SLOVENSKI STANDARD
SIST EN IEC 61730-1:2018

01-junij-2018

Nadomešča:
SIST EN 61730-1:2008
SIST EN 61730-1:2008/A1:2012
SIST EN 61730-1:2008/A11:2015
SIST EN 61730-1:2008/A2:2013

Varnostne zahteve fotonapetostnih (PV) modulov - 1. del: Konstrukcijske zahteve

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

Ta slovenski standard je istoveten z: **EN IEC 61730-1:2018**

ICS:

27.160	Sončna energija	Solar energy engineering

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EUROPEAN STANDARD

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English Version

Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction (IEC 61730-1:2016)

Qualification pour la sûreté de fonctionnement des modules photovoltaïques (PV) - Partie 1: Exigences pour la construction (IEC 61730-1:2016)

Photovoltaik (PV) Module - Sicherheitsqualifikation - Teil 1: Anforderungen an den Aufbau (IEC 61730-1:2016)

This European Standard was approved by CENELEC on 2016-09-21. 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.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 61730-1:2018 E

European foreword

The text of document 82/1128/FDIS, future edition 2 of IEC 61730-1, prepared by IEC/TC 82 “Solar photovoltaic energy systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61730-1:2018.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2018-10-27
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2021-04-27

This document supersedes EN 61730-1:2007.

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

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive 2006/42/EC see informative Annex ZZ, which is an integral part of this document.

Endorsement notice

The text of the International Standard IEC 61730-1:2016 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 are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where 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.

Publication	Year	Title	EN/HD	Year
		Electric cables for photovoltaic systems	EN 50618	2014
IEC 60050	series	International Electrotechnical Vocabulary	-	-
IEC 60112	-	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	-
IEC 60216-1	-	Electrical insulating materials - Thermal endurance properties - Part 1: Ageing procedures and evaluation of test results	EN 60216-1	2013
IEC 60216-2	-	Electrical insulating materials - Thermal endurance properties - Part 2: Determination of thermal endurance properties of electrical insulating materials - Choice of test criteria	EN 60216-2	2005
IEC 60216-5	-	Electrical insulating materials - Thermal endurance properties - Part 5: Determination of relative thermal endurance index (RTE) of an insulating material	EN 60216-5	2008
IEC 60243-1	2013	Electric strength of insulating materials - Test methods - Part 1: Tests at power frequencies	EN 60243-1	2013
IEC 60243-2	2013	Electric strength of insulating materials - Test methods - Part 2: Additional requirements for tests using direct voltage	EN 60243-2	2014
IEC 60269-6	-	Low-voltage fuses - Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems	EN 60269-6	2011
IEC 60364-7-712	-	Electrical installations of buildings - Part 7-712: Requirements for special installations or locations - Solar photovoltaic (PV) power supply systems	HD 60364-7-712	2016
IEC 60417	Data-base	Graphical symbols for use on equipment. Index, survey and compilation of the single sheets.	-	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
IEC 60664-1	-	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007

IEC 60664-3	2003	Insulation coordination for equipment within low-voltage systems - Part 3: Use of coating, potting or moulding for protection against pollution	EN 60664-3	2003
IEC 60695-10-2	-	Fire hazard testing - Part 10-2: Abnormal heat - Ball pressure test method	EN 60695-10-2	2014
IEC 60695-11-10	-	Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	2013
IEC 60904-3	-	Photovoltaic devices - Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data	EN 60904-3	2016
IEC 60950-1 (mod)	2005	Information technology equipment - Safety - Part 1: General requirements	EN 60950-1	2006
-	-		+ A11	2009
-	-		+ A12	2011
-	-		+ AC	2011
IEC 61032	1997	Protection of persons and equipment by enclosures - Probes for verification	EN 61032	1998
IEC 61140	-	Protection against electric shock - Common aspects for installation and equipment	EN 61140	2016
IEC 61215	series	Terrestrial photovoltaic (PV) modules Design qualification and type approval	EN 61215	series
IEC 61558-1	2005	Safety of power transformers, power supplies, reactors and similar products - Part 1: General requirements and tests	EN 61558-1	2005
-	-		+ corrigendum Aug.	2006
IEC 61701	-	Salt mist corrosion testing of photovoltaic (PV) modules	EN 61701	2012
IEC 61730-2	-	Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing	EN 61730-2	2018
IEC 62548	2016	Photovoltaic (PV) arrays - Design requirements	-	-
IEC 62716	-	Photovoltaic (PV) modules - Ammonia corrosion testing	EN 62716	2013
IEC 62788-1-2	-	Measurement procedures for materials used in photovoltaic modules - Part 1-2: Encapsulants - Measurement of volume resistivity of photovoltaic encapsulation and backsheet materials	EN 62788-1-2	2016
IEC 62790	-	Junction boxes for photovoltaic modules - Safety requirements and tests	EN 62790	2015
IEC 62852	-	Connectors for DC-application in photovoltaic systems - Safety requirements and tests	EN 62852	2015
ISO 1456	-	Metallic and other inorganic coatings - Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium	EN ISO 1456	2009
ISO 1461	-	Hot dip galvanized coatings on fabricated iron and steel articles_- Specifications and test methods	EN ISO 1461	2009
ISO 2081	-	Metallic and other inorganic coatings_- Electroplated coatings of zinc with supplementary treatments on iron or steel	EN ISO 2081	2018
ISO 2093	1986	Electroplated coatings of tin; Specification and test methods	-	-

