SLOVENSKI STANDARD
SIST EN IEC 62108:2022

01-september-2022

Nadomešča:
SIST EN 62108:2017

Koncentratorski fotonapetostni (CPV) moduli in sestavi - Ocena zasnove in odobritev tipa

Concentrator photovoltaic (CPV) modules and assemblies - Design qualification and type approval

Konzentrator-Photovoltaik(CPV)-Module und -Anordnungen - Bauarteignung und Bauartzulassung

Modules et ensembles photovoltaïques à concentration - Qualification de la conception et homologation

Ta slovenski standard je istoveten z: **EN IEC 62108:2022**

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Concentrator photovoltaic (CPV) modules and assemblies - Design qualification and type approval (IEC 62108:2022)

Modules et ensembles photovoltaïques à concentration - Qualification de la conception et homologation (IEC 62108:2022)

Konzentrator-Photovoltaik(CPV)-Module und -Anordnungen - Bauarteignung und Bauartzulassung (IEC 62108:2022)

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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

European foreword

The text of document 82/2024/FDIS, future edition 3 of IEC 62108, prepared by IEC/TC 82 "Solar photovoltaic energy systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62108:2022.

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)	2023-04-07
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2025-07-07

This document supersedes EN 62108:2016 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62108:2022 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60664-1	2020	Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests	EN IEC 60664-1	2020
IEC 60721-2-1	-	Classification of environmental conditions - Part 2-1: Environmental conditions appearing in nature - Temperature and humidity	EN 60721-2-1	-
IEC 60904-1	2020	Photovoltaic devices - Part 1: Measurement of photovoltaic current-voltage characteristics	EN IEC 60904-1	2020
IEC 60904-1-1	2017	Photovoltaic devices - Part 1-1: Measurement of current-voltage characteristics of multi-junction photovoltaic (PV) devices	EN 60904-1-1	2017
IEC/TS 60904-1-2	2019	Photovoltaic devices - Part 1-2: Measurement of current-voltage characteristics of bifacial photovoltaic (PV) devices	-	-
IEC 60904-2	2015	Photovoltaic devices - Part 2: Requirements for photovoltaic reference devices	EN 60904-2	2015
IEC 60904-3	2019	Photovoltaic devices - Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data	EN IEC 60904-3	2019
IEC 60904-4	2019	Photovoltaic devices - Part 4: Reference solar devices - Procedures for establishing calibration traceability	EN IEC 60904-4	2019
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	EN 60904-5	2011

IEC 60904-7	2019	Photovoltaic devices - Part 7: Computation of the spectral mismatch correction for measurements of photovoltaic devices	EN IEC 60904-7	2019
IEC 60904-8	2014	Photovoltaic devices - Part 8: Measurement of spectral responsivity of a photovoltaic (PV) device	EN 60904-8	2014
IEC 60904-8-1	2017	Photovoltaic devices - Part 8-1: Measurement of spectral responsivity of multi-junction photovoltaic (PV) devices	EN 60904-8-1	2017
IEC 61140	2016	Protection against electric shock - Common aspects for installation and equipment	EN 61140	2016
IEC 61210 (mod)	2010	Connecting devices - Flat quick-connect terminations for electrical copper conductors - Safety requirements	EN 61210	2010
IEC 61215-1	2021	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1: Test requirements	EN IEC 61215-1	2021
IEC 61215-2	2021	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 2: Test procedures	EN IEC 61215-2	2021
IEC/TS 61836	2016	Solar photovoltaic energy systems - Terms, definitions and symbols		-
IEC 61853-1	2011	Photovoltaic (PV) module performance testing and energy rating - Part 1: Irradiance and temperature performance measurements and power rating	-	-
IEC 61853-2	2016	Photovoltaic (PV) module performance testing and energy rating - Part 2: Spectral responsivity, incidence angle and module operating temperature measurements	EN 61853-2	2016
IEC 61853-3	2018	Photovoltaic (PV) module performance testing and energy rating – Part 3: Energy rating of PV modules	EN IEC 61853-3	2018
IEC 62670-1	-	Photovoltaic concentrators (CPV) - Performance testing - Part 1: Standard conditions	EN 62670-1	-
IEC 62670-3	2017	Photovoltaic concentrators (CPV) - Performance testing – Part 3: Performance measurements and power rating	EN 62670-3	2017
IEC 62790	2020	Junction boxes for photovoltaic modules - Safety requirements and tests	EN IEC 62790	2020
IEC 62852	2014	Connectors for DC-application in photovoltaic systems - Safety requirements and tests	EN 62852	2015
+ A1	2020		+ A1	2020
-	-		+ AC	2019-02

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NORME INTERNATIONALE

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Modules et ensembles photovoltaïques à concentration – Qualification de la conception et homologation

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CONCENTRATOR PHOTOVOLTAIC (CPV) MODULES AND ASSEMBLIES – DESIGN QUALIFICATION AND TYPE APPROVAL

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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IEC 62108 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems. It is an International Standard.

This third edition cancels and replaces the second edition published in 2016. This edition constitutes a technical revision.

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

a) Changes in the procedure of the thermal cycling test for the active cooling module.
b) Solar simulator I-V measurement.

