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Solceller – Säkerhetsfordringar på solcellsmoduler – Del 1: Utförande

*Photovoltaic (PV) module safety qualification –
Part 1: Requirements for construction*

Som svensk standard gäller europastandarden EN 61730-1:2007. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61730-1:2007.

Nationellt förord

Europastandarden EN 61730-1:2007

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61730-1, First edition, 2004 - Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 27.160

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**Photovoltaic (PV) module safety qualification –
Part 1: Requirements for construction
(IEC 61730-1:2004, modified)**

Qualification pour la sûreté de
fonctionnement des modules
photovoltaïques (PV) –
Partie 1: Exigences pour la construction
(CEI 61730-1:2004, modifiée)

Photovoltaik (PV) -Module –
Sicherheitsqualifikation –
Teil 1: Anforderungen an den Aufbau
(IEC 61730-1:2004, modifiziert)

This European Standard was approved by CENELEC on 2007-02-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 82/356/FDIS, future edition 1 of IEC 61730-1, prepared by IEC TC 82, Solar photovoltaic energy systems, was submitted to the IEC-CENELEC parallel vote.

A draft amendment, prepared by the Technical Committee CENELEC TC 82, Solar photovoltaic energy systems, was submitted to the Unique Acceptance Procedure.

The combined texts were approved by CENELEC as EN 61730-1 on 2007-02-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2008-02-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2010-02-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61730-1:2004 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

[REDACTED]

[REDACTED]

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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
–	–	Datasheet and nameplate information for photovoltaic modules	EN 50380	2003
IEC 60112	– ¹⁾	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	2003 ²⁾
IEC 60189-2	– ¹⁾	Low-frequency cables and wires with PVC insulation and PV sheath – Part 2: Cables in pairs, triples, quads and quintuples for inside installations	–	–
IEC 60216-1	– ¹⁾	Electrical insulating materials - Properties of thermal endurance – Part 1: Ageing procedures and evaluation of test results	EN 60216-1	2001 ²⁾
IEC 60216-5	– ¹⁾	Electrical insulating materials - Thermal endurance properties – Part 5: Determination of relative thermal endurance index (RTE) of an insulating material	EN 60216-5	2003 ²⁾
IEC 60364-5-51 (mod)	– ¹⁾	Electrical installations of buildings – Part 5-51: Selection and erection of electrical equipment - Common rules	EN 60364-5-51	2006 ²⁾
IEC 60417	data- base	Graphical symbols for use on equipment	–	–
IEC 60512-5-1	– ¹⁾	Connectors for electronic equipment - Tests and measurements – Part 5-1: Current-carrying capacity tests - Test 5a: Temperature rise	EN 60512-5-1	2002 ²⁾
IEC 60512-5-2	– ¹⁾	Connectors for electronic equipment - Tests and measurements – Part 5-2: Current-carrying capacity tests - Test 5b: Current-temperature derating	EN 60512-5-2	2002 ²⁾
IEC 60529	– ¹⁾	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 ²⁾ 1993

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60664-1	- ¹⁾	Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests	EN 60664-1	2003 ²⁾
IEC 60695-1-1	- ¹⁾	Fire hazard testing – Part 1-1: Guidance for assessing the fire hazard of electrotechnical products - General guidelines	EN 60695-1-1	2000 ²⁾
IEC 60947-1	- ¹⁾	Low-voltage switchgear and controlgear – Part 1: General rules	EN 60947-1 + corr. November	2004 ²⁾ 2004
IEC 61140	2001	Protection against electric shock - Common aspects for installation and equipment	EN 61140	2002
IEC 61215	- ¹⁾	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval	EN 61215	2005 ²⁾
IEC 61646	- ¹⁾	Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval	EN 61646	1997 ²⁾
IEC 61730-2 (mod)	2004	Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing	EN 61730-2	2007
IEC 61984	- ¹⁾	Connectors - Safety requirements and tests	EN 61984	2001 ²⁾
ISO 261	- ¹⁾	ISO general purpose metric screw threads - General plan	-	-
ISO 262	- ¹⁾	ISO general purpose metric screw threads - Selected sizes for screws, bolts and nuts	-	-
ISO 4892	Series	Plastics – Methods of exposure to laboratory light sources	EN ISO 4892	Series
ANSI Z97.1	- ¹⁾	American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test	-	-
ASTM E162-02a	- ¹⁾	Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source	-	-

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PHOTOVOLTAIC (PV) MODULE SAFETY QUALIFICATION –

Part 1: Requirements for construction

1 Scope and object

This part of IEC 61730 describes the fundamental construction requirements for photovoltaic (PV) modules in order to provide safe electrical and mechanical operation during their expected lifetime. Specific topics are provided to assess the prevention of electrical shock, fire hazards, and personal injury due to mechanical and environmental stresses. This part of IEC 61730 pertains to the particular requirements of construction. IEC 61730-2 outlines the requirements of testing.

This standard attempts to define the basic requirements for various application classes of PV modules, but it cannot be considered to encompass all national or regional building codes. The specific requirements for marine and vehicle applications are not covered. This standard is not applicable to modules with integrated AC inverters (AC modules).

This standard is designed so that its test sequence can coordinate with those of IEC 61215 or IEC 61646, so that a single set of samples may be used to perform both the safety and performance evaluation of a photovoltaic module design.

The object of this document is to provide basic guidance in certifying the fundamental construction of photovoltaic modules presented for safety approval by testing under IEC 61730-2. These requirements are intended to minimise the misapplication and misuse of modules or the breakdown of internal components which would result in fire, electric shock and personal injury. The standard defines the basic safety construction requirements and additional tests that are a function of the module end-use applications.

Component requirements are intended to provide evidence of performance of that component appropriate to its application in the module construction and environment.

NOTE The additional construction requirements outlined in relevant ISO standards, or the national or local codes which govern the installation and use of these modules in their intended locations, should be considered in addition to the requirements contained within this document.

2 Normative references

The following referenced documents are indispensable for the application 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 60112, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60130 (all parts), *Connectors for frequencies below 3 MHz*

IEC 60189-2, *Low-frequency cables and wires with PVC insulation and PVC sheath – Part 2: Cables in pairs, triples, quads and quintuples for inside installations*