

Connectors for electronic equipment –

Part 4-115:

Printed board connectors –

Detail specification for a single-part hybrid connector, with a section of high-speed differential pair connections, and a section of low-speed, power and ground connections between printed boards and backplanes, in accordance with IEC 60917

PUBLICLY AVAILABLE SPECIFICATION



INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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CONTENTS

1. General data	7
1.1. Recommended method of mounting	7
1.1.1. Number of contacts and contact cavities	8
1.2. Ratings and characteristics	8
1.3. Normative references	9
1.4. Marking	10
1.5. IEC type designation	10
1.6. Ordering information	10
2. Technical data	11
2.1. Definitions	11
2.1.1. Mechanical features	11
2.1.2. Contacts and terminations	11
2.1.3. Engagement sequence	11
2.2. Survey of styles and variants	12
2.2.1. Styles of connectors	12
2.2.2. Styles of termination	12
2.2.3. Variants of the paddle-guard	12
2.3. Information on application	13
2.3.1. Description of the connector	13
2.3.2. Contact designation	14
2.3.3. Arrangement of contact levels	16
2.3.4. Polarisation and keying	16
2.3.5. Mounting on backplane	16
2.3.6. Mounting on the plug-in card	16
3. Dimensional Information	17
3.1. General	17
3.2. Isometric view and common features	17
3.2.1. Common features	18
3.2.2. Height dimensions	18
3.2.3. Width dimensions	19
3.2.4. Depth dimensions	19
3.3. Mating information	20
3.3.1. Engaging direction	20
3.3.2. Perpendicular to engaging direction	21
3.3.3. Inclination	22
3.4. Fixed connector	23
3.4.1. Dimensions of fixed connector	23
3.4.2. Dimensions of contacts and terminations	24
3.5. Plug-in card paddle	24
3.5.1. Dimensions of paddle-guard	24
3.6. Mounting information for fixed connector	26
3.6.1. Footprint for press-in / compression mounted fixed connector	26
3.6.2. Footprint for press-in only mounted fixed connector	26
3.6.3. Footprint for surface-mount soldered fixed connector	26
3.7. Mounting information for paddle-guard	27
3.7.1. Footprint for high-speed and shielding ground connections	27
3.7.2. Footprint for low-speed connections	28

3.8. Gauges	29
3.8.1. Compression force gauges for high-speed section	29
3.8.2. Sizing and compression force gauges for low-speed section	32
4. Characteristics	34
4.1. Climatic category	34
4.2. Electrical	34
4.2.1. Creepage and clearance distances	34
4.2.2. Voltage proof	34
4.2.3. Current carrying capacity	35
4.2.4. Contact resistance	36
4.2.5. Insulation resistance	36
4.2.6. Inductance	36
4.3. Mechanical	37
4.3.1. Mechanical operation	37
4.3.2. Engaging and separating forces	37
4.3.3. Gauge supporting force	37
4.3.4. Vibration (sinusoidal)	37
4.3.5. Shock	38
4.3.6. Polarising method	38
4.3.7. Retention of fixed connector on backplane	38
4.3.8. Retention of the paddle-guard	38
4.4. High-speed characteristics	39
4.4.1. Differential impedance	39
4.4.2. Differential crosstalk	40
4.4.3. Differential attenuation	41
4.4.4. Propagation delay skew	41
5. Test schedule	42
5.1. General	42
5.1.1. Layout of printed circuit boards for electromechanical tests	43
5.1.2. Layout of printed circuit boards for signal integrity validation	44
5.1.3. Arrangement for contact resistance measurement	45
5.1.4. Arrangement for dynamic stress tests	45
5.1.5. Arrangement for insulation resistance, voltage proof and polarisation voltage	45
5.1.6. Arrangement for gauge supporting force test on high-speed contacts	47
5.1.7. Arrangement for gauge supporting force test on low-speed contacts	48
5.2. Test schedule tables	49
5.2.1. Group P - Preliminary	49
5.2.2. Group A - Dynamic / Climatic	50
5.2.3. Group B - Mechanical endurance	51
5.2.4. Group C - Moisture	53
5.2.5. Group D - Electrical load	54
5.2.6. Group E - Mechanical resistivity	55
5.2.7. Group F - Resistance to dust	56
5.2.8. Group G - Signal integrity validation	57
A. Annex A – Test method for gauge supporting force	58
B. Annex B – Test method for dust and fibre resistance	60

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FOREWORD

A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public.

IEC-PAS 61076-4-115 has been processed by subcommittee 48B: Connectors, of IEC technical committee 48: Electromechanical components and mechanical structures for electronic equipment.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document:

Draft PAS	Report on voting
48B/1004/PAS	48B/1055/RVD

Following publication of this PAS, the technical committee or subcommittee concerned will investigate the possibility of transforming the PAS into an International Standard.

The International Electrotechnical Commission (IEC) draws attention to the fact that is claimed that compliance with this PAS may involve the use of patents concerning

- a) an electrical connector assembly for establishing electrical contact with contacting devices of external terminals, e.g. with solder points of a circuit board;
- b) an electrical connector assembly for establishing electrical contact with external terminals having contacting devices with contact faces, e.g. with solder points of a circuit board;
- c) an electrical connector assembly with an electrical connector having a connecting position and contacting devices for establishing electrical contact between a first and a second printed circuit board.

