



BSI Standards Publication

Semiconductor converters — General requirements and line commutated converters

Part 1-1: Specification of basic requirements

This is a preview of BS EN IEC 60146-1-1:2024. [Click here to purchase the full version from the ANSI store.](#)

National foreword

This British Standard is the UK implementation of EN IEC 60146-1-1:2024. It is identical to IEC 60146-1-1:2024, incorporating corrigendum March 2025. It supersedes BS EN 60146-1-1:2010, which is withdrawn.

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags. Text altered by IEC corrigendum March 2025 is indicated in the text by AC1 AC1.

The UK participation in its preparation was entrusted to Technical Committee PEL/22, Power electronics.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Amendments/corrigenda issued since publication

Date	Text affected
30 April 2025	Implementation of IEC corrigendum March 2025

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EUROPÄISCHE NORM

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Supersedes EN 60146-1-1:2010

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.

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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

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-04-23

This document supersedes EN 60146-1-1:2010 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.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

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 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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(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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		6-2: Generic standards - Immunity standard for industrial environments		
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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