

Connectors for electronic equipment — Printed board connectors —

**Part 4-113: Detail specification for
two-part connectors having 5 rows with
a grid of 2,54 mm for printed boards and
backplanes in bus applications**

The European Standard EN 61076-4-113:2003 has the status of a
British Standard

ICS 31.220.10

National foreword

This British Standard is the official English language version of EN 61076-4-113:2003. It is identical with IEC 61076-4-113:2002.

The UK participation in its preparation was entrusted by Technical Committee EPL/48, Electromechanical components and mechanical structures for electronic equipment, to Subcommittee EPL/48/2, Connectors for electronic equipment which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

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**Connectors for electronic equipment -
Printed board connectors
Part 4-113: Detail specification for two-part connectors having 5 rows
with a grid of 2,54 mm for printed boards
and backplanes in bus applications
(IEC 61076-4-113:2002)**

Connecteurs pour équipements
électroniques -
Connecteurs pour cartes imprimées
Partie 4-113: Spécification particulière
pour connecteurs en deux parties
ayant 5 rangées au pas de 2,54 mm
pour cartes imprimées enfichables
en fond de panier,
dans des applications en bus
(CEI 61076-4-113:2002)

Steckverbinder für elektronische
Einrichtungen -
Steckverbinder für gedruckte Schaltungen
Teil 4-113: Bauartspezifikation
für indirekte Steckverbinder, fünfreiig,
für gedruckte Schaltungen
und Rückplatten in Busanwendungen,
Raster 2,54 mm
(IEC 61076-4-113:2002)

This European Standard was approved by CENELEC on 2003-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 48B/1247/FDIS, future edition 1 of IEC 61076-4-113, prepared by SC 48B, Connectors, of IEC TC 48, Electromechanical components and mechanical structures for electronic equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61076-4-113 on 2003-02-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2003-11-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2006-02-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61076-4-113:2002 was approved by CENELEC as a European Standard without any modification.

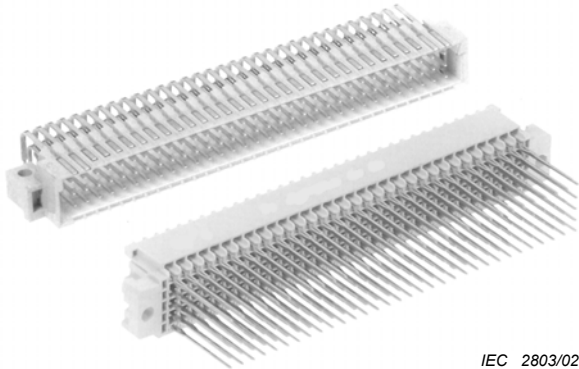
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CONNECTORS FOR ELECTRONIC EQUIPMENT –
PRINTED BOARD CONNECTORS –

Part 4-113: Detail specification for two-part connectors
having 5 rows with a grid of 2,54 mm for printed boards
and backplanes in bus applications

IEC SC 48B: Connectors Electronic components of assessed quality in accordance with - GENERIC SPECIFICATION IEC 61076-1 Generic specification IEC 61076-1 First edition:1995	IEC 61076-4-113
	Page 5 of 36 pages
See 3 for dimensions 	Two-part connectors for printed boards and backplanes, grid of 2,54 mm.
	Connector with 160 contacts in 5 rows. Rows a, b and c in compliance with IEC 60603-2, 3rd edition. Rows z and d with 32 contacts each usable for standard application or for grounding. Terminations: Free board connector: Solder connections Fixed board connector: Press-in, wire wrap and interface connections

Reference to IEC Guide 109: Environmental aspects

IEC Guide 109 advocates the need to minimize the impact of a product on the natural environment throughout the product life cycle.

It is understood that some of the materials permitted in this standard and manufacturing and assembly procedures may have a negative environmental impact.

As technological advances lead to acceptable alternatives for these materials, they will be eliminated from the standard. Inappropriate manufacturing procedures should be replaced by a design for easy maintainability and disassembly.

