
Okrogli konektorji - Podrobna specifikacija za oklepljene in neoklepljene, proste in pritrjene konektorje z bajonetnim zaklepom velikosti b12, b17, b23 in b40 za prenos električnega napajanja, signalov in podatkov

Circular connectors - Detail specification for shielded and unshielded, free and fixed connectors with bayonet-locking size b12, b17, b23 and b40, for power, signal and data transmission

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

Ta slovenski standard je istoveten z: prEN IEC 61076-2-118:2024

[oSIST prEN IEC 61076-2-118:2024](https://standards.iteh.ai/catalog/standards/sist/f3cc0fa0-3eb2-460a-b956-ea45045d171b/osist-pr-en-iec-61076-2-118-2024)

<https://standards.iteh.ai/catalog/standards/sist/f3cc0fa0-3eb2-460a-b956-ea45045d171b/osist-pr-en-iec-61076-2-118-2024>

ICS:

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

oSIST prEN IEC 61076-2-118:2024 **en**



48B/3118/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:

IEC 61076-2-118 ED1

DATE OF CIRCULATION:

2024-10-04

CLOSING DATE FOR VOTING:

2024-12-27

SUPERSEDES DOCUMENTS:

48B/3081/CD, 48B/3102/CC

IEC SC 48B : ELECTRICAL CONNECTORS	
SECRETARIAT: United States of America	SECRETARY: Mr Jeffrey Toran
OF INTEREST TO THE FOLLOWING COMMITTEES: SC 46C, SC 65C, ISO/IEC JTC 1/SC 25	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

oSIST prEN IEC 61076-2-118:2024

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:

Circular connectors – Detail specification for shielded and unshielded, free and fixed connectors with bayonet-locking size B12, B17, B23 and B40, for power, signal and data transmission

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

Contents

1		
2	FOREWORD.....	4
3	INTRODUCTION.....	6
4	1 Scope.....	8
5	2 Normative references	9
6	3 Terms and definitions	12
7	4 Technical information	13
8	4.1 Systems of levels.....	13
9	4.1.1 Performance levels	13
10	4.1.2 Compatibility levels, according to IEC 61076-1	13
11	4.2 Classification into climatic categories.....	13
12	4.3 Current-carrying capacity	13
13	4.4 Type designation	15
14	4.5 Marking.....	16
15	4.6 Safety aspects	17
16	5 Dimensional information	17
17	5.1 General.....	17
18	5.2 Survey of styles and variants	17
19	5.2.1 General	17
20	5.2.2 Terminations.....	17
21	5.2.3 Fixed connectors	17
22	5.2.4 Free connectors.....	23
23	5.3 Interface dimensions	32
24	5.3.1 Interface dimensions – B12	32
25	5.3.2 Interface dimensions – B17	40
26	5.3.3 Interface dimensions – B23	59
27	5.3.4 Interface dimensions – B40	73
28	5.3.5 Interface dimensions – trapezoidal data module	82
29	5.3.6 Engagement (mating) direction	86
30	5.4 Gauges.....	90
31	6 Characteristics	91
32	6.1 General.....	91
33	6.2 Contact assignment and other definitions.....	91
34	6.3 Classification into climatic categories.....	91
35	6.4 Electrical characteristics	92
36	6.4.1 Voltage proof.....	92
37	6.4.2 Rated impulse withstand voltage – Pollution degree	93
38	6.4.3 Current-carrying capacity.....	93
39	6.4.4 Contact and shield resistance.....	94
40	6.4.5 Insulation resistance.....	94
41	6.5 Transmission performance	94
42	6.5.1 General	94
43	6.5.2 Insertion loss	95
44	6.5.3 Return loss	95
45	6.5.4 Near-end cross talk (NEXT).....	95
46	6.5.5 Far-end cross talk (FEXT).....	96
47	6.5.6 Transverse conversion loss (TCL)	96