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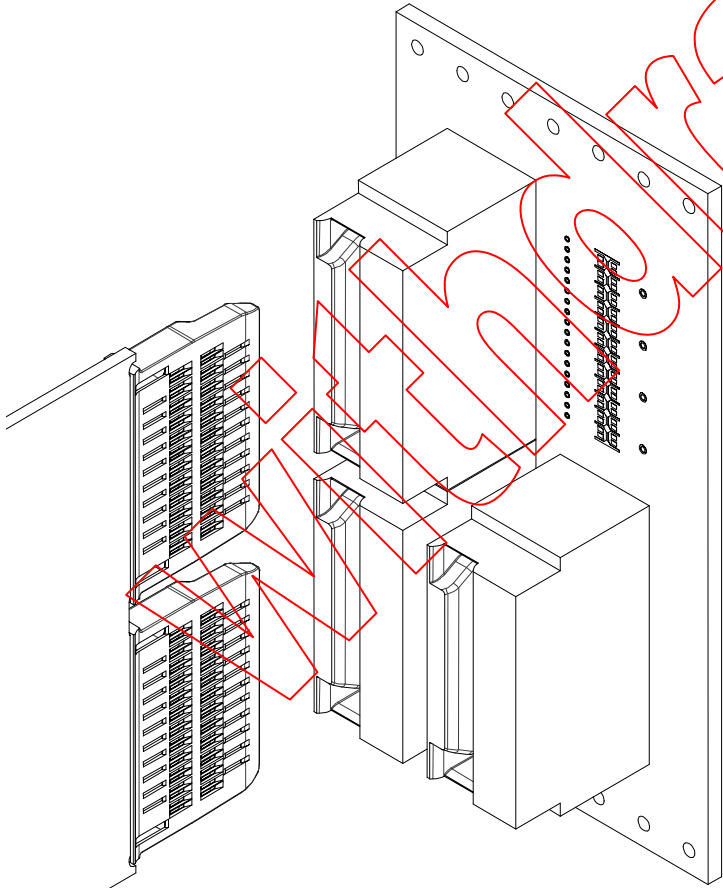
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PAS 61076-4-115 – Backplane connector for InfiniBand equipment

<p>International Electrotechnical Commission IEC SC 48B – Connectors</p>	
<p>Electronic components of assessed quality in accordance with: GENERIC SPECIFICATION IEC 61076-1, Issue 1 1995</p>	<p>Blank detail specification: IEC 61076-4-001, Issue 1 1996</p>
	<p>Single-part hybrid connector, with a section for high-speed on a 3 mm grid and a low-speed section with power and ground connections on a 2 mm grid, for printed boards and backplanes in accordance with IEC 60917.</p>
	<p>Hybrid connector having one section containing 2 rows of 12 contact pairs for differential pair transmission on a 3 mm pitch and one section with 1 row of 18 contacts for low-speed and power connections on a 2 mm pitch. The fixed connectors are 50 mm high, pressed-in or surface mount soldered onto the backplane. The plug-in card interface is protected by a paddle-guard.</p>
	<p>Performance levels (PL): 1</p>

Information on the availability of components qualified to this detail specification is given in the qualified product list.

1. General data

1.1. Recommended method of mounting

Three methods of mounting to the backplane may be adopted.

a. **Press-in / compression connections**

The fixed connector is pressed-in onto the backplane, using 18 press-in low-speed connections and four press-in pins.

The high-speed contacts to the backplane are using compression connections.