1 General data

1.1 Recommended method of mounting

The contacts of free board connectors are provided for solder connections. The terminations of the free board connectors shall fit into holes in the printed board according to IEC 60326-3 and IEC 60326-5, located on a grid of 2,54 mm.

The contacts of fixed board connectors are provided for either press-in connections or press-in connections with an additional wire wrap and mating function.

The connector is fixed by means of the press-in terminations; fixing holes on the backplane are not necessary.

The distance of termination centre lines is 2,54 mm or a multiple of it. The terminations of the fixed board connectors are suited for backplanes having a grid dimension of 2,54 mm.

1.2 Ratings and characteristics

Rated voltage: Contact / contact for fully loaded connector.

Table 1 – Rated voltage

Material group	Pollution degree	Rated voltage (V)
I, II, IIIa/b	1	400
II, IIIa/b	2	32
NOTE Reference is made to Table 11 of this specification, and to Table 4 of IEC 60664-1 listing the relation between creepage distances, pollution degree and material groups versus voltages r.m.s.		

Current rating:	1 A at 70 °C for fully loaded connector
Insulation resistance:	$\geq 10^{10} \Omega$
Climatic category:	PL1: 55/125/56 PL2: 55/125/21
Printed board thickness:	1,6 mm to 2,4 mm for free board connector 1,6 mm to 6,4 mm for fixed board connector
Contact spacing:	2,54 mm

1.3 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 60068-1:1988, *Environmental testing – Part 1: General and guidance*
Amendment 1 (1992)

IEC 60068-2-54:1985, *Environmental testing – Part 2: Tests. Test Ta: Soldering – Solderability testing by the wetting balance method*

IEC 60097:1991, *Grid systems for printed circuits*

IEC 60326-3:1991, *Printed boards – Part 3: Design and use of printed boards*

IEC 60326-5:1995, *Printed boards – Part 5: Specification for single and double side printed boards with plated-through holes*

IEC 60352-1:1997, *Solderless connections – Part 1: Wrapped connections – General requirements, test methods and practical guidance*

IEC 60352-5:2001, *Solderless connections – Part 5: Press-in connections – General requirements, test methods and practical guidance*

IEC 60512 (all parts)

IEC 60512-1-100, *Connectors for electronic equipment – Tests and measurements – Part 100: Applicable publications*

IEC 60603-2:1995, *Connectors for frequencies below 3 MHz for use with printed boards – Part 2: Detail specification for two-part connectors with assessed quality, for printed boards, for basic grid of 2,54 mm (0,1 in) with common mounting features*

IEC 60664-1:2000, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 61076-1:1995, *Connectors with assessed quality, for use in d.c. low frequency analogue and in digital high speed data applications – Part 1: Generic specification*

IEC 61076-4:1995, *Connectors with assessed quality, for use in d.c. low frequency analogue and in digital high speed data applications – Part 4: Sectional specification – Printed board connectors*

IEC Guide 109:1995, *Environmental aspects – Inclusion in electrotechnical product standards*

