

Junction boxes for photovoltaic modules - Safety requirements and tests

ESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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ICS 27.160

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EUROPEAN STANDARD
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EN IEC 62790

September 2020

ICS 27.160

Supersedes EN 62790:2015 and all of its amendments
and corrigenda (if any)

English Version

Junction boxes for photovoltaic modules - Safety requirements
and tests
(IEC 62790:2020)

Boîtes de jonction pour modules photovoltaïques -
Exigences de sécurité et essais
(IEC 62790:2020)

Anschlussdosen für Photovoltaik-Module -
Sicherheitsanforderungen und Prüfungen
(IEC 62790:2020)

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European foreword

The text of document 82/1719/FDIS, future edition 2 of IEC 62790, prepared by IEC/TC 82 "Solar photovoltaic energy systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62790:2020.

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) 2021-05-19
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-08-19

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60112	NOTE	Harmonized as EN 60112
IEC 60228	NOTE	Harmonized as EN 60228
IEC 60512-1	NOTE	Harmonized as EN IEC 60512-1
IEC 60664-3	NOTE	Harmonized as EN 60664-3
IEC 60998-2-1	NOTE	Harmonized as EN 60998-2-1
IEC 60998-2-2	NOTE	Harmonized as EN 60998-2-2
IEC 61730-2	NOTE	Harmonized as EN IEC 61730-2

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60060-1	-	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	-
IEC 60068-1	-	Environmental testing - Part 1: General and guidance	EN 60068-1	-
IEC 60068-2-14	2009	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	2009
IEC 60068-2-70	-	Environmental Testing - Part 2-70: Tests - Test Xb: Abrasion of markings, lettering, surfaces and materials caused by rubbing of fingertips and hands	-	-
IEC 60068-2-75	-	Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests	EN 60068-2-75	-
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60216-1	-	Electrical insulating materials - Thermal endurance properties - Part 1: Ageing procedures and evaluation of test results	EN 60216-1	-
IEC 60216-5	-	Electrical insulating materials - Thermal endurance properties - Part 5: Determination of relative temperature index (RTI) of an insulating material	-	-
IEC 60352-2	-	Solderless connections - Part 2: Crimped connections - General requirements, test methods and practical guidance	EN 60352-2	-
IEC 60352-3	-	Solderless connections - Part 3: Accessible insulation displacement (ID) connections - General requirements, test methods and practical guidance	EN IEC 60352-3	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60352-4	-	Solderless connections - Part 4: Non-accessible insulation displacement (ID) connections - General requirements, test methods and practical guidance	EN IEC 60352-4	-
IEC 60352-5	-	Solderless connections - Part 5: Press-in connections - General requirements, test methods and practical guidance	-	-
IEC 60352-6	-	Solderless connections - Part 6: Insulation piercing connections - General requirements, test methods and practical guidance	-	-
IEC 60352-7	-	Solderless connections - Part 7: Spring clamp connections - General requirements, test methods and practical guidance	-	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 60695-2-11	-	Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products (GWEPT)	-	-
IEC 60695-10-2	-	Fire hazard testing - Part 10-2: Abnormal heat - Ball pressure test method	EN 60695-10-2	-
IEC 60695-11-10	-	Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	-
IEC 60695-11-20	-	Fire hazard testing - Part 11-20: Test flames - 500 W flame test method	EN 60695-11-20	-
IEC 60947-7-1	-	Low-voltage switchgear and controlgear - Part 7-1: Ancillary equipment - Terminal blocks for copper conductors	EN 60947-7-1	-
IEC 60998-2-3	-	Connecting devices for low-voltage circuits for household and similar purposes - Part 2-3: Particular requirements for connecting devices as separate entities with insulation-piercing clamping units	EN 60998-2-3	-
IEC 60999-1	1999	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units - Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm ² up to 35 mm ² (included)	EN 60999-1	2000

