



SLOVENSKI STANDARD

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

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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EUROPEAN STANDARD

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**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

Informationstechnik -
Installation von Kommunikations-
verkabelung
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Qualitätssicherung

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This European Standard was approved by CENELEC on 2000-08-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

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Foreword

This European Standard has been prepared by Technical Committee CENELEC/TC 215 „Electrotechnical aspects of telecommunication equipment" under the framework of the Mandates M/212 on „Telecommunication cables and cabling systems" and M/239 on „Air traffic management equipment and systems".

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50174-1 on 2000-08-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at the national level by publication of an identical national standard or by endorsement (dop) 2001-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2003-08-01

This standard comprises three parts. All three parts support the specification, implementation and operation of information technology cabling using both balanced copper and optical fibre cabling components. These components are combined to provide cabling solutions either in accordance with the design requirements of EN 50173 or to meet the requirements of one or more application-specific standards (such as EN 50098-1 or EN 50098-2).

This part, EN 50174-1, is intended to be referenced in contracts between cabling installers and their customers. However, the range of options featured in many of the clauses make a single conformance statement impossible. For this reason the standard should be read carefully to ensure that the requirements of the standard (as defined by the use of the word "shall") are adhered to where conformance is required under the terms of any contract.

[SIST EN 50174-1:2001](#)

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

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Introduction

Within premises, the importance of the information technology cabling infrastructure is similar to that of other fundamental building utilities such as heating, lighting and mains power 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.

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

- a) design - the selection of cabling components and their configuration;
- b) specification - the detailed requirement for the cabling, its accommodation and associated building services addressing specific environment(s) identified within the premises together with the quality assurance requirements to be applied;
- c) implementation - the physical 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, implementation and operational aspects. The design issues are covered in EN 50173 and / or other application standards.

This part, EN 50174-1, is intended to be used by personnel during the planning phase of the installation together with those responsible for the quality planning and operation of the installation. It contains requirements and guidance for the specification and quality assurance of the information technology cabling by defining:

- aspects to be addressed during the specification of the cabling;
- quality assurance documentation and procedures;
- requirements for the documentation and administration of cabling;
- recommendations for repair and maintenance.

EN 50174-2 and EN 50174-3 are intended to be used by the personnel directly involved in the implementation phase of the installation. EN 50174-2 is applicable inside buildings and EN 50174-3 is applicable outside buildings.

These standards contain detailed requirements and guidance relating to the installation planning and practices by defining:

- 1) planning strategy (road map) and guidance depending on the application, electromagnetic environment, building infrastructure and facilities, etc.
- 2) design and installation rules for metallic and optical fibre cabling depending on the application, electromagnetic environment, building infrastructure and facilities, etc.
- 3) requirements on satisfactory operation of the cabling depending on the application, electromagnetic environment, building infrastructure and facilities, etc.
- 4) the practices and procedures to be adopted to ensure that the cabling is installed in accordance with the specification.

In addition the information in EN 50174-2 and EN 50174-3 should be used to construct the detailed specification for the installation in accordance with this standard.

Figure 1 shows the relationships between the standards produced by TC 215 for information technology cabling, namely cabling design standards (EN 50098 series, EN 50173), cabling installation standards (EN 50174 series) and equipotential bonding requirements (EN 50310).

Building design phase	Cabling design phase	Planning phase	Implementation phase	Operation phase
<p>EN 50310</p> <p>5.2: Common bonding network (CBN) within a building</p> <p>6.3: AC distribution system and bonding of the protective conductor (TN-S)</p>	<p>EN 50173</p> <p>or (and)</p> <p>EN 50098-1</p> <p>or (and)</p> <p>EN 50098-2</p> <p>or (and)</p> <p>Other application standards</p>	<p>EN 50174-1</p> <p>4: Specification considerations</p> <p>5: Quality assurance</p> <p>7: Cabling administration</p> <p>and</p> <p>EN 50174-2</p> <p>4: Safety requirements</p> <p>5: General installation practices for metallic and optical fibre cabling</p> <p>6: Additional installation practice for metallic cabling</p> <p>7: Additional installation practice for optical fibre cabling</p> <p>and</p> <p>EN 50174-3</p> <p>and</p> <p>(for equipotential bonding)</p> <p>EN 50310</p> <p>5.2: Common bonding network (CBN) within a building</p> <p>6.3: AC distribution system and bonding of the protective conductor (TN-S)</p>	<p>EN 50174-1</p> <p>6: Documentation</p> <p>7: Cabling administration</p> <p>and</p> <p>EN 50174-2</p> <p>4: Safety requirements</p> <p>5: General installation practices for metallic and optical fibre cabling</p> <p>6: Additional installation practice for metallic cabling</p> <p>7: Additional installation practice for optical fibre cabling</p> <p>and</p> <p>EN 50174-3</p> <p>and</p> <p>(for equipotential bonding)</p> <p>EN 50310</p> <p>5.2: Common bonding network (CBN) within a building</p> <p>6.3: AC distribution system and bonding of the protective conductor (TN-S)</p>	<p>EN 50174-1</p> <p>5: Quality assurance</p> <p>7: Cabling administration</p> <p>8: Repair and maintenance</p>

Figure 1 - Relationship between EN 50174 series and other design standards

1 Scope

This European standard specifies the basic requirements for the planning, implementation and operation of information technology cabling using balanced copper cabling and optical fibre cabling. This standard is applicable to:

- a) cabling designed to support particular analogue and digital telecommunications services including voice services;
- b) generic cabling systems designed in accordance with EN 50173 and intended to support a wide range of telecommunications services.