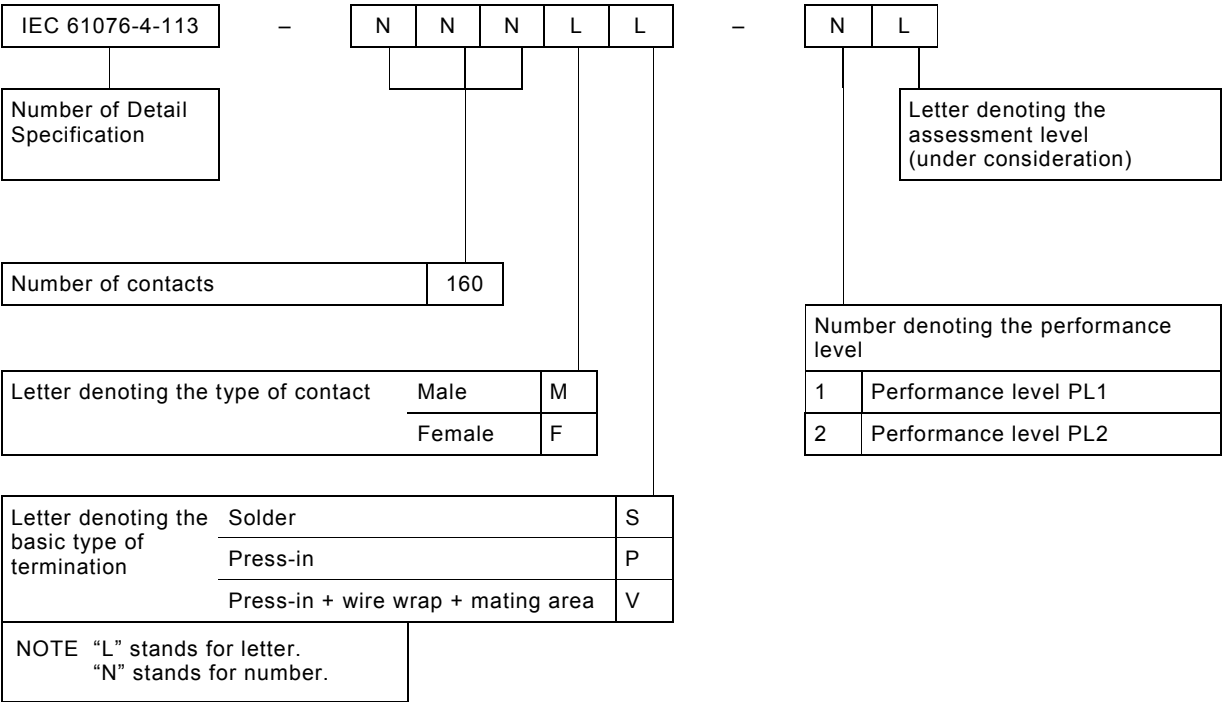
ISO 1302:2002, *Geometrical Product Specifications (GPS) – Indication of surface texture in technical product documentation*

1.4 Marking

The marking of the connector and the package shall be in accordance with 2.6 of IEC 61076-4.

1.5 IEC type designation

Connectors, connector bodies and contacts according to this standard shall be designated by the following system:



EXAMPLE Connector having 160 female contacts with press-in terminations, with performance level 2: IEC 61076-4-113 – 160FP – 2

1.6 Ordering information

To order connectors according to this detail specification, the type designation described in 1.5 shall be used.

2 Technical information

2.1 Definitions

For the purposes of this document the following definitions apply.

2.1.1 Contacts and terminations

press-in and mating function

termination post, usually pressed-in into the backplane and emerging on the rear side as a male contact, to be connected to a free board or cable connector

grounding

rows z and d of free and fixed board connector used as shielding frames, i.e. connected to zero volts

first make last break contact (FMLB)

pre-leading male contacts which facilitate live insertion

2.2 Information on application

2.2.1 Complete connectors (pairs)

2.2.2 Fixed board connectors

Planarity before press-in operation into backplane according to 3.4.1 and after press-in into backplane according to 3.3.4.1.

2.2.3 Free board connectors

Planarity before soldering into printed board according to 3.5.1 and after soldering into printed board according to 3.3.4.1.

