



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 61076-2-117:2025**  
**01-september-2025**

---

**Konektorji za električno in elektronsko opremo - Podrobna specifikacija za oklopljene, gibljive in pritrjene konektorje M12 do M40 za prenos električnega napajanja, signalov in podatkov s frekvencami do 600 MHz**

Connectors for electrical and electronic equipment - Detail specification for shielded, free and fixed circular connectors m12 to m40 for power, signal and data transmission with frequencies up to 600 MHz

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

Connecteurs pour équipements électriques et électroniques -S spécification particulière pour les fiches et embases circulaires écrantées m12 à m40 pour la transmission de puissance, de signaux et de données à des fréquences jusqu'à 600 MHz

[oSIST prEN IEC 61076-2-117:2025](https://standards.iteh.ai/standards/61076-2-117-2025)

<https://standards.iteh.ai/standards/61076-2-117-2025> **Ta slovenski standard je istoveten z: prEN IEC 61076-2-117:2025** [prEN IEC 61076-2-117:2025](https://standards.iteh.ai/standards/61076-2-117-2025)

---

**ICS:**

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

**oSIST prEN IEC 61076-2-117:2025**      **en**





# 48B/3166/CDV

## COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: <b>IEC 61076-2-117 ED1</b>	
DATE OF CIRCULATION: <b>2025-08-01</b>	CLOSING DATE FOR VOTING: <b>2025-10-24</b>
SUPERSEDES DOCUMENTS: <b>48B/3093/CD, 48B/3120A/CC</b>	

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  <b>Attention IEC-CENELEC parallel voting</b>  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

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:

**Connectors for electrical and electronic equipment – Detail specification for shielded, free and fixed circular connectors M12 to M40 for power, signal and data transmission with frequencies up to 600 MHz**

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

**Copyright © 2025 International Electrotechnical Commission, IEC.** All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

## IEC 61076-2-117 Ed1©IEC 2025

## CONTENTS

2			
3			
4			
5			
6	FOREWORD .....		7
7	INTRODUCTION .....		9
8	1 Scope .....		10
9	2 Normative references .....		10
10	3 Terms and definitions .....		13
11	4 Technical information .....		13
12	4.1 Systems of levels – Compatibility levels, according to IEC 61076-1 .....		13
13	4.1.1 Performance level .....		13
14	4.1.2 Compatibility levels according to IEC 61076-1 .....		13
15	4.2 Classification into climatic categories .....		13
16	4.3 Clearance and creepage distances .....		13
17	4.4 Current carrying capacity .....		13
18	4.5 Marking .....		14
19	4.6 Safety aspects .....		14
20	5 Dimensional information .....		14
21	5.1 General .....		14
22	5.2 Coding .....		15
23	5.3 Survey of styles and variants .....		18
24	5.3.1 Fixed connectors .....		18
25	5.3.2 Free connectors .....		23
26	5.4 Interface dimensions .....		26
27	5.4.1 M12 .....		26
28	5.4.2 M17 .....		33
29	5.4.3 M23 .....		41
30	5.4.4 M40 .....		49
31	5.5 Engagement (mating) information .....		56
32	5.5.1 Engagement (mating) direction .....		56
33	5.6 Gauges .....		60
34	6 Characteristics .....		61
35	6.1 General .....		61
36	6.2 Contact element assignment .....		61
37	6.3 Classification into climatic category .....		68
38	6.4 Electrical characteristics .....		69
39	6.4.1 Voltage information for Creepage and clearance distances .....		69
40	6.4.2 Voltage proof .....		70
41	6.4.3 Current-carrying capacity .....		70
42	6.4.4 Current rating .....		71
43	6.4.5 Contact resistance – interface only (separable fixed and free contact) .....		71
44	6.4.6 Input to output d.c. resistance .....		71
45	6.4.7 Input to output d.c. resistance unbalanced .....		72
46	6.4.8 Insulation resistance .....		72
47	6.4.9 Impedance .....		72
48	6.5 Transmission performance .....		73