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

Draft	Report on voting
82/2024/FDIS	82/2046/RVD

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

The language used for the development of this International Standard 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/standardsdev/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,
- replaced by a revised edition, or
- amended.

CONCENTRATOR PHOTOVOLTAIC (CPV) MODULES AND ASSEMBLIES – DESIGN QUALIFICATION AND TYPE APPROVAL

1 Scope

This document specifies the minimum requirements for the design qualification and type approval of concentrator photovoltaic (CPV) modules and assemblies suitable for long-term operation in general open-air climates as defined in IEC 60721-2-1. The test sequence is partially based on that specified in IEC 61215-1 for the design qualification and type approval of flat-plate terrestrial crystalline silicon PV modules. However, some changes have been made to account for the special features of CPV receivers and modules, particularly with regard to the separation of on-site and in-lab tests, effects of tracking alignment, high current density, and rapid temperature changes, which have resulted in the formulation of some new test procedures or new requirements.

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

This document is used in conjunction with the retest guidelines described in Annex B.

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 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests*

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

IEC 60904-1:2020, *Photovoltaic devices – Part 1: Measurement of photovoltaic current-voltage characteristics*

IEC 60904-1-1:2017, *Photovoltaic devices – Part 1-1: Measurement of current-voltage characteristics of multi-junction photovoltaic (PV) devices*

IEC TS 60904-1-2:2019, *Photovoltaic devices – Part 1-2: Measurement of current-voltage characteristics of bifacial photovoltaic (PV) devices*

IEC 60904-2:2015, *Photovoltaic devices – Part 2: Requirements for photovoltaic reference devices*

IEC 60904-3:2019, *Photovoltaic devices – Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data*

IEC 60904-4:2019, *Photovoltaic devices – Part 4: Photovoltaic reference devices – Procedures for establishing calibration traceability*

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*

IEC 60904-7:2019, *Photovoltaic devices – Part 7: Computation of the spectral mismatch correction for measurements of photovoltaic devices*

IEC 60904-8:2014, *Photovoltaic devices – Part 8: Measurement of spectral responsivity of a photovoltaic (PV) device*

IEC 60904-8-1:2017, *Photovoltaic devices – Part 8-1: Measurement of spectral responsivity of multi-junction photovoltaic (PV) devices*

IEC 61140:2016, *Protection against electric shock – Common aspects for installation and equipment*

IEC 61210:2010, *Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*

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 TS 61836:2016, *Solar photovoltaic energy systems – Terms, definitions and symbols*

IEC 61853-1:2011, *Photovoltaic (PV) module performance testing and energy rating – Part 1: Irradiance and temperature performance measurements and power rating*

IEC 61853-2:2016, *Photovoltaic (PV) module performance testing and energy rating – Part 2: Spectral responsivity, incidence angle and module operating temperature measurements*

IEC 61853-3:2018, *Photovoltaic (PV) module performance testing and energy rating – Part 3: Energy rating of PV modules*

IEC 62670-1, *Photovoltaic concentrators (CPV) – Performance testing – Part 1: Standard conditions*

IEC 62670-3:2017, *Photovoltaic concentrators (CPV) – Performance testing – Part 3: Performance measurements and power rating*

IEC 62790:2020, *Junction boxes for photovoltaic modules – Safety requirements and tests*

IEC 62852:2014, *Connectors for DC-application in photovoltaic systems – Safety requirements and tests*
IEC 62852:2014/AMD1:2020

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60664-1, IEC TS 60904-1-2, IEC 61140, IEC TS 61836 and the following apply, see also Table 1.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
concentrator
term associated with photovoltaic devices that use concentrated sunlight

3.2
concentrator cell
basic photovoltaic device that is used under the illumination of concentrated sunlight

3.3
concentrator optics
optical device that performs one or more of the following functions from its input to output: increasing the light intensity, filtering the spectrum, modifying light intensity distribution, or changing light direction. Typically, it is a lens or a mirror

Note 1 to entry: A primary optics receives unconcentrated sunlight directly from the sun. A secondary optics receives concentrated or modified sunlight from another optical device, such as primary optics or another secondary optics.

3.4
concentrator receiver
group of one or more concentrator cells and secondary optics (if present) that accepts concentrated sunlight and incorporates the means for thermal and electric energy transfer

Note 1 to entry: A receiver could be made of several sub-receivers. The sub-receiver is a physically stand-alone, smaller portion of the full-size receiver.

3.5
concentrator module
group of receivers, optics, and other related components, such as interconnection and mounting, that accepts unconcentrated sunlight

Note 1 to entry: All above components are usually prefabricated as one unit, and the focus point is not field adjustable.

Note 2 to entry: A module could be made of several sub-modules. The sub-module is a physically stand-alone, smaller portion of the full-size module.

3.6
concentrator assembly
group of receivers, optics, and other related components, such as interconnection and mounting, that accepts unconcentrated sunlight

Note 1 to entry: All above components would usually be shipped separately and need some field installation, and the focus point is field adjustable.

Note 2 to entry: An assembly could be made of several sub-assemblies. The sub-assembly is a physically stand-alone, smaller portion of the full-size assembly.