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60999-2	-	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units - Part 2: Particular requirements for clamping units for conductors above 35 mm ² up to 300 mm ² (included)	EN 60999-2	-
IEC 61032	-	Protection of persons and equipment by enclosures - Probes for verification	EN 61032	-
IEC 61140	2016	Protection against electric shock - Common aspects for installation and equipment	EN 61140	2016
IEC 61191-1	-	Printed board assemblies - Part 1: Generic specification - Requirements for soldered electrical and electronic assemblies using surface mount and related assembly technologies	EN IEC 61191-1	-
IEC 61210	-	Connecting devices - Flat quick-connect terminations for electrical copper conductors - Safety requirements	EN 61210	-
IEC 61215-1	2016	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 1: Test requirements	EN 61215-1	2016
IEC 61215-2	2016	Terrestrial photovoltaic (PV) modules - Design qualification and type approval - Part 2: Test procedures	EN 61215-2	2017
IEC 61730-1	2016	Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction	EN IEC 61730-1	2018
IEC 62852	-	Connectors for DC-application in photovoltaic systems - Safety requirements and tests	EN 62852	-
IEC 62930	-	Electric cables for photovoltaic systems with a voltage rating of 1,5 kV DC	-	-
ISO 868	2003	Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness)	EN ISO 868	2003
ISO 4892-2	-	Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps	EN ISO 4892-2	-
ISO 4892-3	-	Plastics - Methods of exposure to laboratory light sources - Part 3: fluorescent UV lamps	EN ISO 4892-3	-

INTERNATIONAL STANDARD

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Junction boxes for photovoltaic modules – Safety requirements and tests

Boîtes de jonction pour modules photovoltaïques – Exigences de sécurité et essais





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IEC 62790

Edition 2.0 2020-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Junction boxes for photovoltaic modules – Safety requirements and tests

**Boîtes de jonction pour modules photovoltaïques – Exigences de sécurité
et essais**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONALE

ICS 27.160

ISBN 978-2-8322-8488-9

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CONTENTS

FOREWORD	5
1 Scope	7
2 Normative references	7
3 Terms and definitions	9
4 Constructional requirements and performance	13
4.1 General.....	13
4.2 Marking and identification	14
4.2.1 Identification.....	14
4.2.2 Marking	14
4.2.3 Technical documentation	15
4.3 Protection against electric shock.....	15
4.4 Terminations, connecting devices and connection methods	15
4.5 Connectors	16
4.6 Cables	16
4.7 Resistance to ageing	16
4.8 General design	16
4.9 Degree of protection (IP).....	17
4.10 Dielectric strength.....	17
4.11 Range of ambient temperature	17
4.12 Cable anchorage.....	17
4.13 Mechanical strength	17
4.14 Insulation	18
4.14.1 Type of insulation	18
4.14.2 Basic insulation	18
4.14.3 Supplementary insulation.....	18
4.14.4 Double insulation	18
4.14.5 Reinforced insulation	18
4.15 Clearances and creepage distances.....	19
4.15.1 Clearances	19
4.15.2 Creepage distances.....	19
4.16 Insulation parts	21
4.16.1 Outer accessible parts	21
4.16.2 Inner parts keeping active parts in position	21
4.17 Current carrying parts and resistance against corrosion	21
4.18 Sealing	22
4.19 Bypass-diode	22
4.20 Knock-out inlets (outlets) intended to be removed by mechanical impact	22
5 Tests	22
5.1 General.....	22
5.2 Preparation of specimens	23
5.3 Performance of tests.....	25
5.3.1 General	25
5.3.2 Durability of marking.....	25
5.3.3 Fixing of lid on rewirable junction box	25
5.3.4 Protection against electric shock	25
5.3.5 Measurement of clearances and creepage distances	26