48	6.5.7	Transverse conversion transfer loss (TCTL)	96
49	6.5.8	Transfer impedance	97
50	6.5.9	Coupling attenuation	97
51	6.5.10	Power sum alien (exogenous) NEXT (PS NEXT)	97
52	6.5.11	Power sum alien (exogenous) FEXT (PS AFEXT)	98
53	6.5.12	Propagation delay	98
54	6.6	Mechanical characteristics	98
55	6.6.1	Mechanical operations	98
56	6.6.2	Effectiveness of connector coupling device	99
57	6.6.3	Insertion and withdrawal forces	99
58	6.6.4	Polarization and coding	99
59	6.7	Other characteristics	100
60	6.7.1	Vibration (sinusoidal)	100
61	6.7.2	Shock	100
62	6.7.3	Degree of protection provided by enclosures (IP code)	100
63	6.7.4	Locking and unlocking torque	100
64	7	Test schedule	101
65	7.1	General	101
66	7.1.1	Overview	101
67	7.1.2	Climatic category	101
68	7.1.3	Arrangement for contact resistance measurements	101
69	7.1.4	Arrangement for dynamic stress tests (vibration)	103
70	7.1.5	Wiring of specimens	104
71	7.2	Test schedule	104
72	7.2.1	Test group P – Preliminary	104
73	7.2.2	Test group AP – Dynamic / Climatic	105
74	7.2.3	Test group BP – Mechanical endurance	108
75	7.2.4	Test group CP – Electrical load	109
76	7.2.5	Test group DP – Connection method tests	110
77	7.2.6	Test group EP – Signal integrity requirements	111
78	7.2.7	Test group FP – Current carrying capacity	111

79

80

INTERNATIONAL ELECTROTECHNICAL COMMISSION

CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT –
PRODUCT REQUIREMENTS –**Part 2-118: Circular connectors – Detail specification for shielded and
unshielded, free and fixed connectors with bayonet-locking size B12, B17,
B23 and B40, for power, signal and data transmission**

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 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.

IEC 61076-2-118 has been prepared by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment. It is an International Standard.

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

Draft	Report on voting
48B/XX/FDIS	48B/XX/RVD

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

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

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

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

- 144 • reconfirmed,
- 145 • withdrawn,
- 146 • replaced by a revised edition, or
- 147 • amended.

148

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

149

Itch Standards
(<https://standards.itech.ai>)
Document Preview

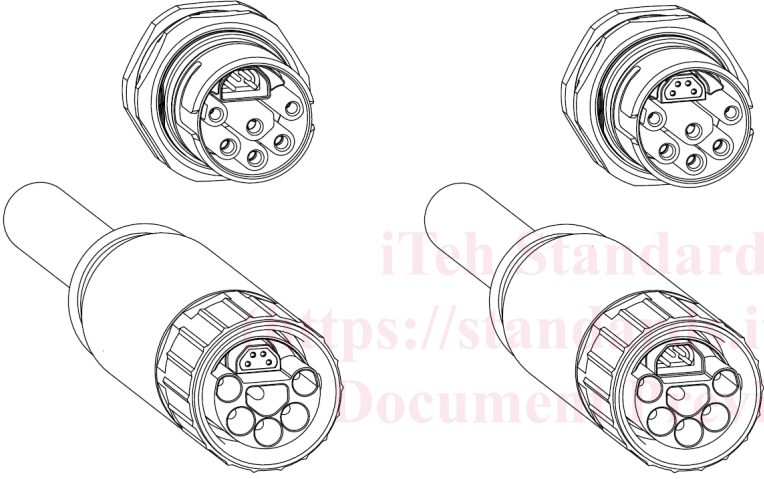
[oSIST prEN IEC 61076-2-118:2024](https://standards.itech.ai/catalog/standards/sist/f3cc0fa0-3eb2-460a-b956-ead5045d171b/osist-pren-iec-61076-2-118-2024)

<https://standards.itech.ai/catalog/standards/sist/f3cc0fa0-3eb2-460a-b956-ead5045d171b/osist-pren-iec-61076-2-118-2024>

150

INTRODUCTION

151

IEC SC 48B – Electrical connectors Specification available from: IEC General secretariat or from the addresses shown on the inside cover.	IEC 61076-2-118 ED1
DETAIL SPECIFICATION in accordance with IEC 61076-1	
	Circular connectors With bayonet-locking Size B12, B17, B23 and B40, for power, signal and data transmission Male (power and signal) + male (data) and female (power and signal) + female (data) connectors Male (power and signal) + female (data) and female (power and signal) + male (data) connectors Male and female contacts Shielded and unshielded Rewirable Non-rewirable
	Free connectors Straight and angled connectors Fixed connectors Flange mounting Single hole mounting

152

153 The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed
154 that compliance with this document may involve the use of a patent. IEC takes no position
155 concerning the evidence, validity, and scope of this patent right.