This standard is intended for those involved in the procurement, installation and operation of information technology cabling. Furthermore this standard is addressed to:

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

This standard is applicable to certain hazardous environments but does not exclude additional requirements, which are applicable in particular circumstances, defined by e.g. electricity supply and electrified railways.

This part of the standard:

- c) provides guidance on the preparation and agreement of an installation specification covering the information technology cabling, its accommodation and associated building services;
- d) defines installation and acceptance testing practices enabling the agreement of a quality plan used to demonstrate conformance with the installation specification.

This standard does not contain requirements for cabling component performance, link design or installed performance - reference should be made to EN 50173, for generic cabling, or relevant application standards.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 50173, *Information technology – Generic cabling systems*.

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

EN 50174-3 ¹⁾, *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*.

ISO/IEC 14763-1, *Information technology – Implementation and operation of customer premises – Part 1: Administration*.

¹⁾ At present committee draft

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.

NOTE As far as possible definitions of series IEC 60050 and of HD 384.2 S1 have been used; reference to these standards is indicated in square brackets.

3.1.1

acceptance test (of installed information technology cabling)

contractual test to prove to the customer that the installed cabling meets certain conditions of its specification

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

3.1.2

active transmission equipment

equipment necessary to deliver a specific application (e.g. hubs, routers)

3.1.3

application specific cabling

cabling installed to meet the requirements of a specific transmission system and not necessarily guaranteed to support other transmission systems

3.1.4

back-up cabling

cabling that is installed specifically for use only when other cabling links become defective or unusable

3.1.5

balanced application

transmission system designed for use with balanced cabling

3.1.6

balun

device for transforming an unbalanced voltage to a balanced voltage or vice-versa

[161-14-37 of IEC 60050-161:1990]

3.1.7

builder

person commissioning the constructing of buildings. The builder gives the necessary allowance for the practical design of the telecommunication infrastructure within and between buildings

3.1.8

cabinet

enclosed construction providing additional security features intended for the housing of closures and other equipment including passive and active transmission equipment

3.1.9

cabling installer

person installing cabling and the associated material of the information technology cabling

3.1.10

cabling maintainer

person maintaining the information technology cabling

3.1.11

cabling owner

person who owns the information technology cabling

3.1.12

cabling component supplier

person providing cabling components and associated materials

3.1.13

cabling system

specific combination of cables, connecting hardware and other components that are supplied as a single entity

3.1.14

cabling system supplier

person that supplies the cabling components and associated materials in such a manner as to form a passive cabling system

3.1.15

closure

fixture or fitting of either open or closed construction intended to contain connecting hardware, both permanent, semi-permanent and demountable

3.1.16

connecting hardware

device or combination of devices used to connect two cables or cable elements

3.1.17

draw box

space in the pathway system which allows the routing of cables during the cable installation process such that bending and pulling requirements are met

3.1.18

electromagnetic compatibility

ability of a device, unit of equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment

3.1.19

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.

[161-11-05 of IEC 60050-161:1990]

3.1.20

end user

person who requests or makes use of telecommunications services

3.1.21

equipotential bonding

electrical connection putting various exposed conductive parts and extraneous conductive parts at a substantially equal potential

[826-04-09 of HD 384.2 S1:1986]

3.1.22

fire zone

clearly defined area, bounded by fire barriers

3.1.23**frame**

open construction intended for the housing of closures and other equipment including both passive and active transmission equipment

3.1.24**identifier**

unique item of information that enables a specific component of the telecommunications infrastructure to be distinguished in the administration records

3.1.25**immunity (to a disturbance)**

ability of a device, equipment or system to perform without degradation in the presence of an electro-magnetic disturbance

[161-11-20 of IEC 60050-161:1990]

3.1.26**label**

means to mark clearly a specific component of the telecommunications infrastructure with its identifier and (optionally) other information

3.1.27**link**

transmission path between any two interfaces of cabling

NOTE The link definition of EN 50173 excludes equipment cables and work area cables.

3.1.28**main contractor**

person responsible for the approval of subcontractors

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[184e92484a85/sist-en-50174-1-2001](https://standards.iteh.ai/catalog/standards/sist/4782d51c-3a9a-4681-831b-184e92484a85/sist-en-50174-1-2001)

3.1.29**main earthing terminal**

terminal or bar provided for the connection of protective conductors, including equipotential bonding conductors and conductors for functional earthing if any, to the means of earthing

[826-04-08 of HD 384.2 S1:1986]

3.1.30**minimum bend radius (installation)**

minimum radius, as defined by the cable manufacturer/ supplier, at which a cable is allowed to be bent during installation

3.1.31**minimum bend radius (operating)**

minimum radius, as defined by the cable manufacturer/ supplier, at which a cable is allowed to be bent following installation and in its final operating position

3.1.32**passive transmission equipment**

non-active equipment necessary to support a specific application in conjunction with active transmission equipment

NOTE Examples are baluns, filters, adapters and equipment cables.

