



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 vijlačnim
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

<https://standards.iteh.ai/catalog/standards/sist/35f19590-af75-43c5-903e-65990f407ff7/osist-pren-iec-61076-2-111-2024>

ICS:

31.220.10	Vtiči in vtičnice, konektorji	Plug-and-socket devices. Connectors
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oSIST prEN IEC 61076-2-111:2024 **en**



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:	
<input checked="" type="checkbox"/> 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.	<input type="checkbox"/> 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

CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

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

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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- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

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.

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

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

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

243
244 Full information on the voting for its approval can be found in the report on voting indicated in
245 the above table.

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

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

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

- 254 • reconfirmed,
- 255 • withdrawn, or
- 256 • revised.

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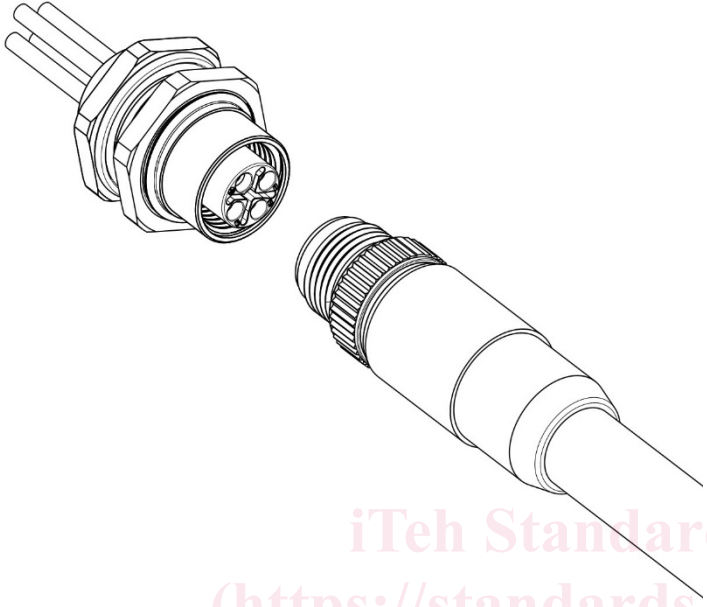
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<p>IEC SC 48B – Electrical connectors</p> <p>Specification available from: IEC General secretariat or from the addresses shown on the inside cover.</p>	IEC 61076-2-111 Ed 2
DETAIL SPECIFICATION in accordance with IEC 61076-1	
	<p>Circular connectors</p> <p>Power connectors with M12 screw-locking</p> <p>Male and female connectors</p> <p>Male and female contacts</p> <p>Rewirable – Non-rewirable</p>
	<p>Free cable connectors</p> <p>Straight and right-angled connectors</p> <p>Fixed connectors</p> <p>Flange mounting</p> <p>Single hole mounting</p>

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

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

272 1 Scope

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

276 These connectors consist of both, fixed and free connectors either rewirable or non-rewirable.
277 Male connectors have round contacts $\varnothing 1,0\text{mm}$ and $\varnothing 1,5\text{mm}$.

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

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

282 2 Normative references

283 The following referenced documents are indispensable for the application of this document.
284 For dated references, only the edition cited applies. For undated references, the latest edition
285 of the referenced document (including any amendments) applies.

286 IEC 60050-581, *Advance edition of the International Electrotechnical Vocabulary – Chapter*
287 *581: Electromechanical components for electronic equipment*

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

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

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

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

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

297 IEC 60352-5, *Solderless connections – Part 5: Press-in connections – General requirements,*
298 *test methods and practical guidance*

299 IEC 60352-6, *Solderless connections – Part 6: Insulation piercing connections – General*
300 *requirements, test methods and practical guidance*

301 IEC 60352-7, *Solderless connections – Part 7: Spring clamp connections – General*
302 *requirements, test methods and practical guidance*

