SLOVENSKI STANDARD
SIST EN 50174-2:2009/A1:2011

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Informacijska tehnologija - Polaganje kablov - 2. del: Načrtovanje inštalacij in tehnike dela v stavbah - Dodatek A1

Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings

Informationstechnik - Installation von Kommunikationsverkabelung - Teil 2: Installationsplanung und Installationspraktiken in Gebäuden

Technologies de l'information - Installation de câblages - Partie 2: Planification et pratiques d'installation à l'intérieur des bâtiments

Ta slovenski standard je istoveten z: **EN 50174-2:2009/A1:2011**

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 50174-2/A1

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ICS 35.110; 91.140.50

English version

Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings

Technologies de l'information -
Installation de câblages -
Partie 2: Planification et pratiques d'installation à l'intérieur des bâtiments

Informationstechnik -
Installation von Kommunikationsverkabelung -
Teil 2: Installationsplanung und Installationspraktiken in Gebäuden

This amendment A1 modifies the European Standard EN 50174-2:2009; it was approved by CENELEC on 2011-01-03. 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.

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 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 Central Secretariat 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, 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

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Ref. No. EN 50174-2:2009/A1:2011 E

Foreword

This amendment to the European Standard EN 50174-2:2009 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 50174-2:2009 on 2011-01-03.

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)	2012-01-03
– latest date by which the national standards conflicting with the amendment have to be withdrawn	(dow)	2014-01-03

This amendment introduces:

- a new Clause 10 with specific requirements for installation of cabling in homes;
- a new Clause 11 with specific requirements for installation of cabling in data centres;
- detailed requirements and recommendations for installation of cabling in office (including commercial) (see Clause 8) premises and in industrial premises (see Clause 9);
- some technical and editorial modifications to the other clauses.

Text of A1 to EN 50174-2:2009

Introduction

Replace Table 1 with:

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	**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
	and EN 50173-4	**Planning phase**		
	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 power supply cabling 7: Electricity distribution systems and lightning protection	**EN 50174-2** 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	

1.1 Scope

Replace “mains power” with “power supply” in bullet 2 (English version only).

Replace 5th paragraph with:

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

1.2 Conformance

Replace bullet g) with:

g) local regulations, including safety, that are more stringent than the requirements listed in a) to f) shall be met.

2 Normative references

Add the following references:

EN 50090-9-1:2004, *Home and Building Electronic Systems (HBES) – Part 9-1: Installation requirements – Generic cabling for HBES Class 1 Twisted Pair*

EN 50491 series, *General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS)*

EN 50491-6-1 [1)], *Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 6-1: Installation requirements*

EN 60670 series, *Boxes and enclosures for electrical accessories for household and similar fixed electrical installations*

Delete reference to IEC 61784-4.

3 Terms, definitions and abbreviations

3.1 Terms and definitions

Replace in existing 3.1.11 and 3.1.15 “mains power” with “power supply” (English version only).

Insert the following definitions and **renumber** existing definitions accordingly:

3.1.2
co-hosting data centre
data centre in which multiple customers are provided with access to network(s), servers and storage equipment on which they operate their own services/applications

NOTE Both the information technology equipment and the support infrastructure of the building are provided as a service by the data centre operator.

3.1.3
co-location data centre

———————

1) In preparation.

data centre in which multiple customers locate their own network(s), servers and storage equipment

NOTE The support infrastructure of the building (such as power distribution and environmental control) is provided as a service by the data centre operator.

3.1.5
data centre
building or space, whose primary function is to accommodate equipment that processes, delivers and/or stores information

NOTE A data centre can consist of multiple spaces with specific functions to support the primary function.

3.1.8
enterprise data centre
data centre that is operated by an enterprise which has the sole purpose of the delivery and management of services to its employees and customers

3.1.9
entrance room
space within, or at the boundary of, a building housing the demarcation point where facilities owned by external service providers interface with the premises cabling

NOTE For generic cabling in accordance with EN 50173-5, the demarcation point is the external network interface (ENI) and the data centre cabling at that point is the network access cabling.

