

This document is a review generated by EVS

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

ESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 62108:2016 sisaldab Euroopa standardi EN 62108:2016 ingliskeelset teksti.	This Estonian standard EVS-EN 62108:2016 consists of the English text of the European standard EN 62108:2016.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 16.12.2016.	Date of Availability of the European standard is 16.12.2016.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 27.160

Standardite reproduutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 62108

December 2016

ICS 27.160

Supersedes EN 62108:2008

English Version

Concentrator photovoltaic (CPV) modules and assemblies -
Design qualification and type approval
(IEC 62108:2016)

Modules et ensembles photovoltaïques à concentration -
Qualification de la conception et homologation
(IEC 62108:2016)

Konzentrator-Photovoltaik(CPV)-Module und -Anordnungen -
Bauartefähigkeit und Bauartzulassung
(IEC 62108:2016)

This European Standard was approved by CENELEC on 2016-10-31. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

The text of document 82/1142/FDIS, future edition 2 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 62108:2016.

The following dates are fixed:

- latest date by which the document has to be implemented at (dop) 2017-07-31 national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-10-31

This document supersedes EN 62108:2008.

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

Endorsement notice

The text of the International Standard IEC 62108:2016 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, 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.

NOTE 1 When 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-21	2006	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	2006
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	-
IEC 61215-2	2016	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 2: Test procedures	EN 61215-2	2016
IEC 62670-1	-	Photovoltaic concentrators (CPV) - Performance testing - Part 1: Standard conditions	EN 62670-1	-
ANSI/UL 1703	2002	Flat-Plate Photovoltaic Modules and Panels	-	-

CONTENTS

FOREWORD.....	5
1 Scope and object.....	7
2 Normative references.....	7
3 Terms and definitions	7
4 Sampling	9
5 Marking	10
6 Testing	10
7 Pass criteria	11
8 Report.....	18
9 Modifications	19
10 Test procedures	19
10.1 Visual inspection	19
10.1.1 General	19
10.1.2 Procedure	19
10.1.3 Major visual defects	20
10.1.4 Requirements	20
10.2 Electrical performance measurement.....	20
10.2.1 Purpose	20
10.2.2 Outdoor side-by-side I-V measurement.....	20
10.2.3 Solar simulator I-V measurement.....	22
10.2.4 Dark I-V measurement	22
10.3 Ground path continuity test.....	23
10.3.1 General	23
10.3.2 Purpose	23
10.3.3 Procedure	23
10.3.4 Requirements	23
10.4 Electrical insulation test	24
10.4.1 Purpose	24
10.4.2 Procedure	24
10.4.3 Requirements	24
10.5 Wet insulation test.....	25
10.5.1 Purpose	25
10.5.2 Procedure	25
10.5.3 Requirements	25
10.6 Thermal cycling test	25
10.6.1 Purpose	25
10.6.2 Test sample	26
10.6.3 Procedure	26
10.6.4 Requirements	27
10.7 Damp heat test.....	28
10.7.1 Purpose	28
10.7.2 Test sample	28
10.7.3 Procedure	28
10.7.4 Requirements	29
10.8 Humidity freeze test	29

10.8.1	Purpose	29
10.8.2	Test sample	29
10.8.3	Procedure	29
10.8.4	Requirements	29
10.9	Hail impact test	30
10.9.1	Purpose	30
10.9.2	Apparatus	30
10.9.3	Procedure	31
10.9.4	Requirements	31
10.10	Water spray test	31
10.10.1	General	31
10.10.2	Purpose	31
10.10.3	Procedure	32
10.10.4	Requirements	32
10.11	Bypass/blocking diode thermal test	32
10.11.1	Purpose	32
10.11.2	Test sample	33
10.11.3	Apparatus	33
10.11.4	Procedure	33
10.11.5	Requirements	33
10.11.6	Procedure 2 – Alternate method	34
10.12	Robustness of terminations test	35
10.12.1	Purpose	35
10.12.2	Types of terminations	35
10.12.3	Procedure	35
10.12.4	Requirements	36
10.13	Mechanical load test	36
10.13.1	Purpose	36
10.13.2	Procedure	37
10.13.3	Requirements	37
10.14	Off-axis beam damage test	37
10.14.1	General	37
10.14.2	Purpose	37
10.14.3	Special case	37
10.14.4	Procedure	37
10.14.5	Requirements	38
10.15	Outdoor exposure test	38
10.15.1	Purpose	38
10.15.2	Procedure	38
10.15.3	Requirements	38
10.16	Hot-spot endurance test	39
10.17	Dust ingress protection test	39
10.17.1	Purpose	39
10.17.2	Procedure	39
10.17.3	Requirements	39
Annex A (informative)	Summary of test conditions and requirements	40
Annex B (normative)	Retesting guideline	43
B.1	Product or process modifications requiring limited retesting to maintain certification	43

B.2	Modifications of CPV cell technology	43
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)	44
B.4	Modification in cell encapsulation outside of intended light path	44
B.5	Modification of cell package substrate used for heat transfer.....	44
B.6	Accessible optics (primary or secondary)	45
B.7	Inaccessible optics (secondary).....	45
B.8	Frame and/or mounting structure.....	45
B.9	Enclosure.....	46
B.10	Wiring compartment/junction box	46
B.11	Interconnection terminals	46
B.12	Interconnection materials or technique (to cells and between receivers)	47
B.13	Change in electrical circuit design in an identical package	47
B.14	Output power	47
B.15	Thermal energy transfer means	48
B.16	Adhesives	48
	 Figure 1 – Schematic of point-focus dish PV concentrator.....	12
	Figure 2 – Schematic of linear-focus trough PV concentrator	13
	Figure 3 – Schematic of point-focus fresnel lens PV concentrator	14
	Figure 4 – Schematic of linear-focus fresnel lens PV concentrator	15
	Figure 5 – Schematic of a heliostat CPV.....	16
	Figure 6 – Qualification test sequence for CPV modules	17
	Figure 7 – Qualification test sequence for CPV assemblies	18
	Figure 8 – Temperature and current profile of thermal cycle test (not to scale)	28
	Figure 9 – Profile of humidity-freeze test conditions	30
	Figure 10 – Bypass diode thermal test.....	34
	 Table 1 – Terms used for CPV	9
	Table 2 – Allocation of test samples to typical test sequences	11
	Table 3 – Thermal cycle test options for sequence A	27
	Table 4 – Humidity freeze test options for sequence B	29
	Table 5 – Minimum wind loads	36
	Table A.1 – Summary of test conditions and requirements	40