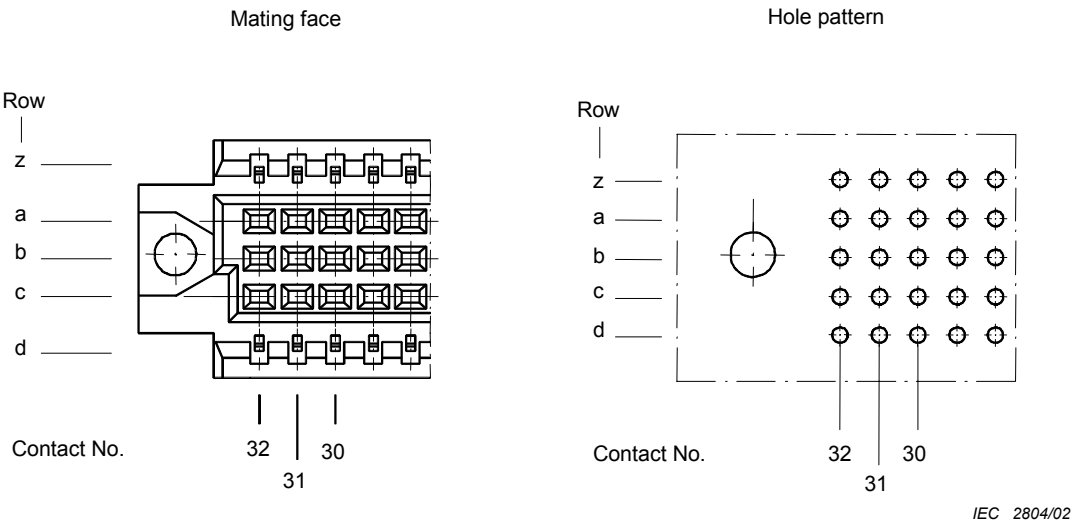
2.2.4 Shielding/grounding

2.2.5 Basic type of termination

Identification letter	Basic type of termination	Length mm
S	90° angled solder-pin for termination to a printed board with a thickness of 1,6 mm to 2,4 mm, hole diameter: 1 mm according to IEC 60326-3	2,9 ± 0,3
P	Straight, solderless, compliant press-in connections for termination to a printed board with a thickness of 1,6 mm to 6,4 mm, hole diameter: 1 mm according to IEC 60326-5	5
V	Straight, solderless, compliant press-in connections and additional wire wrap and mating area to be connected to a free board connector for termination to a printed board with a thickness of 1,6 mm to 6,4 mm, hole diameter: 1 mm according to IEC 60326-5	17

2.3 Contact arrangements

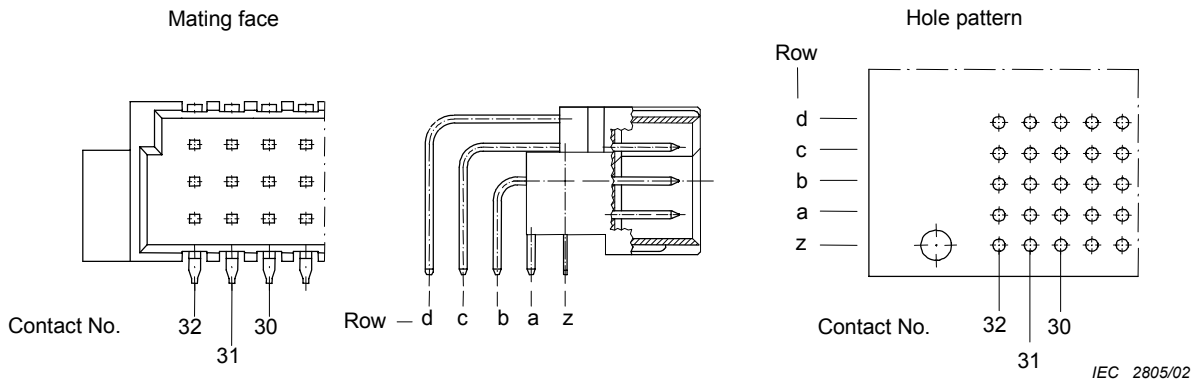
2.3.1 Fixed board connectors



NOTE For mounting information see 3.6.1 (hole pattern)

Figure 1 – Contact arrangements

2.3.2 Free board connectors



NOTE For mounting information see 3.7.1 (hole pattern)

