SVENSK STANDARD SS-EN IEC 61215-1-1

Utgåva 2

2021-05-19

REDLINE VERSION

Solcellsanläggningar – Konstruktions- och typgodkännande av solcellsmoduler – Del 1-1: Särskilda fordringar för provning av moduler med celler av kristallint kisel

Terrestrial photovoltaic (PV) modules –
Design qualification and type approval –
Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules

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IEC 61215-1-1

Edition 2.0 2021-02
REDLINE VERSION

INTERNATIONAL STANDARD

colour inside

Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules

FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 61215-1-1.2016. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

International Standard IEC 61215-1-1 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This second edition cancels and replaces the first edition of IEC 61215-1-1, issued in 2016, and constitutes a technical revision.

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

a) A cyclic (dynamic) mechanical load test (MQT 20) added.
b) A test for detection of potential-induced degradation (MQT 21) added.
c) A bending test (MQT 22) for flexible modules added.
d) A procedure for stress specific stabilization – BO LID (MQT 19.3) added.
e) A final stabilization procedure for modules undergoing PID testing added.

Informative Annex A of IEC 61215-1:2021 explains the background and reasoning behind some of the more substantial changes that were made in the IEC 61215 series in progressing from edition 1 to edition 2.

The text of this International Standard is based on the following documents:

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82/1824/FDIS	82/1849/RVD

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

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

This standard is to be read in conjunction with IEC 61215-1:2021 and IEC 61215-2:2021.

A list of all parts in the IEC 61215 series, published under the general title *Terrestrial photovoltaic (PV) modules – Design qualification and type approval*, can be found on the IEC website.

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

- reconfirmed,
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TERRESTRIAL PHOTOVOLTAIC (PV) MODULES – DESIGN QUALIFICATION AND TYPE APPROVAL –

Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules

1 Scope ~~and object~~

~~This part of IEC 61215 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. This standard is intended to apply to all crystalline silicon terrestrial flat plate modules.~~

~~This standard does not apply to modules used with concentrated sunlight although it may be utilized for low concentrator modules (1 to 3 suns). For low concentration modules, all tests are performed using the current, voltage and power levels expected at the design concentration.~~

~~The object of this test sequence is to determine the electrical and thermal characteristics of the module and to show, as far as 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.~~

This document lays down requirements for the design qualification of terrestrial photovoltaic modules suitable for long-term operation in open-air climates. The useful service life of modules so qualified will depend on their design, their environment and the conditions under which they are operated. Test results are not construed as a quantitative prediction of module lifetime. In climates where 98th percentile operating temperatures exceed 70 °C, users are recommended to consider testing to higher temperature test conditions as described in IEC TS 63126.

Users desiring qualification of PV products with lesser lifetime expectations are recommended to consider testing designed for PV in consumer electronics, as described in IEC 63163 (under development). Users wishing to gain confidence that the characteristics tested in IEC 61215 appear consistently in a manufactured product may wish to utilize IEC 62941 regarding quality systems in PV manufacturing.

This document is intended to apply to all crystalline silicon terrestrial flat plate modules.

This document does not apply to modules used with concentrated sunlight although it may be utilized for low concentrator modules (1 to 3 suns). For low concentration modules, all tests are performed using the irradiance, current, voltage and power levels expected at the design concentration.

The objective of this test sequence is to determine the electrical characteristics of the module and to show, as far as possible within reasonable constraints of cost and time, that the module is capable of withstanding prolonged exposure outdoors. Accelerated test conditions are empirically based on those necessary to reproduce selected observed field failures and are applied equally across module types. Acceleration factors may vary with product design and thus not all degradation mechanisms may manifest. Further general information on accelerated test methods including definitions of terms may be found in IEC 62506.

Some long-term degradation mechanisms can only reasonably be detected via component testing, due to long times required to produce the failure and necessity of stress conditions that are expensive to produce over large areas. Component tests that have reached a sufficient

level of maturity to set pass/fail criteria with high confidence are incorporated into the IEC 61215 series via addition to Table 1 in IEC 61215-1:2021. In contrast, the tests procedures described in this series, in IEC 61215-2, are performed on modules.

This document defines PV technology dependent modifications to the testing procedures and requirements per IEC 61215-1:~~2016~~2021 and IEC 61215-2:~~2016~~2021.

2 Normative references

The normative references of IEC 61215-1:~~2016~~2021 and IEC 61215-2:~~2016~~2021 are applicable without modifications.

SVENSK STANDARD SS-EN IEC 61215-1-1

Fastställd	Utgåva	Sida	Ansvarig kommitté
2021-05-19	2	1 (1+13)	SEK TK 82

Solcellsanläggningar – Konstruktions- och typgodkännande av solcellsmoduler – Del 1-1: Särskilda fordringar för provning av moduler med celler av kristallint kisel

Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules

Som svensk standard gäller europastandarden EN IEC 61215-1-1:2021. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61215-1-1:2021.

Nationellt förord

Europastandarden EN IEC 61215-1-1:2021

består av:

- **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
- **IEC 61215-1-1, Second edition, 2021 - Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules**

utarbetad inom International Electrotechnical Commission, IEC.

Standarden ska användas tillsammans med SS-EN IEC 61215-1, utgåva 2, 2021 och SS-EN IEC 61215-2, utgåva 2, 2021.

Tidigare fastställd svensk standard SS-EN 61215-1-1, utgåva 1, 2017, gäller ej fr o m 2024-03-30.

ICS 27.160.00

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EUROPEAN STANDARD

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EN IEC 61215-1-1

April 2021

ICS 27.160

Supersedes EN 61215-1-1:2016 and all of its amendments and corrigenda (if any)

English Version

Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1-1: Special requirements for testing of crystalline silicon photovoltaic (PV) modules (IEC 61215-1-1:2021)

Modules photovoltaïques (PV) pour applications terrestres - Qualification de la conception et homologation - Partie 1-1: Exigences particulières d'essai des modules photovoltaïques (PV) au silicium cristallin (IEC 61215-1-1:2021)

Terrestrische Photovoltaik(PV)-Module - Bauarteignung und Bauartzulassung - Teil 1-1: Besondere Anforderungen an die Prüfung von kristallinen Silizium-Photovoltaik(PV)-Modulen (IEC 61215-1-1:2021)

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 61215-1-1:2021 E

European foreword

The text of document 82/1824/FDIS, future edition 2 of IEC 61215-1-1, prepared by IEC/TC 82 “Solar photovoltaic energy systems” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61215-1-1:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021–12–30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024–03–30

This document supersedes EN 61215-1-1:2016 and all of its amendments and corrigenda (if any).

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Endorsement notice

The text of the International Standard IEC 61215-1-1:2021 was approved by CENELEC as a European Standard without any modification.

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