156 The holder of this patent right has assured IEC that s/he is willing to negotiate licences under
157 reasonable and non-discriminatory terms and conditions with applicants throughout the world.
158 In this respect, the statement of the holder of this patent right is registered with IEC. Information
159 may be obtained from the patent database available at patents.iec.ch/.

160 Attention is drawn to the possibility that some of the elements of this document may be the
161 subject of patent rights other than those in the patent database. IEC shall not be held
162 responsible for identifying any or all such patent rights.

163

164

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[oSIST prEN IEC 61076-2-118:2024](https://standards.iteh.ai/catalog/standards/sist/f3cc0fa0-3eb2-460a-b956-ead5045d171b/osist-pren-iec-61076-2-118-2024)

<https://standards.iteh.ai/catalog/standards/sist/f3cc0fa0-3eb2-460a-b956-ead5045d171b/osist-pren-iec-61076-2-118-2024>

CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 2-118: Circular connectors – Detail specification for free and fixed connectors with bayonet-locking size B12, B17, B23 and B40, for power, signal and data transmission

1 Scope

This part of IEC 61076 specifies circular connectors with size B12, B17, B23 and B40 with bayonet-locking, typically used for power, signal and data transmissions in industrial applications. These connectors consist of fixed and free connectors either rewirable or non-rewirable.

Power contacts of male connectors are round contacts with Ø 1 mm, Ø 1,5 mm, Ø 1,8 mm, Ø 2,25 mm and Ø 4 mm, with current ratings up to 64 A per pole and rated voltage of 50 V, 300 V or 600 V AC/DC. Power contact groups are classified by type and identified throughout this document as “P” followed by two digits “01” through “09” (see 4.3, Table 1).

Signal contacts of male connectors are round contacts with Ø 1 mm and Ø 1,8 mm, with current ratings up to 20 A per pole and rated voltage of 50 V AC/DC. Signal contact groups are classified by type and identified throughout this document as “S” followed by “0”, “1”, or “2” (see 4.3, Table 2).

Data contacts of male connectors are round contacts with Ø 0,8 mm and Ø 1 mm, with current ratings up to 8 A and rated voltage of 50 V AC/DC. Data transmission performance with frequencies up to 600 MHz. Data modules are classified by type and identified throughout this standard as “D” followed by “1”, or “2” (see 4.3, Table 3).

Besides the size of their bayonet locking (B12, B17, B23 or B40), connectors according to this document can be identified by data module (D) and complementing power (P) and signal (S) contact groups and optionally by number of poles, and finally by their application.

These connectors are designated for two main target applications, which differ as follows:

- Application A is for data transmission with power over data
- Application B is for data transmission without power over data

Connectors with power, signal and data contacts of the same gender are intended to transmit also power over the data contacts (application A), while connectors with data contacts not of the same gender of power and signal contacts are not intended to transmit power over the data contacts (application B).

The codings provided by this document prevent the mating to any other connector with similary sized interfaces covered by this document.

NOTE: B indicates that the connector is equipped with bayonet locking, while 12, 17, 23, 40 are the approximate dimensions in millimetres of the contact carrier diameter of these circular connectors.

204

205 **2 Normative references**

206 The following documents are referred to in the text in such a way that some or all of their content
 207 constitutes requirements of this document. For dated references, only the edition cited applies.
 208 For undated references, the latest edition of the referenced document (including any
 209 amendments) applies.

210 IEC 60050-581:2008, International Electrotechnical Vocabulary – Part 581: Electromechanical
 211 components for electronic equipment

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

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

215 IEC 60352-3, Solderless connections – Part 3: Solderless accessible insulation displacement
 216 connections – General requirements, test methods and practical guidance

217 IEC 60352-4, Solderless connections – Part 4: Solderless non-accessible insulation
 218 displacement connections – General requirements, test methods and practical guidance

219 IEC 60352-5, Solderless connections – Part 5: Press-in connections – General requirements,
 220 test methods and practical guidance

221 IEC 60352-6, Solderless connections – Part 6: Insulation piercing connections – General
 222 requirements, test methods and practical guidance

223 IEC 60352-7, Solderless connections – Part 7: Spring clamp connections – General
 224 requirements, test methods and practical guidance

