SLOVENSKI STANDARD
oSIST prEN IEC 61076-2-111:2024

01-november-2024

Konektorji za električno in elektronsko opremo - Zahteve za izdelek - 2-111. del: Okrogli konektorji - Podrobna specifikacija za močnostne konektorje z vijačnim zaklepanjem M12

Connectors for electrical and electronic equipment - Product requirements - Part 2-111: Circular connectors - Detail specification for power connectors with m12 screw-locking

Connecteurs pour équipements électriques et électroniques - Exigences de produit - Partie 2-111: Connecteurs circulaires - Spécification particulière pour les connecteurs d'alimentation à vis m12

Ta slovenski standard je istoveten z: **prEN IEC 61076-2-111:2024**

ICS:

31.220.10	Vtiči in vtičnice, konektorji	Plug-and-socket devices. Connectors

oSIST prEN IEC 61076-2-111:2024 **en**

IEC

48B/3117/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 61076-2-111 ED2**	
DATE OF CIRCULATION: **2024-09-20**	CLOSING DATE FOR VOTING: **2024-12-13**
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IEC SC 48B : ELECTRICAL CONNECTORS	
SECRETARIAT: United States of America	SECRETARY: Mr Jeffrey Toran
OF INTEREST TO THE FOLLOWING COMMITTEES:	HORIZONTAL FUNCTION(S):
ASPECTS CONCERNED:	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING **Attention IEC-CENELEC parallel voting** The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

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TITLE:

Connectors for electrical and electronic equipment - Product requirements - Part 2-111: Circular connectors - Detail specification for power connectors with M12 screw-locking

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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CONNECTORS FOR ELETRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

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International Standard IEC 61076-2-111 has been prepared by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment.

This International Standard cancel and replaces the first edition of IEC 61076-2-111 (2017). This edition constitutes a technical revision.

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

a) The structure of this document has been adapted to the new IEC template for standards. New subclauses have been added. In Clauses 5 Dimensional information and 6 Characteristics, technical specifications have been updated.

b) This document no longer includes the mating faces for M12 E-coded connectors.

c) Annex B (informative) Orientation of cable outlet in relation to coding has been added.

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

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

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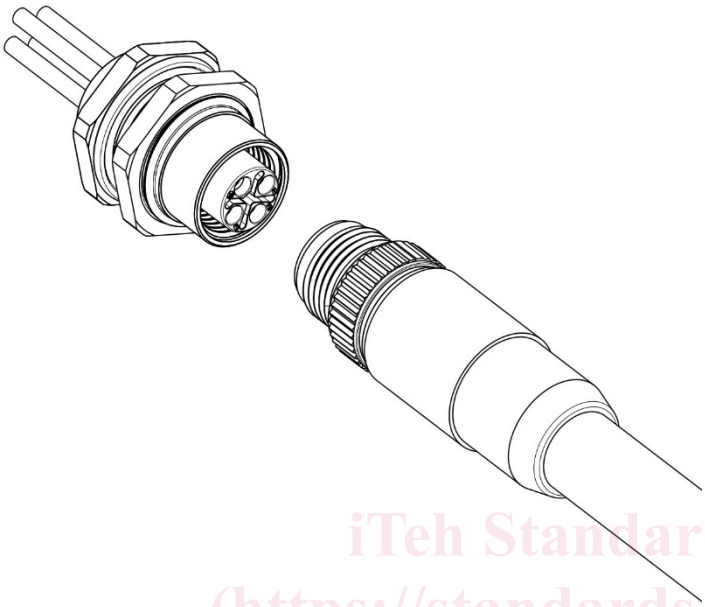
Specification available from: IEC General secretariat or from the addresses shown on the inside cover.</td><td>IEC 61076-2-111 Ed 2</td></tr>
<tr><td>DETAIL SPECIFICATION in accordance with IEC 61076-1</td><td></td></tr>
<tr><td rowspan="2">  </td><td>Circular connectors
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Male and female connectors
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 2-111: Circular connectors – Detail specification for power connectors with M12 screw-locking

1 Scope

This part of IEC 61076-2 describes 4- to 6-way circular connectors with M12 screw-locking with current ratings up to 16A rated current per contact and voltage ratings of 63 V or 630 V, that are typically used for power supply and power applications in industrial premises.

