

**BUREAU OF INDIAN STANDARDS**  
**DRAFT FOR COMMENTS ONLY**

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*Draft Indian Standard*

**Railway applications - Power converters installed on board rolling stock - Part 1: Characteristics and test methods**  
*(First Revision)*

(ICS 45.060)

Power Electronics Sectional  
Committee, ETD 31

Last date for comments-01/08/2024

**NATIONAL FOREWORD**

This Draft Indian Standard (First Revision) which is identical with IEC 61287-1:2014 ‘Railway applications - Power converters installed on board rolling stock - Part 1: Characteristics and test methods’ 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 2002. The first revision of this standard has been undertaken to align it with the latest version of IEC 61287-1:2014.

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 60076-10:2001, Power transformers – Part 10: Determination of sound levels	IS 2026 (Part 10) : 2009/ IEC 60076-10:2001 Power transformers: Part 10 determination of sound levels	Identical
IEC 60270, High-voltage test techniques – Partial discharge measurements	IS/IEC 60270 : 2000 High - Voltage test techniques - Partial discharge measurements	Identical
IEC 60384-4, Fixed capacitors for use in electronic equipment – Part 4: Sectional specification – Aluminium electrolytic capacitors with solid (MnO <sub>2</sub> ) and non-solid electrolyte	IS/IEC 60384-4 : 2016 Fixed capacitors for use in electronic equipment Part 4 Sectional specification Fixed aluminium electrolytic capacitors with solid MnO <sub>2</sub> and non-solid electrolyte Superseding IS 4317: 1983 and ISQC 300300 : 1992	Identical
IEC 60529, Degrees of protection provided by enclosures (IP Code)	IS/IEC 60529 : 2001 Degrees of protection provided by enclosures (IP Code)	Identical
IEC 60721-3-5, Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 5: Ground vehicle installations	IS/IEC 60721-3-5) : 1997 Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 5: Ground vehicle installations	Identical
IEC 60747 (all parts), Semiconductor devices – Discrete devices	IS 14901 (Part 1) : 2010/ IEC 60747-1: 2006 Semiconductor devices - Discrete devices and integrated circuits: Part 1 general (First Revision)	Identical
	IS 14901 (Part 2) : 2020/ IEC 60747-2: 2016 Semiconductor Devices Part 2 Discrete Devices — Rectifier Diodes ( First Revision )	Identical
	IS 14901 (Part 3) : 2016/ IEC 60747-3 : 2013 Semiconductor Devices Discrete Devices Part 3 Signal, Switching and Regulator Diodes	Identical
	IS 14901 (Part 5) : 2004 IEC 60747-5:1992 Semiconductor devices - Discrete devices and integrated circuits: Part 5 optoelectronic devices	Identical
	IS 14901 (Part 7) : 2020 IEC 60747-7 : 2010 Semiconductor Devices — Discrete Devices Part 7	Identical

	Bipolar Transistors ( First Revision )	
	IS 14901 (Part 8) : 2020 IEC 60747-8 : 2010 Semiconductor Devices — Discrete Devices Part 8 Field-Effect Transistors ( Second Revision )	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 60050-811:1991	International Electrotechnical Vocabulary – Chapter 811: Electric traction
IEC 60077-1:1999	Railway applications – Electric equipment for rolling stock – Part 1: General service conditions and general rules
IEC 60310	Railway applications – Traction transformers and inductors on board rolling stock
IEC 60322	Railway applications – Electric equipment for rolling stock – Rules for power resistors of open construction
IEC 60349-1	Electric traction – Rotating electrical machines for rail and road vehicles – Part 1: Machines other than electronic converter-fed alternating current motors
IEC 60349-2	Electric traction – Rotating electrical machines for rail and road vehicles – Part 2: Electronic converter-fed alternating current motors
IEC 60349-4	Electric traction – Rotating electrical machines for rail and road vehicles – Part 4: Permanent magnet synchronous electrical machines connected to an electronic converter
IEC 60571	Railway applications – Electronic equipment used on rolling stock
IEC 60850	Railway applications – Supply voltages of traction systems
IEC 61148	Terminal markings for valve device stacks and assemblies and for power conversion equipment
IEC 61373	Railway applications – Rolling stock equipment – Shock and vibration tests
IEC 61881 (all parts),	Railway applications – Rolling stock equipment – Capacitors for power electronics
IEC 61991	Railway applications – Rolling stock – Protective provisions against electrical hazards
IEC 62236-3-1	Railway applications – Electromagnetic compatibility – Part 3-1: Rolling stock – Train and complete vehicle
IEC 62236-3-2	Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock – Apparatus
IEC 62497-1:2010	Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment
IEC 62498-1:2010	Railway applications – Environmental conditions for equipment – Part 1:

Equipment on board rolling stock
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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 61287-1:2014 or kindly contact:

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