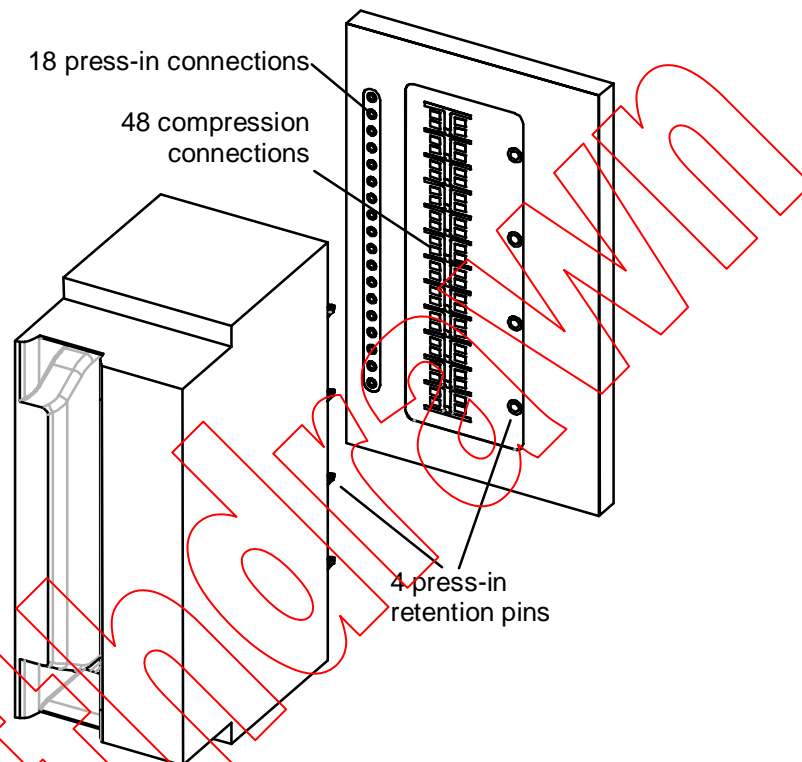


Figure 1 – Press-in / compression method of mounting

b. **Press-in connections only**

Under consideration

c. **Surface mount soldered connections**

Under consideration

The plug-in card

has an extension in the form of a paddle, with contact pads for compression connections.

The paddle shall be protected by a paddle-guard, which may be mounted in a removable or permanent way.

1.1.1. Number of contacts and contact cavities

Table 1 - Number of contacts for fixed connector

Styles	Number of I/O channels	Differential pairs	Low-speed contacts
A	4x I/O channels	4 + 4	18
C	12x I/O channels	12 + 12	18

Table 2 - Number of cavities for paddle guard

Styles	Cavities for differential pair entries	Cavities for low-speed entries
I	12 + 12	18

1.2. Ratings and characteristics

High-speed section

Compression connections	bifurcated contacts with independently operating beams
Creepage and clearance	0,3 mm min. between contacts mutually and ground
Rated voltage	within same pair 100 V r.m.s. pair to ground 100 V r.m.s.
Current rating	0,5 A per contact pair at 70°C (all contacts loaded)
Insulation resistance	1 GΩ min.
Differential impedance	100 Ω ± 10 Ω at 100 ps risetime in the connector

Low-speed section

Compression connections	bifurcated contacts with independently operating beams
Creepage and clearance	0,8 mm min. between contacts mutually and ground
Rated voltage	contact/contact 500 V r.m.s. contact to ground 500 V r.m.s.
Current rating	2,5 A per contact at 70°C (all contacts loaded)
Insulation resistance	5 GΩ min.
Printed board	thickness range for use with same fixed connector = 1,44 mm to 2,64 mm thickness range for a given paddle-guard = ± 10 % of nominal thickness
Backplane	1,6 mm min. plated-through press-in hole for low-speed connections = Ø 0,6 mm ± 0,05 mm press-in hole diameter for fixed connector retention pins = Ø 1 mm +0,09/-0,06 mm

1.3. Normative references

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this part of IEC 61076. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and users of this standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

<i>IEC 60068-1: 1988</i>	<i>Environmental testing</i> <i>Part 1: General and guidance</i>
<i>IEC 60352-5: 1995</i>	Solderless connections Part 5: Solderless press-in connections – General requirements, test methods and practical guidance
<i>IEC 60512-1: 1994</i>	Electromechanical components for electronic equipment – Basic testing procedures and measuring methods Part 1: General
<i>IEC 60512-2: 1985</i>	Part 2: General examination, electrical continuity and contact resistance tests, insulation tests and voltage stress tests
<i>IEC 60512-3: 1976</i>	Part 3: Current-carrying capacity tests
<i>IEC 60512-4: 1976</i>	Part 4: Dynamic stress tests
<i>IEC 60512-5: 1992</i>	Part 5: Impact tests (free components), static load tests (fixed components), endurance tests and overload tests
<i>IEC 60512-6: 1984</i>	Part 6: Climatic tests and soldering tests
<i>IEC 60512-7: 1993</i>	Part 7: Mechanical operating tests and sealing tests
<i>IEC 60512-8: 1993</i>	Part 8: Connector tests (mechanical) and mechanical tests on contacts and terminations
<i>IEC 60512-9: 1992</i>	Part 9: Miscellaneous tests
<i>IEC 60512-20-1: 2000</i>	Part 20: Fire hazard tests Test 20a – Flammability, needle-flame
<i>IEC 60512-23-4: 2000</i>	Part 23: Shielding and filtering tests Test 23d – Transmission line reflections of connectors in the time domain
<i>IEC 60512-25-1: 2000</i>	Part 25: Signal integrity tests Test 25a – Crosstalk ratio
<i>IEC 60512-25-2: 2000</i>	Test 25b – Attenuation
<i>IEC 60512-25-4: 2000</i>	Test 25d – Propagation delay
<i>IEC 60917: 1988</i>	Modular order for the development of mechanical structures for electronic equipment practices
<i>IEC 60917-2-2: 1994</i>	Part 2: Sectional specification – Interface co-ordination dimensions for the 25 mm equipment practice Section 2: Detail specification – Dimensions for subracks
<i>IEC 61076-1: 1995</i>	Connectors with assessed quality for use in d.c. low frequency analogue and digital high-speed data applications Part 1: Generic specification
<i>IEC 61076-4: 1995</i>	Part 4: Sectional specification – Printed board connectors
<i>IEC 61076-4-001: 1996</i>	Section 001: Blank detail specification
<i>ISO 1302: 1995</i>	Technical drawings – Method of indicating surface texture