- 303 IEC 60512-1, *Connectors for electronic equipment – Tests and measurements – Part 1:*
304 *General*
- 305 IEC 60512-1-1, *Connectors for electronic equipment – Tests and measurements – Part 1-1:*
306 *General examination – Test 1a: Visual examination*
- 307 IEC 60512-1-2, *Connectors for electronic equipment – Tests and measurements – Part 1-2:*
308 *General examination – Test 1b: Examination of dimension and mass*
- 309 IEC 60512-2-1, *Connectors for electronic equipment – Tests and measurements – Part 2-1:*
310 *Electrical continuity and contact resistance tests – Test 2a: Contact resistance – Millivolt level*
311 *method*
- 312 IEC 60512-2-2 *Connectors for electronic equipment – Tests and measurements – Part 2-2:*
313 *Electrical continuity and contact resistance tests – Test 2b: Contact resistance – Specified*
314 *test current method*
- 315 IEC 60512-2-5 *Connectors for electronic equipment – Tests and measurements – Part 2-5:*
316 *Electrical continuity and contact resistance tests – Test 2e: Contact disturbance*
- 317 IEC 60512-3-1, *Connectors for electronic equipment – Tests and measurements – Part 3-1:*
318 *Insulation tests – Test 3a: Insulation resistance*
- 319 IEC 60512-4-1, *Connectors for electronic equipment – Tests and measurements – Part 4-1:*
320 *Voltage stress tests – Test 4a: Voltage proof*
- 321 IEC 60512-5-1, *Connectors for electronic equipment – Tests and measurements – Part 5-1:*
322 *Current-carrying capacity tests – Test 5a: Temperature rise*
- 323 IEC 60512-6-3, *Connectors for electronic equipment – Tests and measurements – Part 6-3:*
324 *Dynamic stress tests – Test 6c: Shock*
- 325 IEC 60512-6-4, *Connectors for electronic equipment – Tests and measurements – Part 6-4:*
326 *Dynamic stress tests – Test 6d: Vibration (sinusoidal)*
- 327 IEC 60512-9-1, *Connectors for electronic equipment – Tests and measurements – Part 9-1:*
328 *Endurance tests – Test 9a: Mechanical operation*
- 329 IEC 60512-9-2, *Connectors for electronic equipment – Tests and measurements – Part 9-2:*
330 *Endurance tests – Test 9b: Electrical load and temperature*
- 331 IEC 60512-11-1, *Electromechanical components for electronic equipment – Basic testing* 339
332 *procedures and measuring methods – Part 11: Climatic tests – Section 1: Test 11a – Climatic*
333 *sequence*
- 334 IEC 60512-11-4, *Connectors for electronic equipment – Tests and measurements – Part 11-4:*
335 *Climatic tests – Test 11d: Rapid change of temperature*
- 336 IEC 60512-11-7, *Connectors for electronic equipment – Tests and measurements – Part 11-7:*
337 *Climatic tests – Test 11g: Flowing mixed gas corrosion test*
- 338 IEC 60512-11-9, *Connectors for electronic equipment – Tests and measurements – Part 11-9:*
339 *Climatic tests – Test 11i: Dry heat*
- 340 IEC 60512-11-10, *Connectors for electronic equipment – Tests and measurements – Part 11-*
341 *10: Climatic tests – Test 11j: Cold*

- 342 IEC 60512-11-12, *Connectors for electronic equipment – Tests and measurements – Part 11-12: Climatic tests – Test 11m: Damp heat, cyclic*
343
- 344 IEC 60512-13-2, *Connectors for electronic equipment – Tests and measurements – Part 13-2: Mechanical operation tests – Test 13b: Insertion and withdrawal forces*
345
- 346 IEC 60512-13-5, *Connectors for electronic equipment – Tests and measurements – Part 13-5: Mechanical operation tests – Test 13e: Polarizing and keying method*
347
- 348 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*
349
350
- 351 IEC 60512-15-1 *Connectors for electronic equipment – Tests and measurements – Part 15-1: Connector tests (mechanical) – Test 15a: Contact retention in insert*
352
- 353 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)*
354
355
- 356 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*
357
358
- 359 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*
360
361
- 362 IEC 60529, *Degrees of protection provided by enclosures (IP code)*
- 363 IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*
364
- 365 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*
366
367
- 368 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)*
369
370
- 371 IEC 61076-1, *Connectors for electronic equipment – Product requirements – Part 1: Generic specification*
372
- 373 IEC 61076-2, *Connectors for electronic equipment – Product requirements – Part 2: Sectional specification for circular connectors*
374
- 375 IEC 61984, *Connectors – Safety requirements and tests*
- 376 IEC TR 63040, *Guidance on clearances and creepage distances in particular for distances equal to or less than 2mm – Test results of research on influencing parameters*
377
- 378 ISO 11469: 2016, *Plastics – Generic identification and marking of plastic products*
- 379 ISO 21920-1 (2021), *Geometrical Products Specifications (GPS) – Surface texture: Profile – Part 1: Indication of surface texture*
380

381 3 Terms and definitions

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

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

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

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

388 **3.1**
389 **protective conductor**
390 **PE**
391 **conductor provided for purposes of safety, for example protection against electric**
392 **shock.**

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

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

396 **3.2**
397 **functional earth conductor**
398 **FE**
399 **functional grounding conductor in US**
400 **earthing conductor provided for functional earthing.**

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

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

404 **3.3**
405 **mounting orientation**
406 Circular mounting position of the connector in relation to the polarization of the mating
407 interface.
408

409 4 Technical information

410 4.1 Recommended methods of termination for rewirable connectors

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

414 4.2 Connector coding, number of contacts, ratings and characteristics

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

417 **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		