# INTERNATIONAL STANDARD

# IEC 61215

Second edition
2005-04



## Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval

*This **English-language** version is derived from the original **bilingual** publication by leaving out all French-language pages. Missing page numbers correspond to the French-language pages.*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

# CRYSTALLINE SILICON TERRESTRIAL PHOTOVOLTAIC (PV) MODULES – DESIGN QUALIFICATION AND TYPE APPROVAL

## FOREWORD

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International Standard IEC 61215 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This second edition cancels and replaces thew first edition published in 1993 and constitutes a technical revision.

The main changes with respect to the previous edition (published in 1993) are detailed in Annex A.

The text of this standard is based on the following documents:

| FDIS | Report on voting |
|---|---|
| 82/376/FDIS | 82/382/RVD |

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

# CRYSTALLINE SILICON TERRESTRIAL PHOTOVOLTAIC (PV) MODULES – DESIGN QUALIFICATION AND TYPE APPROVAL

## 1 Scope and object

This International Standard lays down IEC requirements for the design qualification and type approval of terrestrial photovoltaic modules suitable for long-term operation in general open-air climates, as defined in IEC 60721-2-1. It applies only to crystalline silicon modules types. A standard for thin-film modules has been published as IEC 61646.

This standard does not apply to modules used with concentrated sunlight.

The object of this test sequence is to determine the electrical and thermal characteristics of the module and to show, as far as is possible within reasonable constraints of cost and time, that the module is capable of withstanding prolonged exposure in climates described in the scope. The actual lifetime expectancy of modules so qualified will depend on their design, their environment and the conditions under which they are operated.



## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-21:1999, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-78:2001, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60410:1973, *Sampling plans and procedures for inspection by attributes*

IEC 60721-2-1:1982, *Classification of environmental conditions – Part 2: Environmental conditions appearing in nature – Temperature and humidity*

IEC 60891:1987, *Procedures for temperature and irradiance corrections to measured I-V characteristics of crystalline silicon photovoltaic devices*
Amendment 1 (1992)

IEC 60904-1:1987, *Photovoltaic devices – Part 1: Measurements of photovoltaic current-voltage characteristics*

IEC 60904-2:1989, *Photovoltaic devices – Part 2: Requirements for reference solar cells*

IEC 60904-3:1989, *Photovoltaic devices – Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data*

IEC 60904-6:1994, *Photovoltaic devices – Part 6: Requirements for reference solar modules*

IEC 60904-7:1998, *Photovoltaic devices – Part 7: Computation of spectral mismatch error introduced in the testing of a photovoltaic device*

IEC 60904-9:1995, *Photovoltaic devices – Part 9: Solar simulator performance requirements*

IEC 60904-10:1998, *Photovoltaic devices – Part 10: Methods of linearity measurements*

IEC 61853: *Performance testing and energy rating of terrestrial photovoltaic (PV) modules* [1]

ISO/IEC 17025:1999, *General requirements for competence of testing and calibration laboratories.*



[1] Under consideration.