SLOVENSKI STANDARD
SIST EN IEC 60664-1:2020

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Nadomešča:

SIST EN 60664-1:2007

Koordinacija izolacije za opremo v okviru nizkonapetostnih sistemov - 1. del: Načela, zahteve in preskusi (IEC 60664-1:2020)

Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests (IEC 60664-1:2020)

Isolationskoordination für elektrische Betriebsmittel in Niederspannungsanlagen - Teil 1: Grundsätze, Anforderungen und Prüfungen (IEC 60664-1:2020)

Coordination de l'isolement des matériels dans les réseaux d'énergie électrique à basse tension - Partie 1: Principes, exigences et essais (IEC 60664-1:2020)

Ta slovenski standard je istoveten z: **EN IEC 60664-1:2020**

ICS:

29.080.30	Izolacijski sistemi	Insulation systems

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Supersedes EN 60664-1:2007 and all of its amendments and corrigenda (if any)

English Version

Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests (IEC 60664-1:2020)

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This European Standard was approved by CENELEC on 2020-06-30. 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.

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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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 109/183/FDIS, future edition 3 of IEC 60664-1, prepared by IEC/TC 109 "Insulation co-ordination for low-voltage equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60664-1:2020.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-03-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-06-30

This document supersedes EN 60664-1:2007 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60664-1:2020 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60038:2009	NOTE	Harmonized as EN 60038:2011 (modified)
IEC 60216 (series)	NOTE	Harmonized as EN 60216 (series)
IEC 60068 (series)	NOTE	Harmonized as EN 60068 (series)
IEC 60068-1:2013	NOTE	Harmonized as EN 60068-1:2014 (not modified)
IEC 60085:2007	NOTE	Harmonized as EN 60085:2008 (not modified)
IEC 60112:2003	NOTE	Harmonized as EN 60112:2003 (not modified)
IEC 60364-4-44:2007	NOTE	Harmonized as HD 60364-4-442:2012 (modified)
IEC 60529	NOTE	Harmonized as EN 60529
IEC 60664-3:2016	NOTE	Harmonized as EN 60664-3:2017 (not modified)
IEC 60664-4:2005	NOTE	Harmonized as EN 60664-4:2006 (not modified)
IEC 61000-4-5:2014	NOTE	Harmonized as EN 61000-4-5:2014 (not modified)

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60068-2-2	-	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	-
IEC 60068-2-14	2009	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	2009
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60270	-	High-voltage test techniques - Partial discharge measurements	EN 60270	-
IEC 61140	2016	Protection against electric shock - Common aspects for installation and equipment	EN 61140	2016
IEC 61180	2016	High-voltage test techniques for low-voltage equipment - Definitions, test and procedure requirements, test equipment	EN 61180	2016

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

BASIC SAFETY PUBLICATION

PUBLICATION FONDAMENTALE DE SÉCURITÉ

Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests

Coordination de l'isolement des matériels dans les réseaux d'énergie électrique à basse tension – Partie 1: Principes, exigences et essais

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INSULATION COORDINATION FOR EQUIPMENT WITHIN LOW-VOLTAGE SUPPLY SYSTEMS –

Part 1: Principles, requirements and tests

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60664-1 has been prepared by IEC technical committee 109: Insulation co-ordination for low-voltage equipment.

This third edition cancels and replaces the second edition published in 2007. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) update of the Scope, Clauses 2 and 3,
b) new structure for Clauses 4 and 5,
c) addition of 1 500 V DC into tables in Annex B and F,
d) update of distances altitude correction in a new Table F.10,
e) addition of Annex G with a flowchart for clearances,

f) addition of Annex H with a flowchart for creepage distances.

It has the status of a basic safety publication in accordance with IEC Guide 104.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
109/183/FDIS	109/186/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60664 series, published under the general title *Insulation coordination for equipment within low-voltage supply systems*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

In this document, the following print type is used:

– **Terms defined in Clause 3: in bold type.**

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INSULATION COORDINATION FOR EQUIPMENT WITHIN LOW-VOLTAGE SUPPLY SYSTEMS –

Part 1: Principles, requirements and tests

1 Scope

This part of IEC 60664 deals with **insulation coordination** for equipment having a **rated voltage** up to AC 1 000 V or DC 1 500 V connected to **low-voltage supply systems**.

This document applies to frequencies up to 30 kHz.

NOTE 1 Requirements for **insulation coordination** for equipment within **low-voltage supply systems** with rated frequencies above 30 kHz are given in IEC 60664-4.

NOTE 2 Higher voltages can exist in internal circuits of the equipment.

It applies to equipment for use up to 2 000 m above sea level and provides guidance for use at higher altitudes (See 5.2.3.4).

It provides requirements for technical committees to determine **clearances**, **creepage distances** and criteria for **solid insulation**. It includes methods of electrical testing with respect to **insulation coordination**.

The minimum **clearances** specified in this document do not apply where ionized gases are present. Special requirements for such situations can be specified at the discretion of the relevant technical committee.

This document does not deal with distances:

– through liquid insulation;
– through gases other than air;
– through compressed air.

This basic safety publication focusing on safety essential requirements is primarily intended for use by technical committees in the preparation of standards in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51.

One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications in the preparation of its publications.

However, in case of missing specified values for **clearances**, **creepage distances** and requirements for **solid insulation** in the relevant product standards, or even missing standards, this document applies.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Tests B: Dry heat*

IEC 60068-2-14:2009, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60270, *High-voltage test techniques – Partial discharge measurements*

IEC 61140:2016, *Protection against electric shock – Common aspects for installation and equipment*

IEC 61180:2016, *High-voltage test techniques for low-voltage equipment – Definitions, test and procedure requirements, test equipment*

3 Terms, definitions and abbreviated terms

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1 Terms and definitions

3.1.1
low-voltage supply system
all installations and plant provided for the purpose of generating, transmitting and distributing electricity

[SOURCE: IEC 60050-601:1985, 601-01-01, modified – The term " electric power system" has been replaced with “low-voltage supply system”.]

3.1.2
mains supply
AC or DC power distribution system (external to the equipment) that supplies operating power to the equipment

Note 1 to entry: **Mains supply** includes public or private utilities and, unless otherwise specified in this document, equivalent sources such as motor-driven generators and uninterruptible power supplies.

3.1.3
insulation coordination
mutual correlation of insulation characteristics of electrical equipment taking into account the expected **micro-environment** and other influencing stresses

Note 1 to entry: Expected voltage stresses are characterized in terms of the characteristics defined in 3.1.7 to 3.1.16.

[SOURCE: IEC 60050-442:2014, 442-09-01, modified – “electrical” replaces “electric” and Note 1 to entry has been added.]

3.1.4
clearance
shortest distance in air between two conductive parts

[SOURCE: IEC 60050-581:2008, 581-27-76]