

**BUREAU OF INDIAN STANDARDS**  
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*Draft Indian Standard*

**Photovoltaic System Performance**  
**Part 1: Monitoring**

*(Second Revision)*

(ICS 27.160)

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Solar Photovoltaic Energy  
Systems Sectional Committee, ETD 28

Last date for comments- 30 06 2024

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NATIONAL FOREWORD

This draft Indian Standard (Second Revision) which is Identical with IEC 61724-1: 2021 ‘Photovoltaic System Performance Part 1: Monitoring’ 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 (Part 1) was originally published in 2010 and subsequently revised in 2018. The first revision was based on IEC 61724-1: 2017. The second revision of this standard has been undertaken to align it with the latest version of IEC 61724-1: 2021.

This standard is published in three parts. Other parts in this series are:

- Part 2 Capacity evaluation method
- Part 3 Energy evaluation method

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 60050-131, International Electrotechnical Vocabulary (IEV) – Part 131: Circuit theory	IS 1885 (Part 57) :2008 / IEC 60050-131 :2002 Indian Standard Electrotechnical Vocabulary Part 57 Circuit Theory ( <i>Second Revision</i> )	Identical
IEC 60904-2, Photovoltaic devices – Part 2: Requirements for photovoltaic reference devices	IS 12762 (Part 2) : 2018 / IEC 60904-2 : 2015 Photovoltaic devices: Part 2 Requirements for photovoltaic reference devices ( <i>Second Revision</i> )	Identical
IEC 60904-5, Photovoltaic devices – Part 5: Determination of the equivalent cell temperature (ECT) of photovoltaic (PV) devices by the open-circuit voltage method	IS 12762 (Part 5) : 2014 / IEC 60904-5 : 2011 Photovoltaic Devices Part 5 Determination of the Equivalent Cell Temperature (ECT) of Photovoltaic (PV) Devices by the Open-Circuit Voltage Method ( <i>First Revision</i> )	Identical
IEC 60904-7, Photovoltaic devices – Part 7: Computation of the spectral mismatch correction for measurements of photovoltaic devices	IS 12762 (Part 7) : 2023 / IEC 60904-7 : 2019 Photovoltaic Devices Part 7 Computation of the Spectral Mismatch Correction for Measurements of Photovoltaic Devices ( <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 2) : 2019 / IEC 61215-2 : 2016 Terrestrial Photovoltaic (PV) Modules — Design Qualification and Type Approval Part 2 Test Procedures ( <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	Identical

IEC 61215 (all parts), Terrestrial photovoltaic (PV) modules – Design qualification and type approval	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> )	
	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 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> )	Identical
IEC TS 61724-2, Photovoltaic system performance – Part 2: Capacity evaluation method	IS/IEC TS 61724-2 : 2016 Photovoltaic System Performance Part 2 Capacity Evaluation Method	Identical
IEC TS 61724-3, Photovoltaic system performance – Part 3: Energy evaluation method	IS/IEC TS 61724-3 : 2016 Photovoltaic System Performance Part 3 Energy Evaluation Method	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 62670-3, Photovoltaic concentrators (CPV) – Performance testing – Part 3: Performance measurements and power rating	IS 16662 (Part 3) : 2018 / IEC 62670- 3 : 2017 Photovoltaic Concentrators (CPV) — Performance Testing Part 3 Performance Measurements and Power Rating	Identical
IEC 62817: 2014, Photovoltaic systems – Design qualification of solar trackers	IS/IEC 62817 : 2017 Photovoltaic System — Design Qualification of Solar Trackers	Identical
ISO 9488, Solar energy – Vocabulary	IS/ISO 9488 : 2022 Solar Energy — Vocabulary ( <i>First Revision</i> )	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 61557-12	Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 12: Power metering and monitoring devices (PMD)
IEC 62053-22	Electricity metering equipment – Particular requirements – Part 22: Static meters for AC active energy (classes 0,1S, 0,2S and 0,5S)
ISO/IEC Guide 98-1	Uncertainty of measurement – Part 1: Introduction to the expression of uncertainty in measurement
ISO/IEC Guide 98-3	Uncertainty of measurement – Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)
ISO 9060:2018	Solar energy – Specification and classification of instruments for measuring hemispherical solar and direct solar radiation

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 61724-1: 2021 or kindly contact:

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