## IEC 61076-2-117 Ed1©IEC 2025

49	6.5.1	General.....	73
50	6.5.2	Insertion loss .....	73
51	6.5.3	Return loss .....	73
52	6.5.4	Near-end cross talk (NEXT) .....	74
53	6.5.5	Far-end cross talk (FEXT).....	74
54	6.5.6	Transverse conversion loss (TCL).....	74
55	6.5.7	Transverse conversion transfer loss (TCTL).....	75
56	6.5.8	Transfer impedance .....	75
57	6.5.9	Coupling attenuation .....	75
58	6.5.10	Power sum alien (exogenous) NEXT (PS ANEXT).....	76
59	6.5.11	Power sum alien (exogenous) FEXT (PS AFEXT) .....	76
60	6.5.12	Propagation delay .....	77
61	6.6	Mechanical characteristics .....	77
62	6.6.1	IP degree of protection.....	77
63	6.6.2	Mechanical operation .....	77
64	6.6.3	Effectiveness of connector coupling devices .....	77
65	6.6.4	Insertion and withdrawal forces.....	78
66	6.6.5	Polarizing method .....	78
67	6.6.6	Vibration (sinusoidal) .....	79
68	6.6.7	Shock .....	79
69	6.6.8	Severities.....	79
70	7	Tests and test schedule .....	80
71	7.1	General.....	80
72	7.2	Mounting of specimens.....	80
73	7.2.1	General.....	80
74	7.2.2	Arrangement for contact resistance measurement.....	80
75	7.2.3	Arrangement for dynamical stress tests.....	81
76	7.2.4	Wiring of specimens.....	81
77	7.3	Test procedures and measuring methods .....	81
78	7.4	Preconditioning .....	82
79	7.5	Test schedules .....	82
80	7.5.1	General.....	82
81	7.5.2	Basic (minimum) test schedule.....	82
82	7.5.3	Full test schedule.....	82
83	7.5.4	Test group AP – Dynamic/Climatic .....	84
84	7.5.5	Test group BP – Mechanical endurance .....	86
85	7.5.6	Test group CP – Electrical load.....	87
86	7.5.7	Test group DP – Chemical resistivity.....	88
87	7.5.8	Test group EP – Connection method tests .....	88
88	7.5.9	Test group FP – Electrical transmission .....	89
89	7.5.10	Test group GP – Transfer Impedance and Coupling Attenuation .....	90
90	7.5.11	Test Group HP – Current-carrying capacity .....	90
91			
92		Figure 1 – Fixed connector, male or female contacts, straight version, with a square flange front mounting .....	20
93			
94		Figure 2 – Fixed connector, male or female contacts, straight version, single-hole mounting, with or without mounting orientation .....	21
95			
96		Figure 3 – Fixed connector, male or female contacts, right-angled version, with a square flange front mounting .....	22
97			

## IEC 61076-2-117 Ed1©IEC 2025

98	Figure 4 – Fixed connector, male or female contacts, right-angled version,	
99	single-hole mounting .....	22
100	Figure 5 – Rewirable connector, male contacts, straight version .....	24
101	Figure 6 – Non-rewirable connector, male contacts, straight version .....	25
102	Figure 7 – Rewirable connector, male contacts, straight version .....	25
103	Figure 8 – Non-rewirable connector, male contacts, straight version .....	26
104	Figure 9 – M12 mating dimensions for the coding Type 1 for male connectors .....	27
105	Figure 10 – Mating dimensions for the coding Type 3 and style with male contacts .....	29
106	Figure 11 – M12 mating dimensions for the female connectors (at the example of coding Type	
107	1 / 2) .....	31
108	Figure 12 – M12 mating dimensions for the fixed connectors (side view) .....	32
109	Figure 13 – Common dimensions for M17 Type 1/1A/1B male connectors .....	33
110	Figure 14 – Detail dimensions for M17 Type 1/1A/1B male connectors .....	34
111	Figure 15 – Common dimensions for M17 Type 2/2A/2B male connectors .....	35
112	Figure 16 – Detail dimensions for M17 Type 2/2A/2B male connectors .....	37
113	Figure 17 – Pin dimensions for M17 Type 1/1A/1B/2/2A/2B male connectors .....	38
114	Figure 18 – M17 mating dimensions for the fixed connector (side view) .....	39
115	Figure 19 – Common dimensions for M23 Type 1/1A male connectors .....	41
116	Figure 20 – Detail dimensions for M23 Type 1/1A male connector .....	43
117	Figure 21 – Common dimensions for M23 Type 2/2A male connectors .....	43
118	Figure 22 – Detail dimensions for M23 Type 2/2A male connector .....	45
119	Figure 23 – Pin dimensions for M23 Type 1/1A/2/2A male connectors .....	46
120	Figure 24 – M23 mating dimensions for the fixed connector (side view) .....	48
121	Figure 25 – Common dimensions for M40 Type 1/1A male connectors .....	49
122	Figure 26 – Detail dimensions for M40 Type 1/1A male connector .....	51
123	Figure 27 – Common dimensions for M40 Type 2/2A male connectors .....	51
124	Figure 28 – Detail dimensions for M40 Type 2/2A male connector .....	52
125	Figure 29 – Pin dimensions for M40 Type 1/1A/2/2A male connectors .....	53
126	Figure 30 – M40 mating dimensions for the fixed connectors (side view) .....	54
127	Figure 31 – Engagement (mating) variants .....	56
128	Figure 32 – Gauge dimension .....	60
129	Figure 33 – Contact element assignments, front views, M12, Type 1 .....	61
130	Figure 34 – Contact element assignments, front views, M12, Type 2 .....	62
131	Figure 35 – Contact element assignments, front views, M12, Type 3 .....	62
132	Figure 36 – Contact element assignments, front views, M17, Type 1/1A .....	63
133	Figure 37 – Contact element assignments, front views, M17, Type 1B .....	63
134	Figure 38 – Contact element assignments, front views, M17, Type 2/2A .....	64
135	Figure 39 – Contact element assignments, front views, M17, Type 2B .....	64
136	Figure 40 – Contact element assignments, front views, M23, Type 1/1A .....	65
137	Figure 41 – Contact element assignments, front views, M23, Type 2/2A .....	66
138	Figure 42 – Contact element assignments, front views, M40, Type 1/1A .....	67
139	Figure 43 – Contact element assignments, front views, M40, Type 2/2A .....	67
140	Figure 44 – Contact resistance arrangement .....	80
141	Figure 45 – Arrangement for vibration and mechanical shock tests .....	81