Figure 2 – Contact arrangements

3 Dimensional information

3.1 General

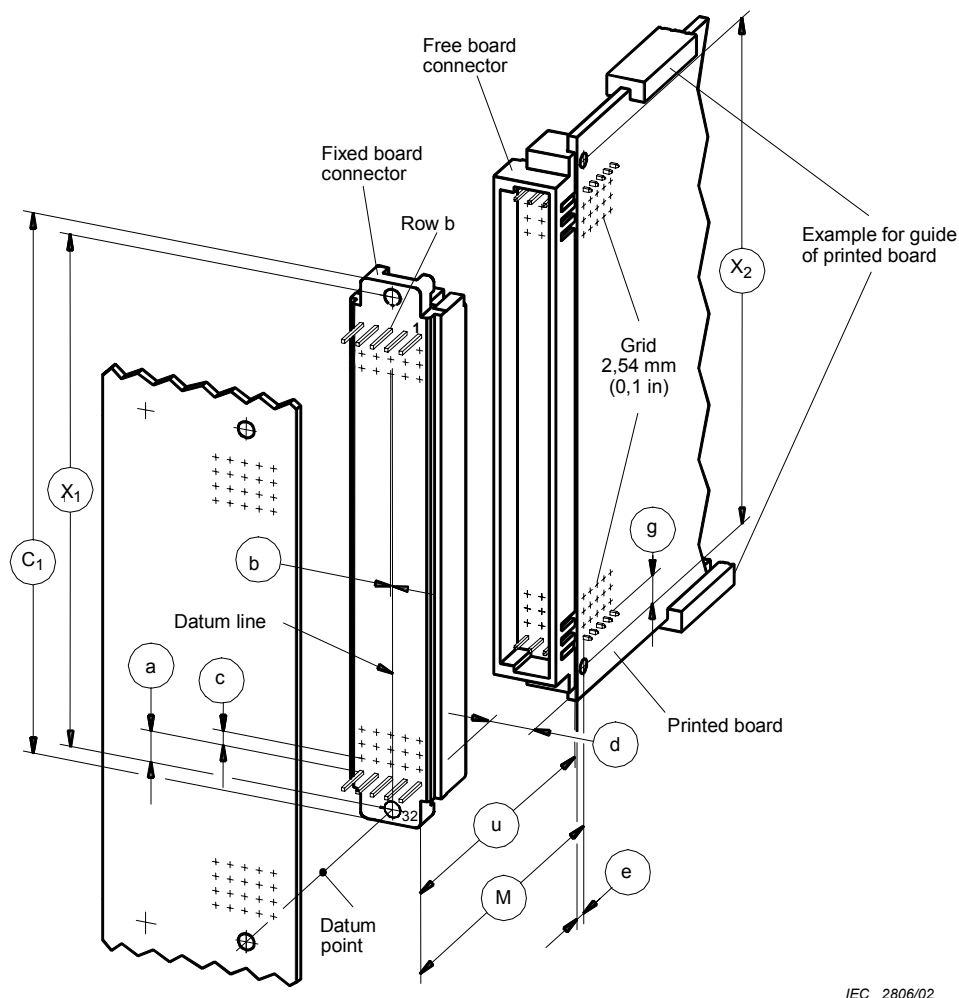
All dimensions are in millimetres.

Drawings are shown in the first angle projection. The shape of the connectors may deviate from those given in the following figures as long as the specified dimensions are not influenced.

The information about the bending in 3.4 and 3.5 is valid for the condition of delivery.

Dimensions not shown may be chosen according to common characteristics and intended use.

3.2 Isometric view and common features



IEC 2806/02

Figure 3 – Isometric view

Table 2 – Isometric view and common features

Reference letter	Dimensions mm	Legend
C ₁	95	Maximum length of the fixed board connector
M	17,2 15,6	Range of electrical engagement, see 3.2.1
X ₁	90	Distance between the two mounting holes of the fixed board connector
X ₂	88,9	Distance between the two mounting holes of the free board connector ^a
a	5,63	Distance between the datum point and a line through the centres of the termination No. 32 of the fixed board connector
b	0,3	Distance between datum line and a line through the centres of the termination row "b" of the fixed board connector
c	<i>nx2,54</i>	Pitch of the termination of the fixed board connector
d	3,55	Distance between the datum line and the connector side of the printed board
e	2,76	Distance between the edge of the printed board and the first row of termination and the mounting holes for the free board connector
g	5,08	Distance between a mounting hole and the hole for the termination No. 1 or No. 32 of the free board connector
u	14,2 12,4	Range in which reliable contact is ensured, see 3.2.1 for mating information
^a The mounting holes are also located on the grid of 2,54 mm according to IEC 60097.		