



TECHNICAL SPECIFICATION



**Photovoltaic (PV) modules – Type approval, design and safety qualification –
Retesting**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PHOTOVOLTAIC (PV) MODULES – TYPE APPROVAL, DESIGN AND SAFETY QUALIFICATION – RETESTING

FOREWORD

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IEC TS 62915 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems. It is a Technical Specification.

This publication contains attached files in the form of xls document. These files are intended to be used as a complement and do not form an integral part of the publication.

This second edition cancels and replaces the first edition published in 2018. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- Prior references to specific process-related changes to PV modules have been removed in this edition and replaced with a general requirement to ensure that a consistent quality management system is in place per IEC 62941

- References to IEC 61215 and IEC 61730 have been updated to the latest editions (2021 and 2023 respectively)
 - Retest requirements with respect to new added tests such as cyclic (dynamic) mechanical load (MQT 20) and potential-induced degradation (MQT 21) are addressed in this edition
- Retest requirements for IEC 61215 and IEC 61730 have been separated for the sake of clarity
- A comprehensive matrix table summarizing all the retest requirements for each possible change in material(s) or design modification is provided in this edition
- References to component level standards, namely IEC 62788-1 series and IEC 62788-2 series, are included in this edition to address changes that could be made to the critical sub-components going into new PV module constructions
- Crystalline silicon and thin film references have been updated to be consistent with nomenclature in the updated IEC 61215 and IEC 61730 standards; namely, wafer-based technology (WBT) and monolithically integrated (MLI) thin film PV modules
- In this edition, 4.3 which addresses retest requirements for MLI thin film PV modules has been truncated and simplified by removing redundant sections that are identical with the subclauses in 4.2
- Guidance for retesting modules according to IEC TS 63126, “Guidelines for qualifying PV modules, components and materials for operation at high temperatures” has been added to this edition
- In this edition, requirements have been added for changes affecting system compatibility with variants of the same model

The text of this technical specification is based on the following documents:

Enquiry draft	Reports on voting
82/2121/DTS	82/2157A/RVDTS

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

The language used for the development of this Technical Specification is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

The contents of the corrigendum 1 (2024-08) have been included in this copy.

PHOTOVOLTAIC (PV) MODULES – TYPE APPROVAL, DESIGN AND SAFETY QUALIFICATION – RETESTING

1 Scope

This document sets forth a uniform approach to maintain type approval, design and safety qualification of terrestrial PV modules that have undergone or will undergo modification from their originally assessed design. This document addresses two types of PV module technologies, wafer-based technologies (WBT) and monolithically-integrated (MLI) thin-film based technologies.

Changes in material selection, components and manufacturing process can impact electrical performance, reliability and safety of the modified product. This document lists typical modifications and the resulting requirements for retesting based on the different test standards. It provides assistance; at some level, engineering judgement may be needed.

The test sequences are selected to identify adverse changes to the modified product.

Those products successfully following the herein defined test sequences are considered to be compliant with the standard against which they have originally been assessed in a full qualification.

The number of samples to be included in the retesting program and the pass/fail criteria are listed in the referenced standards IEC 61215 and IEC 61730. In addition, a representative sample may be used as described in IEC 61215 and IEC 61730 as applicable.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 61215-1:2021, *Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements*

IEC 61215-2:2021, *Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 2: Test procedures*

IEC 61730-1:2023, *Photovoltaic (PV) module safety qualification – Part 1: Requirements for construction*

IEC 61730-2:2023, *Photovoltaic (PV) module safety qualification – Part 2: Requirements for testing*

IEC TS 61836, *Solar photovoltaic energy systems – Terms, definitions and symbols* IEC 62788-2-1, *Measurement procedures for materials used in photovoltaic modules – Part 2-1: Polymeric materials – Frontsheet and backsheet – Safety requirements*

IEC 62790, *Junction boxes for photovoltaic modules – Safety requirements and tests*

IEC 62852, *Connectors for DC-application in photovoltaic systems – Safety requirements and tests*

IEC 62930, *Electric cables for photovoltaic systems with a voltage rating of 1,5 kV DC*

IEC 62941:2019, *Terrestrial photovoltaic (PV) modules - Quality system for PV module manufacturing*

IEC TS 63126 2020, *Guidelines for qualifying PV modules, components, and materials for operation at high temperatures*

ISO 9001, *Quality management systems – Requirements*