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Solceller – Säkerhetsfordringar på solcellsmoduler – Del 2: Provning

*Photovoltaic (PV) module safety qualification –
Part 2: Requirements for testing*

Som svensk standard gäller europastandarden EN 61730-2:2007. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61730-2:2007.

Nationellt förord

Europastandarden EN 61730-2:2007

består av:

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

utarbetad inom International Electrotechnical Commission, IEC.

ICS 27.160

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

Qualification pour la sûreté de
fonctionnement des modules
photovoltaïques (PV) –
Partie 2: Exigences pour les essais
(CEI 61730-2:2004, modifiée)

Photovoltaik (PV) -Module –
Sicherheitsqualifikation –
Teil 2: Anforderungen an die Prüfung
(IEC 61730-2:2004, modifiziert)

This European Standard was approved by CENELEC on 2006-12-01. 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

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Foreword

The text of the International Standard IEC 61730-2:2004, prepared by IEC TC 82, Solar photovoltaic energy systems, together with the common modifications prepared by the Technical Committee CENELEC TC 82, Solar photovoltaic energy systems, was submitted to the formal vote and was approved by CENELEC as EN 61730-2 on 2006-12-01.

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 61730-2:2004 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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>
–	–	Glass in building - Thermally toughened soda lime silicate safety glass – Part 1: Definition and description	EN 12150-1	– ¹⁾
–	–	Datasheet and nameplate information for photovoltaic modules	EN 50380	2003
IEC 60060-1	– ¹⁾	High-voltage test techniques – Part 1: General definitions and test requirements	HD 588.1 S1	1999 ²⁾
IEC 60068-1	– ¹⁾	Environmental testing – Part 1: General and guidance	EN 60068-1	1994 ²⁾
IEC 60243-1	1998	Electrical strength of insulating materials - Test methods – Part 1: Tests at power frequencies	EN 60243-1	1998
IEC 60410	– ¹⁾	Sampling plans and procedures for inspection by attributes	–	–
IEC 60664-1 + A1 + A2	1992 2000 2002	Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests	EN 60664-1	2003
IEC 60904-2	– ¹⁾	Photovoltaic devices – Part 2: Requirements for reference solar devices	EN 60904-2	2007
IEC 61032	1997	Protection of persons and equipment by enclosures - Probes for verification	EN 61032	1998
IEC 61140	– ¹⁾	Protection against electric shock - Common aspects for installation and equipment	EN 61140	2002 ²⁾
IEC 61215	2005	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval	EN 61215	2005
IEC 61646	1996	Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval	EN 61646	1997
IEC 61730-1 (mod)	2004	Photovoltaic (PV) module safety qualification– Part 1: Requirements for construction	EN 61730-1	2007
ISO/IEC 17025	– ¹⁾	General requirements for the competence of testing and calibration laboratories	EN ISO/IEC 17025	2005 ²⁾

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>
ANSI/UL 514C	- ¹⁾	Non-metallic outlet boxes, flush device boxes and covers	-	-
ANSI/UL 790	- ¹⁾	Tests for Fire Resistance of Roof Covering Materials	-	-
ANSI/UL 1703	- ¹⁾	Flat – Plate Photovoltaic Modules and Panels	-	-
ANSI Z97.1	- ¹⁾	American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test	-	-

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PHOTOVOLTAIC (PV) MODULE SAFETY QUALIFICATION –

Part 2: Requirements for testing

1 Scope and object

This part of IEC 61730 describes the testing 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. IEC 61730-1 pertains to the particular requirements of construction. This part of IEC 61730 outlines the requirements of testing.

This standard attempts to define the basic requirements for various application classes of photovoltaic 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 co-ordinate 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 test-sequences of this standard are arranged in an optimal way so that tests of IEC 61215 or IEC 61646 can be used as basic preconditioning tests.

NOTE 1 The sequence of tests required in this standard may not test for all possible safety aspects associated with the use of PV modules in all possible applications. This standard utilizes the best sequence of tests available at the time of its writing. There are some issues, such as the potential danger of electric shock posed by a broken module in a high voltage system, that should be addressed by the systems design, location, restrictions on access and maintenance procedures.

The object of this document is to provide the testing sequence intended to verify the safety of PV modules whose construction has been assessed by IEC 61730-1. The test sequence and pass criteria are designed to detect the potential breakdown of internal and external components of PV modules that would result in fire, electric shock and personal injury. The standard defines the basic safety test requirements and additional tests that are a function of the module end-use applications.

Test categories include general inspection, electrical shock hazard, fire hazard, mechanical stress, and environmental stress.

NOTE 2 The additional testing 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.