

BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

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Draft Indian Standard

Photovoltaic (PV) Module Safety Qualification
Part 2 Requirements for Testing

(Second Revision)

(ICS 27.160)

Solar Photovoltaic Energy
Systems Sectional Committee, ETD 28

Last date for comments- 30 06 2024

NATIONAL FOREWORD

This draft Indian Standard (Part 2) (Second Revision) which is Identical with IEC 61730-2: 2023 'Photovoltaic (PV) Module Safety Qualification Part 2: Requirements for Testing' issued by the International Electrotechnical Commission (IEC) will be adopted by the Bureau of Indian Standards on the recommendation of the Solar Photovoltaic Energy Systems Sectional Committee and approval of the Electrotechnical Division Council.

This Standards was originally Published in 2010 and subsequently revised in 2019. The first revision was based on IEC 61730-2: 2016. The second revision of this standard has been undertaken to align with the latest version of IEC 61730-2: 2023.

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 60060-1, High-voltage test techniques – Part 1: General definitions and test requirements	IS 2071 (Part 1) : 2016 / IEC 60060-1 : 2010 High-voltage Test Techniques Part 1 General Definitions and Test Requirements (<i>Third Revision</i>)	Identical
IEC 60068-2-1:2007, Environmental testing – Part 2-1: Tests – Test A: Cold	IS / IEC 60068-2-1 : 2007 Environmental Testing Part 2 Tests Section 1 Test A: Cold	Identical
IEC 60068-2-2:2007, Environmental testing – Part 2-2: Tests – Test B: Dry heat	IS / IEC 60068-2-2 : 2007 Environmental Testing Part 2 Tests Section 2 Test B Dry Heat	Identical
IEC 60598-1: 2020, Luminaires – Part 1: General requirements and tests	IS 10322 (Part 1) : 2014 Luminaires: Part 1 general requirements and tests (<i>First Revision</i>)	Modified/Technically Equivalent
IEC 60664-1:2020, Insulation co-ordination for equipment within low-voltage 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 (<i>Second Revision</i>)	Identical
IEC 60695-2-10, Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure	IS / IEC 60695-2-10 : 2021 Fire Hazard Testing Part 2 Glowing/Hot-Wire Based Test Methods Section 10 Glow-Wire Apparatus and Common Test Procedure	Identical
IEC 60950-1: 2005, Information technology equipment – Safety – Part 1: General requirements IEC 60950-1: 2005/AMD1:2009 IEC 60950-1:2005/AMD2:2013	IS 13252 (Part 1) : 2010 / IEC 60950-1 : 2005 Information Technology Equipment — Safety Part 1 General Requirements (<i>Second Revision</i>)	Identical
IEC 61010-1, Safety Requirements For Electrical Equipment For Measurement, Control And Laboratory Use – Part 1: General requirements	IS 17724 (Part 1) : 2023 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1 General Requirements (IEC 61010-1 : 2010 + AMD 1 : 2016 + COR 1 : 2019, MOD)	Modified/Technically Equivalent
IEC 61032:1997, Protection of Persons And Equipment By Enclosures – Probes For	IS 1401 : 2008 / IEC 61032: 1997 Protection Of Persons And Equipment By Enclosures —	Identical

Verification	Probes For Verification (<i>Second Revision</i>)	
IEC 61140, Protection against Electric Shock – Common Aspects For Installation And Equipment	IS 9409 : 2023 / IEC 61140 : 2016 Protection Against Electric Shock — Common Aspects for Installation and Equipment (<i>First Revision</i>)	Identical
IEC 61215 (all parts), Terrestrial photovoltaic (PV) modules – Design qualification and type approval	IS 14286 (Part 1) : 2019 / IEC 61215-1 : 2016 Terrestrial Photovoltaic (PV) Modules — Design Qualification and Type Approval Part 1 Test Requirements (<i>Second Revision</i>)	Identical
	IS 14286 (Part 1/Sec 1) : 2019 / IEC 61215-1-1 : 2016 Terrestrial Photovoltaic (PV) Modules — Design Qualification and Type Approval Part 1 Test Requirements Section 1 Special requirements for testing of crystalline silicon photovoltaic (PV) modules (<i>Second Revision</i>)	Identical
	IS 14286 (Part 1/Sec 2) : 2019 / IEC 61215-1-2 : 2016 Terrestrial Photovoltaic (PV) Modules — Design Qualification and Type Approval Part 1 Test Requirements Section 2 Special requirements for testing of thin-film cadmium telluride (CDTE) based photovoltaic (PV) modules (<i>Second Revision</i>)	Identical
	IS 14286 (Part 1/Sec 3) : 2019 / IEC 61215-1-3 : 2016 Terrestrial Photovoltaic (PV) Modules — Design Qualification and Type Approval Part 1 Test Requirements Section 3 Special requirements for testing of thin-film amorphous silicon based photovoltaic (PV) modules (<i>Second Revision</i>)	Identical
	IS 14286 (Part 1/Sec 4) : 2019 / IEC 61215-1-4 : 2016 Terrestrial Photovoltaic (PV) Modules — Design Qualification and Type	Identical