IEC/TR 60664-2-1	2011	Insulation coordination for equipment within low-voltage systems - Part 2-1: Application guide - Explanation of the application of the IEC 60664 series, dimensioning examples and dielectric testing	-	-
IEC/TS 61836	-	Solar photovoltaic energy systems - Terms, definitions and symbols	CLC/TS 61836	2009
IEC/TS 62915	2018	Photovoltaic (PV) Modules - Retesting for type approval, design and safety qualification	-	-
UL 746B	2013	Standard for Polymeric Materials - Long Term Property Evaluations	-	-

Annex ZZ
(informative)

Relationship between this European standard and the safety objectives of Directive 2014/35/EU [2014 OJ L96] aimed to be covered

This European Standard has been prepared under a Commission's standardization request relating to harmonized standards in the field of the Low Voltage Directive, M/511, to provide one voluntary means of conforming to safety objectives of Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits [2014 OJ L96].

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZ.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding safety objectives of that Directive, and associated EFTA regulations.

Table ZZ.1 – Correspondence between this European standard and Annex I of Directive 2014/35/EU [2014 OJ L96]

Safety objectives of Directive 2014/35/EU	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
1. General conditions		
1 (a) the essential characteristics, the recognition and observance of which will ensure that electrical equipment will be used safely and in applications for which it was made, shall be marked on the electrical equipment, or, if this is not possible, on an accompanying document;	EN 61730-1, 5.2	
1 (b) the electrical equipment, together with its component parts, shall be made in such a way as to ensure that it can be safely and properly assembled and connected;	EN 61730-1, 5.2	
1(c) the electrical equipment shall be so designed and manufactured as to ensure that protection against the hazards set out in points 2 and 3 is assured, providing that the equipment is used in applications for which it was made and is adequately maintained.	EN 61730-1, 5.2 refer to 2a) to 2d) and 3a) to 3c) of this table cl. 5.4 (intended use)	

Safety objectives of Directive 2014/35/EU	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
2. Protection against hazards arising from the electrical equipment Measures of a technical nature shall be laid down in accordance with point 1, in order to ensure that:		
2 (a) persons and domestic animals are adequately protected against the danger of physical injury or other harm which might be caused by direct or indirect contact;	EN 61730-1, 5.2.2, 5.3.4, 5.3.5, 5.5.4, 5.6.4.2 EN 61730-2, 4.4 EN 61730-2, 10.9, (MST 11) EN 61730-2, 10.11, (MST 13) EN 61730-2, 10.12, (MST 14) EN 61730-2, 10.13, (MST 16) EN 61730-2, 10.14, (MST 17)	
2 (b) temperatures, arcs or radiation which would cause a danger, are not produced;	EN 61730-1, 5.1, 5.2.2.1, 5.2.3, 5.3, 5.5 and Annex B (B6) EN 61730-2, 4.2 EN 61730-2, 10.15, (MST 21)	
2 (c) persons, domestic animals and property are adequately protected against non-electrical dangers caused by the electrical equipment which are revealed by experience;	EN 61730-1, 5.2.3 EN 61730-2, 10.7, (MST 06) EN 61730-2, 10.10, (MST 12) EN 61730-2, 10.21, (MST 32) EN 61730-2, 10.23, (MST 34)	
2 (d) the insulation is suitable for foreseeable conditions.	EN 61730-1, 5.2.2.1 k) and MST 26 EN 61730-1, 5.2.2, 5.2.2.1, 5.3.4, 5.3.5, 5.5.4, 5.6 and 5.6.4.2 EN 61730-2, 4.4 EN 61730-2, 10.13, (MST 16) EN 61730-2, 10.14, (MST 17)	

Safety objectives of Directive 2014/35/EU	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
3. Protection against hazards which may be caused by external influences on the electrical equipment Technical measures shall be laid down in accordance with point 1, in order to ensure that the electrical equipment:		
3 (a) meets the expected mechanical requirements in such a way that persons, domestic animals and property are not endangered;	EN 61730-1, 5.1, 5.2.3, 5.3, 5.4 and 5.5 EN 61730-2, 4.2 EN 61730-2, 10.7, (MST 06) EN 61730-2, 10.21, (MST 32) EN 61730-2, 10.23, (MST 34)	
3 (b) is resistant to non-mechanical influences in expected environmental conditions, in such a way that persons, domestic animals and property are not endangered;	EN 61730-2, 4.5 EN 61730-2, 10.15, (MST 21) EN 61730-2, 10.17, (MST 23)	No remote access to modules to influence function. There are no mandatory requirements for fire tests, spread of flame and burning-brand tests for PV modules in this standard.
3 (c) does not endanger persons, domestic animals and property in foreseeable conditions of overload.	EN 61730-1, 5.2 EN 61730-1, 5.2.2.1 k) and MST 26	

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

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Edition 2.0 2016-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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

Qualification pour la sûreté de fonctionnement des modules photovoltaïques (PV) – Partie 1: Exigences pour la construction

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PHOTOVOLTAIC (PV) MODULE SAFETY QUALIFICATION –

Part 1: Requirements for construction

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 61730-1 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This second edition cancels and replaces the first edition of IEC 61730-1, issued in 2004, and its amendments 1 (2011) and 2 (2013); it constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Adaption of horizontal standards and inclusion of IEC 60664 and IEC 61140.
b) Implementation of insulation coordination, overvoltage category, classes, pollution degree (PD), and material groups (MG).
c) Implementation of component qualification.
d) IEC Guide 108 *Guidelines for ensuring the coherency of IEC publications – Application of horizontal standards.*