3.1.33**pathway (cable route, cable way)**

defined route for cables between termination points

3.1.34**pathway system**

area or volume defined by markings or a specific cable management system including those specified in the EN 50085 and EN 50086 series of standards

3.1.35**public network provider**

provider of public network services to end users who, for some distance, have to rely on the provision of information technology cabling within some part of the premises

3.1.36**record**

collection of information about, or related to, a specific element of the telecommunications infrastructure

3.1.37**service provider**

provider of telecommunications services to end users within the premises

3.1.38**space**

enclosed area (e.g. closet, cabinet, maintenance hole, or equipment room) used to house cable terminations or equipment

3.1.39**termination point**

connection, plug or socket (as appropriate) fitted to an installed cable and housed within a closure

3.1.40**transmission system**

transmission equipment, both active and passive, together with the installed cabling necessary to deliver a specified application between two or more points

3.1.41**unbalanced application**

application that requires a transmission system not specifically designed for balanced cabling and within which signals are transmitted asymmetrically with respect to earth

3.1.42**work order**

document that records the changes requested and the operations carried out on the telecommunications infrastructure

3.1.43**zone**

area containing termination points that are served by a group of cabinets or frames (acting as a floor distributor for generic cabling)

3.2 Abbreviations

For the purposes of this standard the abbreviations of EN 50173 apply in addition to the following ones:

CAD	Computer aided design
EMC	Electromagnetic compatibility
NTP	Network termination point

4 Specification considerations

4.1 Introduction

Correct specification of information technology cabling and its accommodation is vital during the design or refurbishment of premises and will ease the implementation and operation of both the cabling and the applications supported over the cabling. Consideration shall be given to the applications to be supported taking care to observe the recommendations of annex A with regard to the delivery of multiple applications within a single cable.

Cabling components, closures, frames and cabinets require detailed specification in terms of location, space and environmental aspects (including physical and functional security). Failure to observe the installation dependent parameters, including environmental factors, specified by the cabling supplier and/or manufacturer could lead to inadequate performance.

Administration of the cabling shall be considered early in the specification process to ensure smooth transition from installation to operation of the cabling.

Effective specification also involves the co-ordination of other building services such as mains power distribution, earthing, circuits for smoke/fire detection and associated controls, atmospheric control systems and other relevant infrastructures.

4.2 Cabling infrastructure

4.2.1 General

Cables are installed between termination points. Termination points are distributed throughout the buildings or concentrated in areas of distribution. In some cases, termination points are associated with active and/or passive transmission equipment.

4.2.2 Generic cabling systems conforming to EN 50173

Generic cabling systems designed in accordance with EN 50173 feature termination points interconnected by well defined cabling sub-systems and located within a defined structure (see Figure 2).

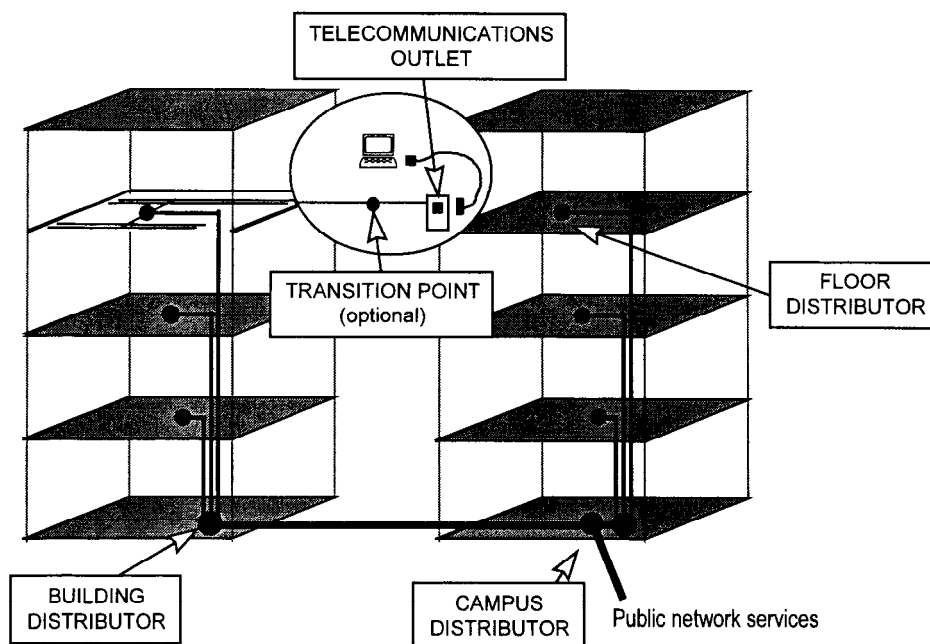


Figure 2 - Generic Cabling System