225 IEC 60352-9, Solderless connections – Part 9: Ultrasonically welded connections – General
 226 requirements, test methods and practical guidance
 227

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

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

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

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

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

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

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

- 243 IEC 60512-6-4, Connectors for electronic equipment – Tests and measurements – Part 6-4:
244 Dynamic stress tests – Test 6d: Vibration (sinusoidal)
- 245 IEC 60512-9-1, Connectors for electronic equipment – Tests and measurements – Part 9-1:
246 Endurance tests – Test 9a: Mechanical operation
- 247 IEC 60512-9-2, Connectors for electronic equipment – Tests and measurements – Part 9-2:
248 Endurance tests – Test 9b: Electrical load and temperature
- 249 IEC 60512-11-1, Electromechanical components for electronic equipment – Basic testing
250 procedures and measuring methods – Part 11: Climatic tests – Section 1: Test 11a – Climatic
251 sequence
- 252 IEC 60512-11-4, Connectors for electronic equipment – Tests and measurements – Part 11-4:
253 Climatic tests – Test 11d: Rapid change of temperature
- 254 IEC 60512-11-9, Connectors for electronic equipment – Tests and measurements – Part 11-9:
255 Climatic tests – Test 11i: Dry heat
- 256 IEC 60512-11-10, Connectors for electronic equipment – Tests and measurements – Part 11-
257 10: Climatic tests – Test 11j: Cold
- 258 IEC 60512-11-12, Connectors for electronic equipment – Tests and measurements – Part 11-
259 12: Climatic tests – Test 11m: Damp heat, cyclic
- 260 IEC 60512-13-2, Connectors for electronic equipment – Tests and measurements – Part 13-2:
261 Mechanical operation tests – Test 13b: Insertion and withdrawal forces
- 262 IEC 60512-13-5, Connectors for electronic equipment – Tests and measurements – Part 13-5:
263 Mechanical operation tests – Test 13e: Polarizing and keying method
- 264 IEC 60512-16-5, Connectors for electronic equipment – Tests and measurements – Part 16-5:
265 Mechanical tests on contacts and terminations – Test 16e: Gauge retention force (resilient
266 contacts)
- 267 IEC 60512-28-100, Connectors for electrical and electronic equipment - Tests and
268 measurements - Part 28-100: Signal integrity tests up to 2 000 MHz - Tests 28a to 28g
- 269 IEC 60529:1989, Degrees of protection provided by enclosures (IP Code)
- 270 IEC 60529:1989/AMD1:1999
- 271 IEC 60529:1989/AMD2:2013
- 272 IEC 60664-1, Insulation coordination for equipment within low-voltage systems – Part 1:
273 Principles, requirements and tests
- 274 IEC 60999-1, Connecting devices – Electrical copper conductors – Safety requirements for
275 screw-type and screwless-type clamping units – Part 1: General requirements and particular
276 requirements for clamping units for conductors from 0,2 mm² up to 35 mm² (included)
- 277 IEC 61076-1:2006, Connectors for electronic equipment – Product requirements – Part 1:
278 Generic specification
- 279 IEC 61984, Connectors – Safety requirements and tests

- 280 IEC 62197-1, Connectors for electronic equipment – Quality assessment requirements – Part
281 1: Generic specification
- 282 ISO 11469, Plastics – Generic identification and marking of plastics products
- 283 ISO 21920-1:2021, Geometrical product specifications (GPS) - Surface texture: Profile - Part 1:
284 Indication of surface texture
285

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[oSIST prEN IEC 61076-2-118:2024](https://standards.iteh.ai/catalog/standards/sist/f3cc0fa0-3eb2-460a-b956-ead5045d171b/osist-pren-iec-61076-2-118-2024)

<https://standards.iteh.ai/catalog/standards/sist/f3cc0fa0-3eb2-460a-b956-ead5045d171b/osist-pren-iec-61076-2-118-2024>

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61076-1, IEC 61076-2, IEC 60512-1, IEC 61984 and the following apply.

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

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

protective conductor

PE

conductor provided for purposes of safety, for example protection against electric shock

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

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

3.2

mounting orientation

circular mounting position of the connector in relation to the polarization of the mating interface

Note to entry: Where the free connector has an angled cable entry (as opposed to a straight cable entry), the angle between the cable entry direction and the polarization keyway should be specified.