These connectors consist of both, fixed and free connectors either rewirable or non-rewirable. Male connectors have round contacts Ø1,0mm and Ø1,5mm.

The different codings provided by this document prevent the mating of differently coded male or female connectors to any other similarly sized interfaces, covered by other standards and the cross-mating between the different codings provided by this document.

NOTE M12 is the dimension of the thread of the screw locking mechanism of these circular connectors.

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 60050-581, *Advance edition of the International Electrotechnical Vocabulary – Chapter 581: Electromechanical components for electronic equipment*

IEC 60068-1, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-60, *Environmental testing – Part 2: Tests –Test Ke: Flowing mixed gas corrosion test*

IEC 60352-2, *Solderless connections – Part 2: Crimped connections – General requirements, test methods and practical guidance*

IEC 60352-3, *Solderless connections – Part 3: Accessible insulation displacement (ID) connections – General requirements, test methods and practical guidance*

IEC 60352-4, *Solderless connections – Part 4: Non-accessible insulation displacement (ID) connections – General requirements, test methods and practical guidance*

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 60512-1, *Connectors for electronic equipment – Tests and measurements – Part 1: General*

IEC 60512-1-1, *Connectors for electronic equipment – Tests and measurements – Part 1-1: General examination – Test 1a: Visual examination*

IEC 60512-1-2, *Connectors for electronic equipment – Tests and measurements – Part 1-2: General examination – Test 1b: Examination of dimension and mass*

IEC 60512-2-1, *Connectors for electronic equipment – Tests and measurements – Part 2-1: Electrical continuity and contact resistance tests – Test 2a: Contact resistance – Millivolt level method*

IEC 60512-2-2 *Connectors for electronic equipment – Tests and measurements – Part 2-2: Electrical continuity and contact resistance tests – Test 2b: Contact resistance – Specified test current method*

IEC 60512-2-5 *Connectors for electronic equipment – Tests and measurements – Part 2-5: Electrical continuity and contact resistance tests – Test 2e: Contact disturbance*

IEC 60512-3-1, *Connectors for electronic equipment – Tests and measurements – Part 3-1: Insulation tests – Test 3a: Insulation resistance*

IEC 60512-4-1, *Connectors for electronic equipment – Tests and measurements – Part 4-1: Voltage stress tests – Test 4a: Voltage proof*

IEC 60512-5-1, *Connectors for electronic equipment – Tests and measurements – Part 5-1: Current-carrying capacity tests – Test 5a: Temperature rise*

IEC 60512-6-3, *Connectors for electronic equipment – Tests and measurements – Part 6-3: Dynamic stress tests – Test 6c: Shock*

IEC 60512-6-4, *Connectors for electronic equipment – Tests and measurements – Part 6-4: Dynamic stress tests – Test 6d: Vibration (sinusoidal)*

IEC 60512-9-1, *Connectors for electronic equipment – Tests and measurements – Part 9-1: Endurance tests – Test 9a: Mechanical operation*

IEC 60512-9-2, *Connectors for electronic equipment – Tests and measurements – Part 9-2: Endurance tests – Test 9b: Electrical load and temperature*

IEC 60512-11-1, *Electromechanical components for electronic equipment – Basic testing 339 procedures and measuring methods – Part 11: Climatic tests – Section 1: Test 11a – Climatic sequence*

IEC 60512-11-4, *Connectors for electronic equipment – Tests and measurements – Part 11-4: Climatic tests – Test 11d: Rapid change of temperature*

IEC 60512-11-7, *Connectors for electronic equipment – Tests and measurements – Part 11-7: Climatic tests – Test 11g: Flowing mixed gas corrosion test*

IEC 60512-11-9*, Connectors for electronic equipment – Tests and measurements – Part 11-9: Climatic tests – Test 11i: Dry heat*

