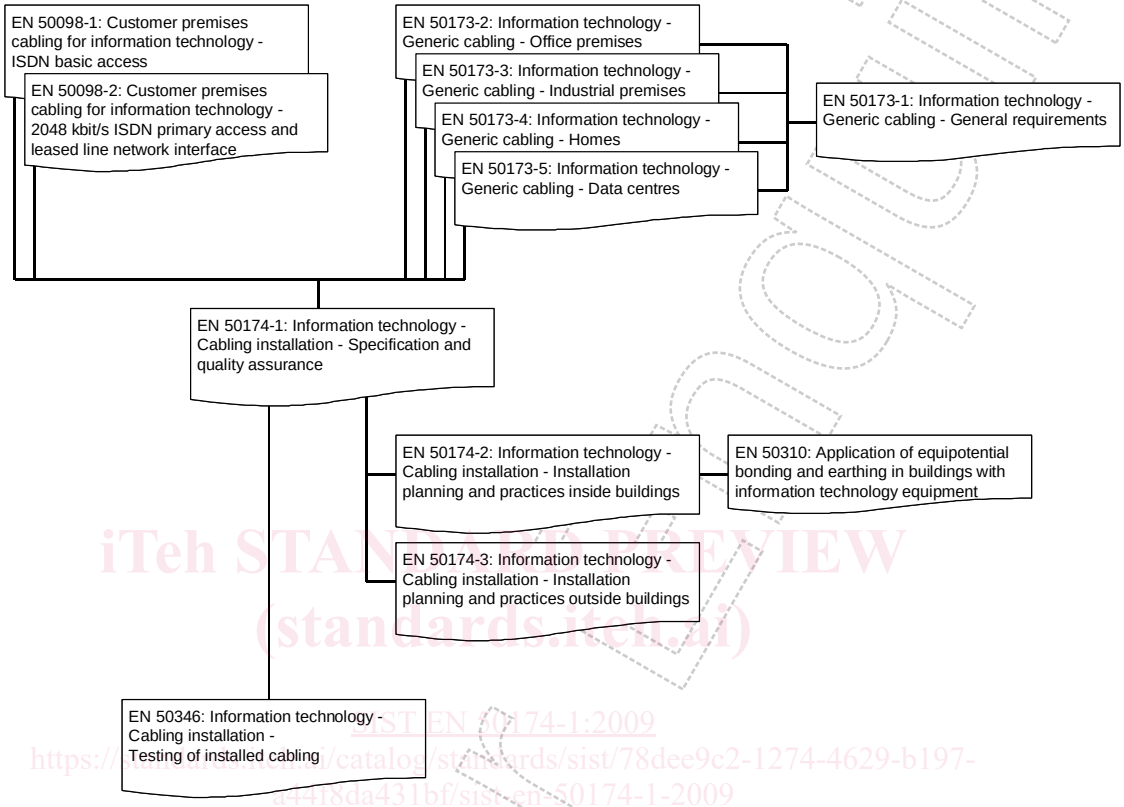

Figure 1 – Schematic relationship between the EN 50174 series and other relevant standards

119 **Table 1 – Contextual relationship between EN 50174 series and other standards**
120 **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 specifiying installa-tions of information technology cabling 5: Requirements for installers of infor-mation technology cabling		**EN 50174-1** 4: Requirements for specifying installations of information technology cabling
		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** 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	

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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 of standards.

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.

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

c) the bonding (and earthing) system within the premises shall be in accordance with EN 50310;

Editors note This assumes changes to 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, *Information technology – Generic cabling systems – Part 1: General requirements*

EN 50173-2, *Information technology – Generic cabling systems – Part 2: Office premises*

EN 50173-3 [1)], *Information technology – Generic cabling systems – Part 3: Industrial premises*

1) At draft stage.

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 external to buildings*

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

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

EN 62305-4, *Protection against lightning – Part 4: Electrical and electronic systems within structures* (IEC 62305-4:2006 [2)])

HD 384 (series), *Electrical installations of buildings* (IEC 60364 series)

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this European Standard the following 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 confirm that the installed cabling satisfies specific aspects of its specification

[derived from IEC 60050-151:1978,151-15-20]

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
facility that provides all necessary mechanical and electrical services, that complies with all relevant regulations, for the entry of telecommunications cables into a building and which may allow for transition from external to internal cable

[EN 50173-1:2007, 3.1.7]

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

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2) Valid edition at date of issue.

3.1.5
cable element
smallest construction unit in a cable (a cable element may have a screen)

NOTE 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]

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, frames, cabinets 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 such that bending and pulling requirements are met

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

[IEC 60050-161:1990,161-11-22]

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, 161-11-05]

3.1.12
external network interface
termination point providing external network demarcation

Editors note: This definitions differs from that of EN 50173-1:2007, 3.1.26. Readers should comment this.

3.1.13
frame (rack)
open construction for housing closures and other information technology equipment

3.1.14
identifier
unique item of information to distinguish a specific component of the cabling installation

3.1.15
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, 3.1.52, modified]

3.1.16
information technology equipment
active or passive equipment necessary to deliver a specific application (e.g. hubs, switches, routers, adapters)

3.1.17
installer
person installing cabling components

NOTE No design functions are assumed.

3.1.18
jumper
one or more cable elements without connectors used to make a connection between terminated cables

3.1.19
label
means of clearly marking a specific component of the information technology infrastructure with its identifier and (optionally) other information

3.1.20
minimum bend radius (installation)
minimum radius as defined by the cable manufacturer, supplier or relevant product standard to which a cable or cable element is allowed to be subjected during installation

3.1.21
minimum bend radius (operating - static)
minimum radius as defined by the cable manufacturer, supplier or relevant product standard to which a cable or cable element is allowed to be subjected following installation and fixed in its final operating position

3.1.22
minimum bend radius (operating - dynamic)
minimum radius as defined by the cable manufacturer, supplier or 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.

3.1.23
pathway (cable route, cable way)
defined route for cables between termination points

3.1.24
pathway system
cable management system or other area or volume defined by markings

3.1.25
rack
see “frame”