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Solceller – Transportprovning av solcellsmoduler – Del 1: Transport av förpackade moduler

Photovoltaic (PV) modules –

Transportation testing –

Part 1: Transportation and shipping of module package units

Som svensk standard gäller europastandarden EN 62759-1:2015. Den svenska standarden innehåller den officiella engelska språkversionen av EN 62759-1:2015.

Nationellt förord

Europastandarden EN 62759-1:2015

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 62759-1, First edition, 2015 - Photovoltaic (PV) modules - Transportation testing - Part 1: Transportation and shipping of module package units**

utarbetad inom International Electrotechnical Commission, IEC.

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English Version

**Photovoltaic (PV) modules - Transportation testing -
Part 1: Transportation and shipping of module package units
(IEC 62759-1:2015)**

Modules photovoltaïques (PV) - Essais de transport -
Partie 1: Transport et expédition d'unités d'emballage
de modules
(IEC 62759-1:2015)

Transportprüfung von Photovoltaik(PV)-Modulen -
Teil 1: Transport und Versand von PV-Modulpaketen
(IEC 62759-1:2015)

This European Standard was approved by CENELEC on 2015-07-31. 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.

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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 82/962/FDIS, future edition 1 of IEC 62759-1, prepared by IEC/TC 82 "Solar photovoltaic energy systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62759-1:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at (dop) 2016-05-01
national level by publication of an identical national
standard or by endorsement
- latest date by which the national standards conflicting with (dow) 2018-07-31
the document have to be withdrawn

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Endorsement notice

The text of the International Standard IEC 62759-1:2015 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 60068-2-27	2008	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	EN 60068-2-27	2009
IEC 60068-2-64	-	Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance	EN 60068-2-64	-
IEC 61215	2005	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval	EN 61215	2005
IEC 61646	2008	Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval	EN 61646	2008
IEC 61730-2 (mod)	2004	Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing	EN 61730-2	2007
IEC/TS 61836	-	Solar photovoltaic energy systems - Terms, definitions and symbols	CLC/TS 61836	-
IEC 62108	2007	Concentrator Photovoltaic (CPV) modules and assemblies - Design qualification and type approval	EN 62108	2008
IEC/TS 62782	- ¹⁾	Dynamic mechanical load testing for photovoltaic (PV) modules	-	-
ISO 13355	-	Packaging - Complete, filled transport packages and unit loads - Vertical random vibration test	EN ISO 13355	-

1) To be published.

EN 62759-1:2015

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ASTM D 880-92	2008	Standard Test Method for Impact Testing for Shipping Containers and Systems	-	-
ASTM D 4169	2008	Standard Practice for Performance Testing of Shipping Containers and Systems	-	-
ASTM D 4728	2006	Standard Test Method for Random Vibration Testing of Shipping Containers	-	-
ASTM D 5277	1992	Standard Test Method for Performing Programmed Horizontal Impacts Using an Inclined Impact Tester	-	-
MIL-STD-810G	-	Test Method Standard: Environmental Engineering Considerations and Laboratory Tests	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PHOTOVOLTAIC (PV) MODULES –
TRANSPORTATION TESTING –****Part 1: Transportation and shipping of module package units****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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International Standard IEC 62759-1 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

The text of this standard is based on the following documents:

FDIS	Report on voting
82/962/FDIS	82/982/RVD

Full information on the voting for the approval of this standard 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.

A list of all parts of IEC 62759 series, under the general title *Photovoltaic (PV) modules – Transportation testing*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

PHOTOVOLTAIC (PV) MODULES – TRANSPORTATION TESTING –

Part 1: Transportation and shipping of module package units

1 Scope and object

Photovoltaic (PV) modules are electrical devices intended for continuous outdoor exposure during their lifetime. Existing type approval standards do not consider mechanical stresses that may occur during transportation to the PV installation destination.

This part of IEC 62759 describes methods for the simulation of transportation of complete package units of modules and combined subsequent environmental impacts, it does however not include pass/fail criteria.

This standard is designed so that its test sequence can co-ordinate with those of IEC 61215 or IEC 61646, so that a single set of samples may be used to perform both the transportation simulation and performance evaluation of a photovoltaic module design. This standard applies to flat plate photovoltaic modules, but may also be used as a basis for testing of CPV modules and assemblies.

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 60068-2-27:2008, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-64, *Environmental testing – Part 2-64: Tests – Test Fh: Vibration, broadband random and guidance*

IEC 61215:2005, *Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval*

IEC 61646:2008, *Thin-film terrestrial photovoltaic (PV) modules – Design qualification and type approval*

IEC 61730-2:2004, *Photovoltaic (PV) module safety qualification – Part 2: Requirements for testing*

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

IEC 62108:2007, *Concentrator photovoltaic (CPV) modules and assemblies – Design qualification and type approval*

IEC 62782, *Dynamic mechanical load testing for photovoltaic (PV) modules* (to be published)

ISO 13355, *Packaging – Complete, filled transport packages and unit loads – Vertical random vibration test*

ASTM D880-92:2008, *Standard Test Method for Impact Testing for Shipping Containers and Systems*

ASTM D4169:2008, *Standard Practice for Performance Testing of Shipping Containers and Systems*

ASTM D4728:2006, *Standard Test Method for Random Vibration Testing of Shipping Containers*

ASTM D5277:1992, *Test method for performing programmed horizontal impact using an incline impact tester*

ISTA 3E:2009, *Unitized Loads of Same Product*

MIL STD 810G, *Test Method Standard for Environmental Engineering Considerations and Laboratory Tests*