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BSI Standards Publication

Photovoltaic (PV) modules — Cyclic (dynamic) mechanical load testing

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee GEL/82, Photovoltaic Energy Systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62782, which is a technical specification, has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

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

Enquiry draft	Report on voting
82/971/DTS	82/1014A/RVC

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.

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 stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

PHOTOVOLTAIC (PV) MODULES – CYCLIC (DYNAMIC) MECHANICAL LOAD TESTING

1 Scope

This technical specification provides a test method for performing a cyclic (dynamic) mechanical load test in which the module is supported at the design support points and a uniform load normal to the module surface is cycled in alternating negative and positive directions. This test may be utilized to evaluate if components within the module including solar cells, interconnect ribbons and/or electrical bonds within the module are susceptible to breakage or if edge seals are likely to fail due to the mechanical stresses encountered during installation and operation. This test can be performed at any module temperature within the normal operating temperature range. Since the results have been determined to depend on the module temperature during the application of the load it is critical to maintain the module at a constant temperature during the performance of this test.

This technical specification has historically been applied to rigid modules. It cannot be applied to flexible modules unless they are designed to be mounted in a rigid manner. In which case, the cyclic (dynamic) mechanical load test can be applied to the flexible module in its rigid mounting system.

This test has been written as a standalone technical specification, but it is likely to be used in conjunction with other test standards. Typically, this test itself will not result in power loss, but when followed by additional stress tests like thermal cycling and humidity freeze, the damage done by the mechanical cycling results in power loss that would not have occurred due only to the thermal cycling and humidity freeze tests. For example, the transportation testing procedure (IEC 62759) includes the requirements for such a cyclic (dynamic) mechanical load test followed by 50 thermal cycles and 10 humidity freeze cycles.

2 Normative references

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

IEC TS 60904-12, *Photovoltaic devices – Part 12: Infrared thermography of photovoltaic modules*[1]

IEC TS 60904-13, *Photovoltaic devices – Part 13: Electroluminescence of photovoltaic modules*[1]

IEC 61215-1:2016, *Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements*

IEC 61215-2:2016, *Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 2: Test procedures*

IEC TS 61836, *Solar photovoltaic energy systems – Terms, definitions and symbols*

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1 To be published.