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IEC 60146-1-1:1991

Australian Standard™

Semiconductor converters

Part 1.1: General requirements and line commutated converters—Specifications of basic requirements

Standards Australia

This Australian Standard was prepared by Committee EL-027, Power Electronics. It was approved on behalf of the Council of Standards Australia on 4 June 2002 and published on 4 July 2002.

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Australian Standard™

Semiconductor converters

Part 1.1: General requirements and line commutated converters—Specifications of basic requirements

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PREFACE

This Standard was prepared by the Standards Australia Committee EL-027, Power Electronics to partially supersede AS 1955.1—1977, *Semiconductor converters*, Part 1: *General* six months after publication.

The objective of this Standard is to provide system designers, manufacturers and users with performance requirements for all electronic power converters and switches.

This Standard is the first part of a three part Standard; the parts of which are as follows:

AS 60146	Semiconductor converters
AS 60146.1.1	Part 1.1: General requirements and line commutated converters—Specifications of basic requirements (this Standard)
AS 60146.1.2	Part 1.2: General requirements and line commutated converters—Application guide
AS 60146.1.3	Part 1.3: General requirements and line commutated converters—Transformers and reactors

This Standard is technically identical with, and has been reproduced from, IEC 60146-1-1:1991, *Semiconductor converters,* Part 1-1: *General requirements and line commutated converters—Specifications of basic requirements*, including Corrigendum:1993 and Amendment 1:1996 (marked with a marginal bar in the right hand margin). Minor editorial changes have been made to the text such as the use of the word ‘converter’ throughout the document (to standardize spelling across this series of Standards).

A reference to an International Standard identified in the Normative References Clause by strikethrough (~~example~~) is replaced by a reference to the Australian or Australian/New Zealand Standard(s) listed immediately thereafter and identified by shading (example). Where the struck-through referenced document and the referenced Australian or Australian/New Zealand Standard are identical, this is indicated in parenthesis after the title of the latter.

In January 1997, the IEC commenced numbering its Standards from 60000 by adding 60000 to the number of each existing Standard. This coordinates IEC numbering with ISO numbering. During the transition period an IEC Standard might be identified by its new number or its old number (for example, IEC 60050 or IEC 50).

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text ‘this International Standard’ should read ‘this Australian Standard’.

(c) A full point should be substituted for a comma when referring to a decimal marker.

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.

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STANDARDS AUSTRALIA

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Australian Standard

Semiconductor converters

Part 1.1: General requirements and line commutated converters—
Specifications of basic requirements

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Section 1 - General

1.1 Scope and object

This International Standard specifies the requirements for the performance of all electronic power converters and electronic power switches using controllable and/or non-controllable electronic valves.

The electronic valves mainly comprise semiconductor devices, i.e. diodes and various types of thyristors and transistors, such as reverse blocking or conducting thyristors, turn-off thyristors, triacs and power transistors. The devices may be controlled by means of current, voltage or light. Non-bistable devices are assumed to be operated in the switched mode.

This standard is primarily intended to specify the requirements applicable to line commutated converters for conversion of a.c. power to d.c. power or vice versa. Parts of this standard are applicable also to other types of electronic power converters and should be regarded as a standard for them in so far as it is not in contradiction to additional IEC Standards for particular types of semiconductor converters given in existing or future IEC Publications.

These specific equipment requirements are applicable to semiconductor power converters that either implement different types of power conversion or use different types of commutation (for example semiconductor self-commutated converters) or involve particular applications (for example semiconductor converters for d.c. motor drives) or include a combination of said characteristics (for example direct d.c. converters for electric rolling stock).

The main purposes of this standard are as follows:

Part 1-1, IEC 146-1-1, Specifications of basic requirements.

- to establish basic terms and definitions;
- to specify service conditions which influence the basis of rating;
- to specify test requirements for complete converter equipment and assemblies, standard design, (for special design see IEC 146-1-2);
- to specify basic performance requirements;
- to give application oriented requirements for semiconductor power converters.