3.1.10
equipment connection space
space within a home that corresponds to the installation space IS6 of EN 50491-6-1 and that may house the outlets (TO, BO, MATO, CO) of EN 50173-4 together with attached equipment

3.1.14
home entrance
space at the boundary of a home that may house the interface(s) between the home networks and external networks provided to the home and that demarcate the administration and maintenance of the two networks

3.1.16
junction box
space within a home that corresponds to the installation space IS5 of EN 50491-6-1 and housing a closure, typically in accordance with the EN 60670 series, designed to allow cables to be routed between pathway systems

3.1.17
local distribution space
space within a home that corresponds to the installation space IS5 of EN 50491-6-1 and that may house the area connection point (ACP) of EN 50173-4

3.1.20
multi-tenant premises
premises containing multiple homes that have each their own home entrance space but share building entrance facilities (BEF) and associated distribution spaces

3.1.21
network operator data centre
data centre that has the primary purpose of the delivery and management of broadband services to the operators' customers

3.1.24
primary distribution space
space within a home that corresponds to the installation space IS4 of EN 50491-6-1 and that may house the home distributor (secondary home distributor) of EN 50173-4 and associated equipment

3.1.28
semi-detached house
residence of a single family within a building containing two single-family houses where access to external service provision is shared

3.1.29
single-family house
residence of a single family within which access to the home entrance space is limited to dweller of the house

3.2 Abbreviations

Insert the following additional abbreviations:

CPL	Central Patching Location
HBES	Home and Building Electronic System
HE	Home Entrance
SHD	Secondary Home Distributor
UPS	Uninterruptible Power Supply
ZPL	Zone Patching Location

4 Requirements for planning installations of information technology cabling

4.1.2 Mains power cabling

Replace title with:

4.1.2 Power supply cabling

4.1.7 Closures

Replace “mains power” with “power supply” (6 places).

4.1.8.2 External cables containing flammable materials

Replace subclause with:

Information technology cables that do not comply with the minimum recommended performance requirements of EN 60332-1-2 shall either be:

a) terminated inside the building, within 2 m (unless an alternative distance if specified by local regulations) of the point of internal penetration of the external fire barrier (e.g. floor/ceiling/wall);

or

b) any length exceeding 2 m (unless an alternative distance if specified by local regulations) is installed within trunking or conduit that is considered as a fire barrier in accordance with local fire regulations.

NOTE This also applies where the cable has to pass through a space between two external fire barriers within a building.

4.1.9 Termination points

Replace “mains power” with “power supply” in two places.

4.3.1 Cable segregation

Replace “mains power” with “power supply” in 2nd paragraph.

4.4 Pathway systems

Insert new heading:

4.4.1 Requirements

Amend 1st paragraph to read:

Pathways, entry points to the pathways and the pathway systems selected shall ensure cables are able to be installed and, where appropriate, fixed in accordance with the applicable minimum bend radius (during installation, during operation – static and during operation – dynamic). This may be achieved by the use of pre-fabricated curved corners, drop-outs, radius limiters or other means. Where multiple cable types are involved, the largest minimum bend radius shall apply.

Insert new subclause

4.4.2 Recommendations

During initial planning, the initial quantity of cables should not use more than 40 % of the usable cross-sectional area within the chosen pathway system subject to the following definition for useable cross-sectional area:

a) for uncovered pathway systems and cable management systems (e.g. tray or basket), cables are not installed above the sidewalls (note electromagnetic screening performance of the selected cable management system may require modified criteria - see Clause 6);

b) bends in the pathway systems may restrict the useable cross-sectional area dependent upon the specified bend radii of the cable to be installed;

c) for non-enclosed pathway systems to which cables are to be attached or supported by (e.g. messenger/ catenary wires or designated routes) the cross-sectional area shall be considered to be the minimum available area surrounding the pathway system.

4.5.1 Requirements

Delete text from “Non-metallic cable management systems...” to “ • optical fibre cabling” **and** from “The planning (selection and location) …” to “… installed above the sidewalls” (i.e. 7th,8th and 10th paragraphs).

4.5.2 Recommendations

Insert the following text at the end of existing text:

Non-metallic cable management systems are neutral products from the electromagnetic point of view. They do not provide electromagnetic screening to the contained cabling, but they do not perturb the cabling by transferring induced currents or leakage currents. Non-metallic cable management systems should be used where electromagnetic screening is not required by the cables to be installed within them.

Insert new subclause as follows:

4.8 Spaces

Requirements and recommendations for the spaces in different types of premises are found in Clauses 8, 9, 10 and 11.

5 Requirements for the installation of information technology cabling

5.1.1.1 Mains power cabling

Replace title with**:**

5.1.1.1 Power supply cabling

5.1.3 Closures

Replace “mains power” with “power supply” in three places.

5.1.4 Cables

Replace 2nd paragraph with:

Information technology cables that do not comply with the minimum recommended performance requirements of EN 60332-1-2 shall be installed according to the instructions of the planner (see 4.1.8.2).

5.3.2 Pathways

Replace last two paragraphs with:

Where it is necessary to remove ceiling tiles, floor covers or trunking covers, only the minimum number shall be removed and these shall be replaced on completion of works.

Fire barriers and gas seals shall be opened only when necessary and resealed on completion of works.

5.3.3.1.1 Requirements

Insert new 1st paragraph as follows:

Any structures, fixtures and fittings used to support the telecommunications cabling within the pathways shall be installed in accordance with instructions provided by the manufacturer(s) and/or supplier(s) of the fixtures and fittings.

