



SLOVENSKI STANDARD

SIST EN 50310:2016

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SIST EN 50310:2011

Izenačitev potencialov in ozemljevanje v stavbah z opremo informacijske tehnologije

Telecommunications bonding networks for buildings and other structures

Anwendung von Maßnahmen für Erdung und Potentialausgleich in Gebäuden mit Einrichtungen der Informationstechnik

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Application de liaison équipotentielle et de la mise à la terre dans les locaux avec équipement de technologie de l'information

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ICS:

35.020	Informacijska tehnika in tehnologija na splošno	Information technology (IT) in general
91.140.50	Sistemi za oskrbo z elektriko	Electricity supply systems

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EUROPEAN STANDARD

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Telecommunications bonding networks for buildings and other structures

Application de liaison équipotentielle et de la mise à la terre dans les locaux avec équipement de technologie de l'information

Anwendung von Maßnahmen für Erdung und Potentialausgleich in Gebäuden mit Einrichtungen der Informationstechnik

This European Standard was approved by CENELEC on 2016-04-11. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 50310:2016) was prepared by the 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) 2017–04–11
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2019–04–11

This document supersedes EN 50310:2010.

In 2012, EN 50310:2010 had been offered to ISO/IEC JTC 1/SC 25 “Interconnection of information technology equipment” as input to the agreed project to seek global harmonization of the technical requirements for telecommunications bonding networks. This project, ISO/IEC 30129, has been finished successfully. Thus, TC 215 decided to transpose ISO/IEC 30129 into the fourth edition of EN 50310 with minimal editorial changes to fit European needs. In this context, also the title of EN 50310 has been changed to adopt the title of ISO/IEC 30129.

EN 50310 has been produced within the framework of the following considerations.

- a) With the ongoing growth of the liberalised telecommunication market, the increasing advent of private telecommunication network operators, and the flourishing use of networking computers, the amount of Information Technology equipment installed in buildings and the complexity of these Information Technology installations are permanently growing.
- b) Information Technology equipment is generally installed either as stand-alone equipment (e.g. personal or network computers, small PBXs), or held in racks, cabinets or other mechanical structures (e.g. switching systems, transmission systems, mobile base stations).
- c) CENELEC/SC 64B „Electrical installations and protection against electric shock – Protection against thermal effects“ had decided during their meeting in November 1997 not to harmonize IEC 60364-5-548:1996 “*Electrical installations of buildings – Part 5: Selection and erection of electrical equipment – Section 548: Earthing arrangements and equipotential bonding for information technology installations*”.
- d) This European Standard shall give guidance to network operators, equipment providers and building owners to agree on a standardized bonding configuration that facilitates:
 - compliance of the Information Technology Equipment installation with functional requirements including Electromagnetic Compatibility (EMC) aspects of emission and immunity,
 - compatible building installation and equipment provisions,
 - installation of new equipment in buildings as well as expansion or replacement of installations in existing buildings with equipment coming from different suppliers,
 - a structured installation practice,
 - simple maintenance rules,

- contracting on a common basis,
- harmonization in development, manufacturing, installation and operation.

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Introduction

This European Standard

- 1) specifies assessment criteria to determine the relevant bonding configurations that are appropriate,
- 2) enables the implementation of any bonding configurations that may be necessary by means of either
 - the provision of a bonding network that utilizes the existing protective bonding network for electrical safety, or
 - the provision of a dedicated bonding network for the telecommunications infrastructure.

This standard is intended for

- building architects, owners and managers,
- designers and installers of electrical and telecommunications cabling installations.

Users of this standard should be familiar with all applicable cabling design and installation standards.

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

- installation specification, quality assurance, planning and installation practices (EN 50174 series);
- generic cabling design (EN 50173 series);
- application dependent cabling design (e.g. EN 50098 series);
- testing of installed cabling (EN 50346);
- this European Standard (EN 50310).