IEC 60512-11-10, *Connectors for electronic equipment – Tests and measurements – Part 11-10: Climatic tests – Test 11j: Cold*

IEC 60512-11-12, *Connectors for electronic equipment – Tests and measurements – Part 11-12: Climatic tests – Test 11m: Damp heat, cyclic*

IEC 60512-13-2, *Connectors for electronic equipment – Tests and measurements – Part 13-2: Mechanical operation tests – Test 13b: Insertion and withdrawal forces*

IEC 60512-13-5, *Connectors for electronic equipment – Tests and measurements – Part 13-5: Mechanical operation tests – Test 13e: Polarizing and keying method*

IEC 60512-14-7 *Electromechanical components for electronic equipment – Basic testing procedures and measuring methods – Part 14: Sealing tests – Section 7: Test 14g: Impacting water*

IEC 60512-15-1 *Connectors for electronic equipment – Tests and measurements – Part 15-1: Connector tests (mechanical) – Test 15a: Contact retention in insert*

IEC 60512-16-5, *Connectors for electronic equipment – Tests and measurements – Part 16-5: Mechanical tests on contacts and terminations – Test 16e: Gauge retention force (resilient contacts)*

IEC 60512-19-3, *Electromechanical components for electronic equipment – Basic testing procedures and measuring methods – Part 19: Chemical resistance tests – Section 3: Test 19c – Fluid resistance*

IEC 60512-23-3 *Connectors for electrical and electronic equipment – Tests and measurements – Part 23-3: Screening and filtering tests – Test 23c: Shielding effectiveness of connectors and accessories – Line injection method*

IEC 60529, *Degrees of protection provided by enclosures (IP code)*

IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60998-2-1, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units*

IEC 60999-1, *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 0,2mm² up 35mm² (included)*

IEC 61076-1, *Connectors for electronic equipment – Product requirements – Part 1: Generic specification*

IEC 61076-2, *Connectors for electronic equipment – Product requirements – Part 2: Sectional specification for circular connectors*

IEC 61984, *Connectors – Safety requirements and tests*

IEC TR 63040, *Guidance on clearances and creepage distances in particular for distances equa lto or less than 2mm – Test results of research on influencing parameters*

ISO 11469: 2016, *Plastics – Generic identification and marking of plastic products*

ISO 21920-1 (2021), *Geometrical Products Specifications (GPS) – Surface texture: Profile – Part 1: Indication of surface texture*

3 Terms and definitions

For the purposes of this document, terms and definitions from IEC 60050-581, IEC 61076-1, IEC 60512-1 and IEC 61984 as well as the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

• ISO Online browsing platform: available at https://www.iso.org/obp

• IEC Electropedia: available at http://www.electropedia.org/

3.1
protective conductor
PE
conductor provided for purposes of safety, for example protection against electric shock.

Note 1 to entry: In an electrical installation, the conductor identified PE is normally also considered as protective earthing conductor.

[IEC 60050-581:2008, 581-27-26]

3.2
functional earth conductor
FE
functional grounding conductor in US
earthing conductor provided for functional earthing.

Note 1 to entry: Functional earthing a point or points in a system or in an installation or in equipment, for purposes other than electrical safety. [IEC 60050-195, Amendment 1: 2001, 195-01-13]

[IEC 60050-195:1998, 195-02-15]

3.3
mounting orientation
Circular mounting position of the connector in relation to the polarization of the mating interface.

4 Technical information

4.1 Recommended methods of termination for rewirable connectors

The contact termination for rewirable connectors shall be of the following types: screw, crimp, spring clamp, insulation piercing, insulation displacement, press-in connections according to the respective part of IEC 60352 series and IEC 60999-1.

4.2 Connector coding, number of contacts, ratings and characteristics

Table 1 provides the coding of these connectors as a function of their polarity (maximum number of ways and their function), number of contacts, rated voltage and rated current.

Table 1 – Ratings of connectors

Coding	Polarity	Number of contacts	Rated voltage AC or DC	Rated current A
F	4-way	2	50 V AC / 60 V DC	16
		3		
		4		