## IEC 61076-2-117 Ed1©IEC 2025

143	Table 1 – Coding.....	15
144	Table 2 – Styles of fixed connectors.....	19
145	Table 3 – Dimensions of styles Mxx_DM and Mxx_DF, Figure 1.....	20
146	Table 4 – Dimensions of styles Mxx_EM, Mxx_EF, Mxx_GM and Mxx_GF, Figure 2.....	21
147	Table 5 – Dimensions of styles Mxx_DM90 and Mxx_DF90, Figure 3.....	22
148	Table 6 – Dimensions of style Mxx_EM90 and Mxx_EF90, Figure 4.....	23
149	Table 7 – Styles of free connectors.....	23
150	Table 8 – Dimensions of styles Mxx_JM and Mxx_JF, Figure 5.....	24
151	Table 9 – Dimensions of style Mxx_LM and Mxx_LF, Figure 6.....	25
152	Table 10 – Dimensions of styles Mxx_JM and Mxx_JF, Figure 7.....	26
153	Table 11 – Dimensions for styles Mxx_LMC and Mxx_LFC, Figure 8.....	26
154	Table 12 – Dimensions for Figure 9.....	28
155	Table 13 – Dimensions for Figure 10.....	30
156	Table 14 – Dimensions for Figure 11.....	31
157	Table 15 – Dimensions for Figure 12.....	32
158	Table 16 – Dimensions for Figure 13.....	34
159	Table 17 – Dimensions for Figure 14.....	35
160	Table 18 – Dimensions for Figure 15.....	36
161	Table 19 – Dimensions for Figure 16.....	37
162	Table 20 – Dimensions for Figure 17.....	39
163	Table 21 – Dimensions for Figure 18.....	40
164	Table 22 – Dimensions for Figure 19.....	42
165	Table 23 – Dimensions for Figure 20.....	43
166	Table 24 – Dimensions for Figure 21.....	44
167	Table 25 – Dimensions for Figure 22.....	45
168	Table 26 – Dimensions for Figure 23.....	47
169	Table 27 – Dimensions for Figure 24.....	48
170	Table 28 – Dimensions for Figure 25.....	50
171	Table 29 – Dimensions for Figure 26.....	51
172	Table 30 – Dimensions for Figure 27.....	52
173	Table 31 – Dimensions for Figure 28.....	53
174	Table 32 – Dimensions for Figure 29.....	54
175	Table 33 – Dimensions for Figure 30.....	55
176	Table 34 – Connector dimensions in mated and locked position.....	57
177	Table 35 – Gauges.....	61
178	Table 36 – Contact element assignments M12.....	62
179	Table 37 – Contact Element assignments M17.....	65
180	Table 38 – Contact Element assignments M23.....	66
181	Table 39 – Contact Element assignments M40.....	68
182	Table 40 – Pin sizes.....	68
183	Table 41 – Climatic category.....	69
184	Table 42 – Rated voltage.....	69
185	Table 43 – Voltage proof.....	70
186	Table 44 – Current ratings of connectors.....	71