

BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

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Draft Indian Standard

Semiconductor Converters Part 1 General and line commutated converters Section 1 Specification of basic requirements

(First Revision of IS 16539 Part 1 Sec 1)

(ICS 29.200, 29.045)

Power Electronics Sectional
Committee, ETD 31

Last date for comments-04/12/2024

NATIONAL FOREWORD

This Draft Indian Standard (First Revision) which is identical with IEC 60146-1-1: 2024 ‘Semiconductor converters – General requirements and line commutated converters – Part 1-1: Specification of basic requirements’ issued by the International Electrotechnical Commission (IEC) is proposed to be adopted by the Bureau of Indian Standards on the recommendation of the Power Electronics Sectional Committee and approval of the Electrotechnical Division Council.

This standard was originally published in 2017. The first revision of this standard has been undertaken to align it with the latest version of IEC 60146-1-1: 2024.

The text of the IEC Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words ‘International Standard’ appears referring to this standard, they should be read as ‘Indian Standard’.
- b) Comma (,) has been used as a decimal marker, while in Indian Standards the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to International Standards for which Indian Standards also exists. The corresponding Indian Standards, which are to be substituted, are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
IEC 60050-551:1998, International Electrotechnical Vocabulary (IEV) – Part 551: Power electronics	IS 1885 (Part 27) : 2008/ IEC 60050-551: 1998 Electrotechnical vocabulary Part 27 power electronics (<i>third revision</i>)	Identical

IEC 60664-1:2020, Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests	IS 15382 (Part 1) : 2022/ IEC 60664-1: 2020 Insulation coordination for equipment within Low-Voltage systems Part 1 Principles requirements and tests	Identical
IEC 61000-3-2: 2018, Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤16 A per phase)	IS 14700 (Part 3/Sec 2) : 2020/ IEC 61000-3-2 : 2018 Electromagnetic Compatibility (EMC) Part 3 Limits Section 2 Limits for harmonic current emissions (equipment input current ? 16 A per phase) (<i>third revision</i>)	Identical
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	IS 14700 (Part 4/Sec 7) : 2017/ IEC 61000-4-7 : 2009 Electromagnetic compatibility (EMC) Part 4 testing and measurement techniques Section 7 general guide on harmonic and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto (<i>first revision</i>)	Identical
IEC 61000-6-1:2016, Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity standard for residential, commercial and light-industrial environments	IS 14700 (Part 6/Sec 1) : 2019/ IEC 61000-6-1 : 2016 Electromagnetic compatibility (EMC) Part 6 Generic standards Section 1 Immunity standard for residential, commercial and light-industrial environments (<i>first revision</i>)	Identical
IEC 61000-6-2:2016, Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments	IS 14700 (Part 6/Sec 2) : 2019/ IEC 61000-6-2 : 2016 Electromagnetic compatibility (EMC) Part 6 Generic standards Section 2 Immunity standard for industrial environments (<i>first revision</i>)	Identical
IEC 61000-6-4:2018, Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments	IS 14700 (Part 4/Sec 6) : 2016 IEC 61000-4-6 : 2013 Electromagnetic compatibility (EMC) Part 4 testing and measurement techniques: Section 6 immunity to conducted disturbances, induced by radio - Frequency fields	Identical

The technical committee has reviewed the provision of the following International Standard referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
IEC 60050-551-20:2001	International Electrotechnical Vocabulary (IEV) – Part 551-20: Power electronics – Harmonic analysis
IEC 61000-2-4:2002	Electromagnetic compatibility (EMC) – Part 2-4: Environment – Compatibility levels in industrial plants for low-frequency conducted disturbances

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
IEC 61378-1:2011	Converter transformers – Part 1: Transformers for industrial applications
IEC 62477-1:2022	Safety requirements for power electronic converter systems and equipment – Part 1: General
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

Only English language text has been retained while adopting it in this Indian Standard, and as such the page numbers given here are not the same as in the International Standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with IS 2: 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

NOTE — The technical content of their document has not been enclosed as there are identical with the corresponding IEC standards for details, please refer the corresponding IEC 60146-1-1: 2024 or kindly contact:

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