5.3.6	Dielectric strength.....	26
5.3.7	Resistance to corrosion	26
5.3.8	Mechanical strength at lower temperatures	26
5.3.9	Thermal cycle test (IEC 60068-2-14:2009, Test Nb).....	27
5.3.10	Damp heat test	28
5.3.11	Weather resistance test	28
5.3.12	Flammability class	28
5.3.13	Ball pressure test.....	29
5.3.14	Glow wire test.....	29
5.3.15	Resistance against ageing	29
5.3.16	Wet leakage current test.....	29
5.3.17	Humidity freeze test.....	30
5.3.18	Bypass diode thermal test.....	30
5.3.19	Test of terminations and connection methods	31
5.3.20	Knock-out inlets (outlets) intended to be removed by mechanical impact	32
5.3.21	Test of cord anchorage	32
5.3.22	Retention on the mounting surface	34
5.3.23	Reverse current test at junction box.....	34
5.4	Test schedule	35
Annex A (informative)	Symbol "Do not disconnect under load"	45
Annex B (normative)	Qualification of conformal coatings for protection against pollution.....	46
B.1	General.....	46
B.2	Technical properties	46
B.3	Qualification of coatings.....	46
Annex C (normative)	Measurement of clearances and creepage distances	49
Bibliography.....		53
Figure 1 – Thermal cycling test – Temperature and applied current profile	40	
Figure 2 – Humidity-freeze cycle.....	41	
Figure 3 – Typical arrangement for the cable anchorage pull test.....	41	
Figure 4 – Typical arrangement for torsion test	42	
Figure 5 – Typical arrangement for flammability test in accordance with 5.3.12.2.....	42	
Figure 6 – Measurement of voltage drop	43	
Figure 7 – Bypass diode thermal test	43	
Figure 8 – Proper attachment of 5 N weight to junction box.....	44	
Figure A.1 – Symbol "DO NOT DISCONNECT UNDER LOAD"	45	
Figure A.2 – Symbol "DO NOT DISCONNECT UNDER LOAD" (IEC 60417-6070:2011-06)....	45	
Figure C.1 – Examples of methods of measuring clearances and creepage distances	52	
Table 1 – Required type of insulation	18	
Table 2 – Rated impulse voltages and minimum clearances.....	19	
Table 3 – Creepage distances for basic insulation	20	
Table 4 – Number of specimens.....	23	
Table 5 – Values of torque for screw-type clamping units.....	24	
Table 6 – Pull forces for cord anchorage	33	

Table 7 – Values for torsion test	34
Table 8 – Marking, information, documentation, test group A	35
Table 9 – Material test, test group B (single tests)	36
Table 10 – Constructional requirements, test group C (single tests).....	37
Table 11 – Mechanical tests, test group D (single tests)	37
Table 12 – Test sequence I, test group E (tests to be performed consecutively in this order).....	38
Table 13 – Test sequence II, test group F (tests to be performed consecutively in this order).....	38
Table 14 – Test sequence III, test group G (tests to be performed consecutively in this order).....	39
Table 15 – Test sequence IV, test group H (tests to be performed consecutively in this order).....	39
Table 16 – Reverse current test, test group I	39
Table 17 – Test sequence V, test group J (tests to be performed consecutively in this order).....	40
Table B.1 – Test parameters, test conditions and test procedures.....	47
Table B.2 – Test sequence and conformity check (tests to be performed consecutively in this order)	48
Table C.1 – Dimensions of X.....	49

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**JUNCTION BOXES FOR PHOTOVOLTAIC MODULES –
SAFETY REQUIREMENTS AND TESTS****FOREWORD**

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International Standard IEC 62790 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

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

- a) Modifications in normative references and terms and definitions;
- b) Improvement of declaration of categories for junction boxes in 4.1;
- c) Clarification for ambient temperature in 4.1;
- d) Addition of requirement to provide information concerning RTE/RTI or TI in 4.2;
- e) Reference to IEC 62930 instead of EN 50618 in 4.6;
- f) Addition of "Functional insulation" in Table 1;

- g) Addition of "Distance through cemented joints" in Table 3;
- h) Correction of procedure of process to categorize material groups (deletion of PTI) in 4.15.2.3;
- i) Requirement for approval of RTE/RTI or TI for insulation parts in 4.16.1 and 4.16.2;
- j) Change of requirements concerning electrochemical potential in 4.17.2;
- k) Clarification for IP-test in 5.3.4.2;
- l) Addition of test voltage for cemented joints in 5.3.6 and 5.3.16;
- m) Addition of detailed description on how to prepare the test sample for the thermal cycle test in 5.3.9.1;
- n) New test procedure for bypass diode thermal test (5.3.18) in accordance with MQT 18.1 of IEC 61215-2:2016;
- o) New test procedure for reverse overload current test in 5.3.23;
- p) New Figure 1 for thermal cycle test.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
82/1719/FDIS	82/1738/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document 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 document. At this date, the document will be

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