Delete existing 4th paragraph.

5.3.3.2 Electrically conductive cable management systems

Correct reference to “7.1.3.3” to read “7.1.3.4”.

5.3.3.3.1 Requirements

Replace bullet c) as follows:

c) Figure 4 shows cable management systems crossing a wall at which a fire barrier is to be re-instated following cable installation. Unless specifically allowed by local regulations, the fire-stop materials or fire-stopping techniques, the cable management system shall be interrupted and the two metallic sections shall be bonded. The bonds shall have performance in accordance with EN 50310;

5.3.3.3.2 Recommendations

In the 1st paragraph **correct** reference to “4.4.2” to read “4.5.2”.

5.3.5.1 General

In 3rd paragraph **replace** “mains power” with “power supply”.

5.3.5.3.1 Requirements

Insert new 6th paragraph:

The re-instatement of the fire rating of fire barriers in accordance with local regulations shall be implemented using the specified fire-stop materials and/or fire-stopping techniques.

5.3.5.4 Requirements for closures

Insert new 3rd paragraph:

The bend radii of telecommunications cables and telecommunications cable elements within closures shall be in accordance with the instructions provided by the telecommunications cable manufacturer and/or supplier.

5.3.6.3 Screened cabling

Replace the first four lines with the following (list a) to g) unchanged):

The cable screen shall totally surround the cable along its entire length (a screening contact applied only through the drain wire has little effect at high frequencies).

Cable screens shall be terminated at each termination point to maintain the intended performance of the cable screen termination of connecting hardware. Where instructions for termination of a specific cable are not available from the manufacturer/supplier of the connecting hardware:

5.6 Testing

Replace existing text as follows:

If required by the quality plan, final cabling inspection and tests shall be undertaken as soon as practicable following marking, labelling and fitting of all components associated with the telecommunications cabling into their final locations.

5.7 Contractual acceptance

Replace existing text as follows:

If required within the installation specification, acceptance procedures shall be undertaken as soon as practicable following marking, labelling and fitting of all components associated with the telecommunications cabling into their final locations.

Insert new subclause as follows:

5.8 Operation

5.8.1 Requirements

Provided that there is no risk of damage to cables or the pathway system additional cables may be installed within pathway systems according to the following rules:

a) using all the useable cross-sectional area (see 4.4.2) within:

   1) uncovered pathway systems and cable management systems;

   2) pathway systems and cable management systems from which covers are removed before installation of cables;

   3) non-enclosed pathway systems and cable management systems;

b) using up to 40 % of the useable cross-sectional area (see 4.4.2) within conduit (unless the conduit contains empty sub-conduits).

5.8.2 Recommendations

No additional recommendations.

6 Segregation of metallic information technology cabling and mains power cabling

Replace title with:

6 Segregation of metallic information technology cabling and power supply cabling

6.1 General

Delete “mains” in 2nd paragraph, bullet b) and in Note 2.

Delete NOTE 1 and **renumber** NOTE 2.

Replace “any” in bullet c) with “one or more”.

6.2.1 General segregation requirements

Replace “mains power” with “power supply” in 15 places (including figures) throughout the subclause.

Replace 4th paragraph with:

Where the cabling to be installed is in accordance with, and is intended to support the applications of Class D or above listed in the EN 50173 series the separation requirements for classification “b” in Table 4 represent the minimum requirements of this standard. Reduced separations based upon the other classifications of Table 4 may restrict the type and use of cables installed in the pathways and cable management systems selected.

Replace Table 4 with:

Table 4 – Minimum separation *S*

		Containment applied to information technology or power supply cabling		
Segregation classification (from Table 3)	**Separation without electromagnetic barrier**	**Open metallic containment** [a]	**Perforated metallic containment** [b, c]	**Solid metallic containment** [d]
d	10 mm	8 mm	5 mm	0 mm
c	50 mm	38 mm	25 mm	0 mm
b	100 mm	75 mm	50 mm	0 mm
a	300 mm	225 mm	150 mm	0 mm

[a] Screening performance (0 MHz to 100 MHz) equivalent to welded mesh steel basket of mesh size 50 mm × 100 mm (excluding ladders). This screening performance is also achieved with steel tray (trunking without cover) of less than 1,0 mm wall thickness and/or more than 20 % equally distributed perforated area.

[b] Screening performance (0 MHz to 100 MHz) equivalent to steel tray (trunking without cover) of at least 1,0 mm wall thickness and no more than 20 % equally distributed perforated area. This screening performance is also achieved with screened power cables that do not meet the performance defined in footnote d.

[c] The upper surface of installed cables shall be at least 10 mm below the top of the barrier.

