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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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EUROPÄISCHE NORM

EN IEC 62108

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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)

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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.

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•	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
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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
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IEC 62108

Edition 3.0 2022-06

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

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



IEC 62108:2022-06(en-fr)

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

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

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CONTENTS

FOREWORD 5
1 Scope 7
2 Normative references 7
3 Terms and definitions 9
4 Sampling 10
5 Marking 11
6 Testing 11
7 Pass criteria 12
8 Report 20
9 Modifications 21
10 Test procedures 21
10.1 Visual inspection 21
10.1.1 General 21
10.1.2 Procedure 21
10.1.3 Major visual defects 22
10.1.4 Requirements 22
10.2 Electrical performance measurement 22
10.2.1 Purpose 22
10.2.2 Outdoor side-by-side I-V measurement 22
10.2.3 Solar simulator I-V measurement 24
10.2.4 Dark I-V measurement 24
10.3 Ground path continuity test 25
10.3.1 General 25
10.3.2 Purpose 25
10.3.3 Procedure 25
10.3.4 Requirements 25
10.4 Electrical insulation test 26
10.4.1 Purpose 26
10.4.2 Procedure 26
10.4.3 Requirements 26
10.5 Wet insulation test 27
10.5.1 Purpose 27
10.5.2 Procedure 27
10.5.3 Requirements 27
10.6 Thermal cycling test 27
10.6.1 Purpose 27
10.6.2 Test sample 28
10.6.3 Procedure 28
10.6.4 Procedure for active cooling system 30
10.6.5 Requirements 30
10.7 Damp heat test 31
10.7.1 Purpose 31
10.7.2 Test sample 31
10.7.3 Procedure 31
10.7.4 Requirements 32

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10.8 Humidity freeze test 32
10.8.1 Purpose 32
10.8.2 Test sample 32
10.8.3 Procedure 32
10.8.4 Requirements 32
10.9 Hail impact test 33
10.9.1 Purpose 33
10.9.2 Apparatus 33
10.9.3 Procedure 34
10.9.4 Requirements 34
10.10 Dust and water ingress protection test 34
10.10.1 Purpose 34
10.10.2 Procedure 35
10.10.3 Requirements 35
10.11 Bypass/blocking diode thermal test 35
10.11.1 Purpose 35
10.11.2 Test sample 35
10.11.3 Apparatus 35
10.11.4 Procedure 36
10.11.5 Requirements 36
10.11.6 Procedure 2 – Alternate method 36
10.12 Robustness of terminations test 37
10.12.1 Purpose 37
10.12.2 Procedure 38
10.12.3 Requirements 38
10.13 Mechanical load test 38
10.13.1 Purpose 38
10.13.2 Procedure 39
10.13.3 Requirements 39
10.14 Off-axis beam damage test 39
10.14.1 General 39
10.14.2 Purpose 39
10.14.3 Special case 39
10.14.4 Procedure 40
10.14.5 Requirements 40
10.15 Outdoor exposure test 40
10.15.1 Purpose 40
10.15.2 Procedure 40
10.15.3 Requirements 41
10.16 Hot-spot endurance test 41
Annex A (informative) Summary of test conditions and requirements 42
Annex B (normative) Retesting guideline 45
B.1 Product or process modifications requiring limited retesting to maintain certification 45
B.2 Modifications of CPV cell technology 45
B.3 Modifications in optical encapsulation on the cell (Includes optical coupling between the cell and a glass secondary optical element bonded to the cell) 46
B.4 Modification in cell encapsulation outside of intended light path 46
B.5 Modification of cell package substrate used for heat transfer 46

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B.6 Accessible optics (primary or secondary) 47
B.7 Inaccessible optics (secondary) 47
B.8 Frame and/or mounting structure 47
B.9 Enclosure 48
B.10 Wiring compartment/junction box 48
B.11 Interconnection terminals 48
B.12 Interconnection materials or technique (to cells and between receivers) 49
B.13 Change in electrical circuit design in an identical package 49
B.14 Output power 49
B.15 Thermal energy transfer means 50
B.16 Adhesives 50

Figure 1 – Schematic of point-focus dish PV concentrator 14
Figure 2 – Schematic of linear-focus trough PV concentrator 15
Figure 3 – Schematic of point-focus Fresnel lens PV concentrator 16
Figure 4 – Schematic of linear-focus Fresnel lens PV concentrator 17
Figure 5 – Schematic of a heliostat CPV 18
Figure 6 – Qualification test sequence for CPV modules 19
Figure 7 – Qualification test sequence for CPV assemblies 20
Figure 8 – Temperature and current profile of thermal cycle test (not to scale) 31
Figure 9 – Profile of humidity-freeze test conditions 33
Figure 10 – Bypass diode thermal test 37

Table 1 – Terms used for CPV 10
Table 2 – Allocation of test samples to typical test sequences 12
Table 3 – Thermal cycle test options for sequence A 29
Table 4 – Humidity freeze test options for sequence B 32
Table 5 – Minimum wind loads 38
Table A.1 – Summary of test conditions and requirements 42

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

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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.

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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.

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

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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

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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*
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