	Approval Part 1 Test Requirements Section 4 Special requirements for testing of thin-film Cu (In,Ga) (S,Se) ₂ based photovoltaic (PV) modules (<i>Second Revision</i>)	
	IS 14286 (Part 2) : 2019 / IEC 61215-2 : 2016 Terrestrial Photovoltaic (PV) Modules — Design Qualification and Type Approval Part 2 Test Procedures (<i>Second Revision</i>)	Identical
IEC 61730-1:2023, Photovoltaic (PV) module safety qualification – Part 1: Requirements for construction	IS / IEC 61730-1 : 2016 Photovoltaic (PV) Module Safety Qualification Part 1 Requirements for Construction (<i>First Revision</i>)	Identical
IEC TS 61836, Solar Photovoltaic Energy Systems – Terms, Definitions And Symbols	IS 12834 : 2023 / IEC TS 61836 : 2016 Solar Photovoltaic Energy Systems — Terms, Definitions and Symbols (<i>Second Revision</i>)	Identical
IEC 62790: 2020, Junction boxes for photovoltaic modules – Safety requirements and tests	IS 16911 : 2023 / IEC 62790 : 2020 Junction Boxes for Photovoltaic Modules — Safety Requirements and Tests (<i>First Revision</i>)	Identical
IEC TS 62915, Photovoltaic (PV) modules – Type approval, design and safety qualification – Retesting	IS/IEC TS 62915 : 2018 Photovoltaic (PV) Modules — Type Approval, Design and Safety Qualification — Retesting	Identical
ISO 813, Rubber, vulcanized or thermoplastic – Determination of adhesion to a rigid substrate – 90 degree peel method	IS 3400 (Part 14/Sec 1) : 2021 / ISO 813 : 2016 Methods of Test for Vulcanized Rubbers Part 14 Adhesion of Rubber to Rigid Substrate Section 1 90° peel method (<i>Second Revision</i>)	Identical
ISO 11925-2: 2020, Reaction to Fire Tests – Ignitability Of Products Subjected To Direct Impingement Of Flame – Part 2: Single-Flame Source Test	IS / ISO 11925-2 : 2020 Reaction to Fire Tests — Ignitability of Products Subjected to Direct Impingement of Flame Part 2 Single-flame Source Test	Identical
ISO 23529, Rubber – General Procedures For Preparing And Conditioning Test Pieces For Physical Test Methods	IS 13867 : 2021 / ISO 23529 : 2016 Rubber — General Procedures for Preparing and Conditioning Test Pieces for	Identical

	Physical Test Methods (<i>First Revision</i>)	
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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 60068-3-5	Environmental testing – Part 3-5: Supporting documentation and guidance – Confirmation of the performance of temperature chambers
IEC 62788-2-1:2023	Measurement procedures for materials used in photovoltaic modules – Part 2-1: Polymeric materials – Frontsheet and backsheet – Safety requirements
ISO 4587:2003	Adhesives – Determination of tensile lap-shear strength of rigid-to-rigid bonded assemblies
ISO 5893	Rubber and plastics test equipment – Tensile, flexural and compression types (constant rate of traverse) – Specification
ANSI/UL 1703:2015	Flat-plate photovoltaic modules and panels
ANSI Z97.1:2009	Standard – Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test

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 61730-2: 2023 or kindly contact:

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