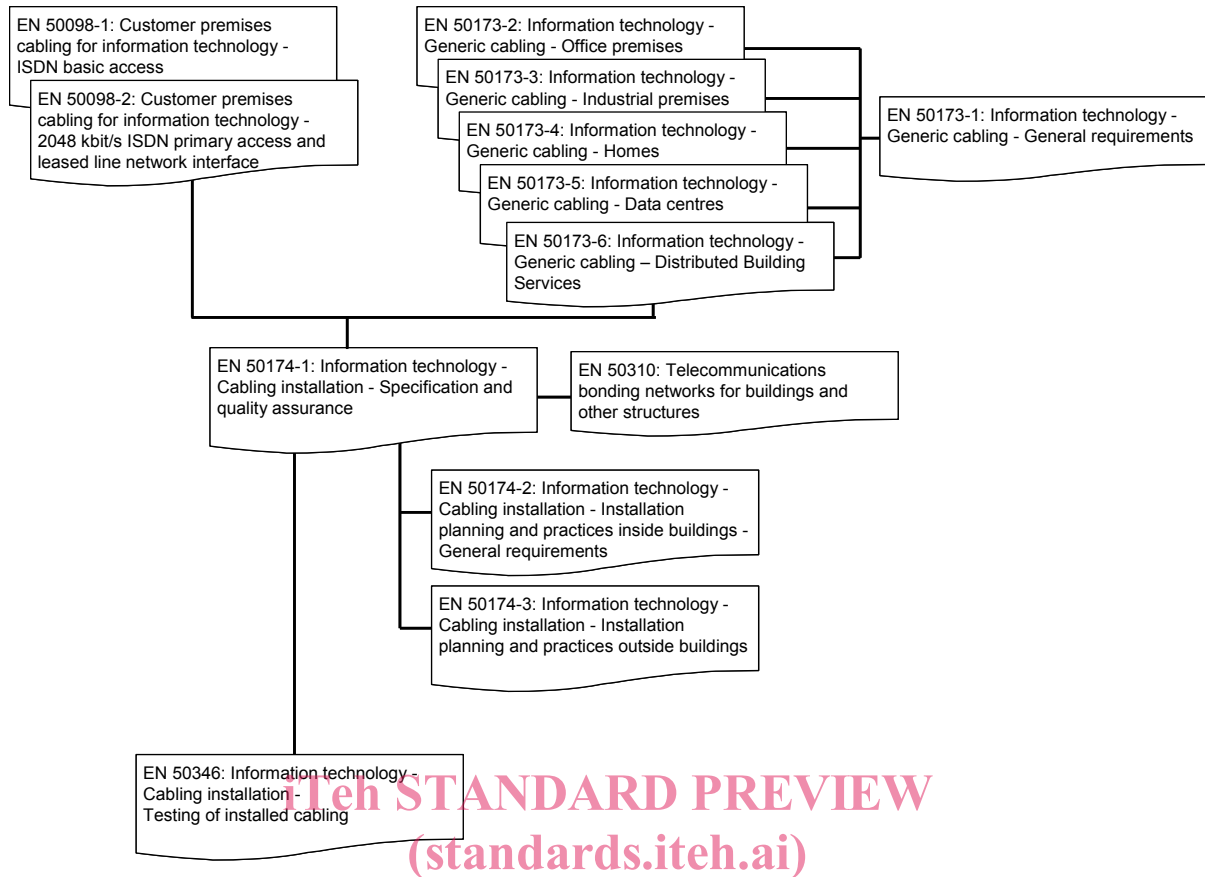


Figure 1 – Schematic relationship between EN 50310 and other relevant standards

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Table 1 – Contextual relationship between EN 50310 and other relevant standards

Building design phase	Generic cabling design phase	Specification phase	Installation phase	Operation phase
EN 50310 6 Selection of bonding network	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 specifying installations of information technology cabling 5 Requirements for installers of information technology cabling		EN 50174-1 4 Requirements for specifying installations of information technology cabling
	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	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 bonding) EN 50310	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 bonding) EN 50310 and EN 50346 4 General requirements 5 Test parameters for balanced cabling 6 Test parameters for optical fibre cabling	

1 Scope

This European Standard specifies requirements and provides recommendations for the design and installation of connections (bonds) between various electrically conductive elements in buildings and other structures, during their construction or refurbishment, in which information technology (IT) and, more generally, telecommunications equipment is intended to be installed in order to:

- a) minimize the risk to the correct function of that equipment and interconnecting cabling from electrical hazards;
- b) provide the telecommunications installation with a reliable signal reference – which may improve immunity from electromagnetic interference (EMI).

The requirements of this European Standard are applicable to the buildings and other structures within premises addressed by EN 50174-2 (e.g. residential, office, industrial and data centres) but information given in this European Standard may be of assistance for other types of buildings and structures.

