



SLOVENSKI STANDARD
SIST EN IEC 60146-1-1:2024

01-september-2024

Polprevodniški pretvorniki - Splošne zahteve in linijsko komutirani pretvorniki - 1-1. del: Specifikacija osnovnih zahtev (IEC 60146-1-1:2024)

Semiconductor converters - General requirements and line commutated converters - Part 1-1: Specification of basic requirements (IEC 60146-1-1:2024)

Halbleiter-Stromrichter - Allgemeine Anforderungen und netzgeführte Stromrichter - Teil 1-1: Festlegung der Grundanforderungen (IEC 60146-1-1:2024)

Convertisseurs à semiconducteurs - Exigences générales et convertisseurs commutés par le réseau - Partie 1-1: Spécification des exigences de base (IEC 60146-1-1:2024)

Ta slovenski standard je istoveten z: EN IEC 60146-1-1:2024

[SIST EN IEC 60146-1-1:2024](https://standards.slovenski-standard.si/standards/sist/60146-1-1:2024)

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English Version

**Semiconductor converters - General requirements and line
commutated converters - Part 1-1: Specification of basic
requirements
(IEC 60146-1-1:2024)**

Convertisseurs à semiconducteurs - Exigences générales
et convertisseurs commutés par le réseau - Partie 1-1:
Spécification des exigences de base
(IEC 60146-1-1:2024)

Halbleiter-Stromrichter - Allgemeine Anforderungen und
netzgeführte Stromrichter - Teil 1-1: Festlegung der
Grundanforderungen
(IEC 60146-1-1:2024)

This European Standard was approved by CENELEC on 2024-04-23. 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.

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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

EN IEC 60146-1-1:2024 (E)**European foreword**

The text of document 22/374/FDIS, future edition 5 of IEC 60146-1-1, prepared by IEC/TC 22 "Power electronic systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60146-1-1:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2025-01-23 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2027-04-23 document have to be withdrawn

This document supersedes EN 60146-1-1:2010 and all of its amendments and corrigenda (if any).

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Endorsement notice

The text of the International Standard IEC 60146-1-1:2024 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 standard indicated:

IEC 60071-1	NOTE	Approved as EN IEC 60071-1
IEC 60071-2	NOTE	Approved as EN IEC 60071-2
IEC 60076-1	NOTE	Approved as EN 60076-1
IEC 60146-2	NOTE	Approved as EN 60146-2
IEC 60364-1	NOTE	Approved as HD 60364-1
IEC 60529	NOTE	Approved as EN 60529
IEC 60664-3	NOTE	Approved as EN 60664-3
IEC 60664-4	NOTE	Approved as EN 60664-4
IEC 61000-2-2:2002	NOTE	Approved as EN 61000-2-2:2002 (not modified)
IEC 61000-3-3	NOTE	Approved as EN 61000-3-3
IEC 61000-3-11	NOTE	Approved as EN IEC 61000-3-11
IEC 61000-6-3:2020	NOTE	Approved as EN IEC 61000-6-3:2021 (not modified)
IEC 61000-6-5	NOTE	Approved as EN 61000-6-5
IEC 61000-6-8	NOTE	Approved as EN IEC 61000-6-8

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IEC 61180	NOTE	Approved as EN 61180
IEC 61204-3:2016	NOTE	Approved as EN IEC 61204-3:2018 (not modified)
IEC 61287-1	NOTE	Approved as EN 61287-1
IEC 61439-1	NOTE	Approved as EN IEC 61439-1
IEC 61800-3:2022	NOTE	Approved as EN IEC 61800-3:2023 (not modified)
IEC/TR 61800-6	NOTE	Approved as CLC/TR 61800-6
IEC 61803:2020	NOTE	Approved as EN IEC 61803:2020 (not modified)
IEC 62040-2:2016	NOTE	Approved as EN IEC 62040-2:2018 (not modified)
IEC 62068	NOTE	Approved as EN 62068
IEC 62310-2:2006	NOTE	Approved as EN 62310-2:2007

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<https://standards.iteh.ai/catalog/standards/sist/dcccb93a-4719-4f0a-bd83-50ec00b8520f/sist-en-iec-60146-1-1-2024>

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.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-551	1998	International Electrotechnical Vocabulary - Part 551: Power electronics	-	-
IEC 60050-551-20	2001	International Electrotechnical Vocabulary - Part 551-20: Power electronics - Harmonic analysis	-	-
IEC 60664-1	2020	Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests	EN IEC 60664-1	2020
IEC 61000-2-4	2002	Electromagnetic compatibility (EMC) - Part 2-4: Environment - Compatibility levels in industrial plants for low-frequency conducted disturbances	EN 61000-2-4	2002
IEC 61000-3-2	2018	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)	EN IEC 61000-3-2	2019
IEC 61000-3-12	2011	Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤ 75 A per phase	EN 61000-3-12	2011
IEC 61000-4-7	2002	Electromagnetic compatibility (EMC) - Part 4-7: Testing and measurement techniques - General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto	EN 61000-4-7	2002
IEC 61000-6-1	2016	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments	EN IEC 61000-6-1	2019

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IEC 61000-6-2	2016	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments	EN IEC 61000-6-2	2019
IEC 61000-6-4	2018	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments	EN IEC 61000-6-4	2019
IEC 61378-1	2011	Converter transformers - Part 1: Transformers for industrial applications	EN 61378-1	2011
IEC 62477-1	2022	Safety requirements for power electronic converter systems and equipment - Part 1: General	EN IEC 62477-1	2023
IEC 62477-2	2018	Safety requirements for power electronic converter systems and equipment - Part 2: Power electronic converters from 1 000 V AC or 1 500 V DC up to 36 kV AC or 54 kV DC	EN IEC 62477-2	2018

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<https://standards.iteh.ai/catalog/standards/sist/dcccb93a-4719-4f0a-bd83-50ec00b8520f/sist-en-iec-60146-1-1-2024>



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INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Semiconductor converters – General requirements and line commutated converters –
Part 1-1: Specification of basic requirements**

**Convertisseurs à semiconducteurs – Exigences générales et convertisseurs commutés par le réseau –
Partie 1-1: Spécification des exigences de base**

<https://standards.iteh.ai/catalog/standards/sist/dcccb93a-4719-4f0a-bd83-50ec00b8520f/sist-en-iec-60146-1-1-2024>

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SEMICONDUCTOR CONVERTERS – GENERAL REQUIREMENTS
AND LINE COMMUTATED CONVERTERS –****Part 1-1: Specification of basic requirements**

FOREWORD

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IEC 60146-1-1 has been prepared by IEC technical committee 22: Power electronic systems and equipment. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2009. This fifth edition constitutes a technical revision.

This fifth edition introduces four main changes:

- a) re-edition of the whole standard according to the current directives;
- b) deletion of safety-related descriptions considering coordination with IEC 62477 series;
- c) changes of calculation methods of inductive voltage regulation;
- d) changes considering coordination with IEC 61378 series.

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

Draft	Report on voting
22/374/FDIS	22/378/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of the IEC 60146 series, under the general title *Semiconductor converters – General requirements and line commutated converters*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn, or
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