[d] Screening performance (0 MHz to 100 MHz) equivalent to a steel conduit of 1,5 mm wall thickness. Separation specified is in addition to that provided by any divider/barrier.

Replace 12th paragraph, starting with "Cables for different purposes…." with:

From an EMI perspective, this standard considers circuits to be within the following groups:

– Group 1: Power supply: e.g. AC and/or DC, high d*i*/d*t* power circuits, speed drives, power converters, etc, which may disturb signals within Groups 2, 3 and 4;

– Group 2: Auxiliary: e.g. relay contactor, actuator, command and control, which may disturb signals within Groups 3 and 4;

– Group 3: Information technology, which may disturb signals within Group 4;

– Group 4: Sensitive circuits: e.g. analog signalling, low level sensors.

Cables of different groups shall not be in the same bundle (see Figure 8, where power supply and information technology segregation meets the requirement of this clause).

6.2.2 Conditional relaxation of requirement

In 1st paragraph **replace** "mains power" with "power supply".

In bullet b) **replace** "power conductors" with "power supply conductors".

7 Electricity distribution systems and lightning protection

Insert new 7.1.2 and **renumber** existing subclauses.

7.1.2 Availability of supply

Where operational procedures, including those designated by national or local regulations or in accordance with manufacturers' instructions, require actions that could interrupt supply then either appropriate facilities shall be provided, or the actions scheduled, to avoid unplanned disruption to the information technology equipment.

Examples of such procedures include the testing of residual current devices and the replacement of surge protection devices on power supply cabling.

8 Office (commercial) premises

8.3 Requirements for planning installations of information technology cabling

Replace text with:

8.3.1 Safety

No additional requirements.

8.3.2 Documentation

No additional requirements.

8.3.3 Pathways

8.3.3.1 External service provision

8.3.3.1.1 Requirements

A risk assessment shall be undertaken to determine the need for:

a) multiple service providers;

b) multiple service provider premises (i.e. operator sites or central offices);

c) diverse pathways from each of the service provider premises;

d) multiple BEFs;

e) multiple entrance rooms.

8.3.3.1.2 General recommendations

Where external service provision from multiple service provider premises is required, it should be ensured that the pathways to the premises are diversely routed in order to remove any single point-of-failure.

Multiple entrance pathways should be used between the boundary of the premises and the entrance room(s) in order to remove any single point-of-failure. These pathways may include customer-owned maintenance holes where the pathway systems owned by the access provider do not terminate at the boundary of the premises.

A minimum of two entrance pathways should be provided both of which should be:

a) located underground (aerial entrance pathways are not recommended because of their vulnerability due to physical exposure);

b) physically separated between the boundary of the premises and the point of entry into the building by at least 20 m to minimise the risk of a single incident causing damage to both entrance pathways.

The entrance pathways should also have adequate capacity to handle growth and additional service providers.

Each external service provider should enter the premises via at least two pathways. Pathways should be considered between entrance rooms.

8.3.3.2 Office pathways

8.3.3.2.1 Requirements

The design of pathways shall be co-ordinated with architects and other responsible engineers.

8.3.3.2.2 General recommendations

Consideration should be given to providing protection against failure in one or more parts of the cabling infrastructure by implementing:

a) multiple areas of distribution with appropriate fire compartmentation with areas served by different power supply distribution units, and be served by different environmental control equipment;

b) multiple pathways between each area of distribution ensuring that maximum channel lengths are not exceeded.

The location of aisles separating rows of cabinets, frames or racks should be co-ordinated with lighting and fire protection plans:

c) lighting should be placed above aisles and not above cabinets, frames, racks and overhead pathways;

d) pathways should not be located where they interfere with proper operation of fire suppression systems such as water distribution from sprinkler heads.

Pathways should not block airflow to or from environmental control equipment.

Pathways should not restrict access to other building infrastructures that require periodic maintenance e.g. valves, electrical receptacles and smoke detectors. Under-floor pathways should not be located above such equipment unless there is an accessible row of tiles adjacent to these pathways.

8.3.3.2.3 Additional recommendations for generic cabling

Consideration should be given to providing protection against failure in one or more parts of the cabling infrastructure by implementing:

a) multiple CDs in the campus;

b) multiple BDs in each building;

c) multiple FDs on each floor;

d) multiple pathways between CDs;

e) multiple pathways between BDs;

f) multiple pathways between FDs on each floor;

g) multiple pathways between each CD and BDs and each BD and FDs.

8.3.3.3 Cable segregation

8.3.3.3.1 Requirements

No additional requirements.

8.3.3.3.2 Recommendations

No additional recommendations.

8.3.3.4 Protection of installed cabling (including security)

8.3.3.4.1 Requirements

No additional requirements.