NOTE Telecommunications centres (operator buildings) are addressed by ETSI/EN 300 253.

This European Standard does not apply to power supply distribution of voltages over AC 1 000 V.

Electromagnetic compatibility (EMC) requirements and safety requirements for power supply installation 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 the requirements of these standards and regulations.

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2 Normative references

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The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50083 series ¹⁾, *Cable networks for television signals, sound signals and interactive services*

EN 50174-2:2009, *Information technology – Cabling installation – Part 2: Installation planning and practices inside buildings*

EN 50174-2:2009/A1:2011, *Information technology – Cabling installation – Part 2: Installation planning and practices inside buildings*

EN 60728 series, *Cable networks for television signals, sound signals and interactive services (IEC 60728 series)*

EN 61140, *Protection against electric shock - Common aspects for installation and equipment (IEC 61140)*

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

HD 60364-4-41, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock (IEC 60364-4-41)*

HD 60364-4-444, *Low-voltage electrical installations – Part 4-444: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances (IEC 60364-4-44)*

¹⁾ Being partly replaced by EN 60728 series.

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HD 60364-5-54, *Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements, protective conductors and protective bonding conductors (IEC 60364-5-54)*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50174-2 and the following apply.

3.1.1

access provider

operator or another entity providing the means to enable external telecommunications services provision to a subscriber

[SOURCE: EN 50700:2014, 3.1.3]

3.1.2

asymmetric cabling

cabling within which the cable elements are asymmetric (unbalanced)

3.1.3

application

system, with its associated transmission method that is supported by telecommunications cabling

[SOURCE: EN 50173-1:2011, 3.1.5]

3.1.4

backbone bonding conductor

telecommunications bonding connection which interconnects telecommunications bonding backbones

3.1.5

balanced application

application designed and optimized to operate over symmetric cabling

3.1.6

common bonding network

set of interconnected conductive structures that combine the functions of a protective bonding network and a telecommunications bonding network

3.1.7

equipment bonding conductor

conductor that connects a protective bonding network to an item of telecommunications equipment

3.1.8

main earthing terminal

terminal or busbar which is part of the earthing arrangement of an installation and enabling the electric connection of a number of conductors for earthing purposes

[SOURCE: IEC 60050-826:2004, 826-13-15, modified – The terms “main earthing busbar main”, “grounding terminal (US)” and “main grounding busbar (US)” have been deleted.]

3.1.9

mesh isolated bonding network

mesh bonding network with a single point of connection to either the protective bonding network or another isolated bonding network

3.1.10**mesh size**

maximum length of conducting material between two adjacent connection points that create the grid of the telecommunications bonding network

3.1.11**primary bonding busbar**

telecommunications bonding connection element, connected to the main earthing terminal, that is used to attach telecommunications bonding backbone conductors and equipment bonding conductors

3.1.12**protective bonding network**

set of interconnected conductive elements to ensure electrical safety

Note 1 to entry: The protective bonding network meets the protective equipotential bonding system as defined in IEC 60050–195:1998, 195.

3.1.13**rack bonding conductor**

conductor that connects a rack bonding busbar or items of equipment within a cabinet, frame or rack to the telecommunications bonding network within a local area

3.1.14**rack bonding busbar**

attachment element within a cabinet, frame or rack or for multiple unit bonding conductors

3.1.15**secondary bonding busbar**

telecommunications bonding connection element for telecommunications systems and equipment in the area, served by a distributor

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3.1.16**system block**

functional group of equipment depending in its operation and performance on its connection to the same system reference potential plane, inherent to a mesh bonding network

[SOURCE: ETSI/EN 300 253:2015, 3.1.2]

3.1.17**system reference potential plane**

conductive solid plane, as an ideal goal in potential equalizing, that is approached in practice by horizontal or vertical meshes

Note 1 to entry: The mesh width thereof is adapted to the frequency range to be considered. Horizontal and vertical meshes may be interconnected to form a grid structure approximating a Faraday cage.

Note 2 to entry: The SRPP facilitates signalling with reference to a common potential.

[SOURCE: ETSI/EN 300 253:2015, 3.1.2]

3.1.18**symmetric cabling**

screened or unshielded cabling within which the cable elements comprise balanced pairs or quads

EXAMPLE Twisted pairs or quads.