

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Connectors for electronic equipment – Product requirements –
Part 2-101: Circular connectors – Detail specification for M12 connectors with
screw-locking**

**Connecteurs pour équipements électroniques – Exigences de produit –
Partie 2-101: Connecteurs circulaires – Spécification particulière pour les
connecteurs M12 à vis**



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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**CONNECTORS FOR ELECTRONIC EQUIPMENT –
PRODUCT REQUIREMENTS –****Part 2-101: Circular connectors –
Detail specification for M12 connectors with screw-locking**

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International Standard IEC 61076-2-101 has been prepared by Sub-Committee 48B: Connectors, of Technical Committee 48: Electromechanical components and mechanical structures for electronic equipment.

This second edition cancels and replaces the first edition published in 2003 and its Amendment 1 published in 2006. It is a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- the connector type M8 has been removed from IEC 61076-2-101 and has been published in a separate IEC Standard under reference IEC 61076-2-104;
- the content of Amendment 1 is included in this International Standard;
- mounting thread changed from Pg to metric.

The text of this standard is based on the following documents:

FDIS	Report on voting
48B/1893/FDIS	48B/1926/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

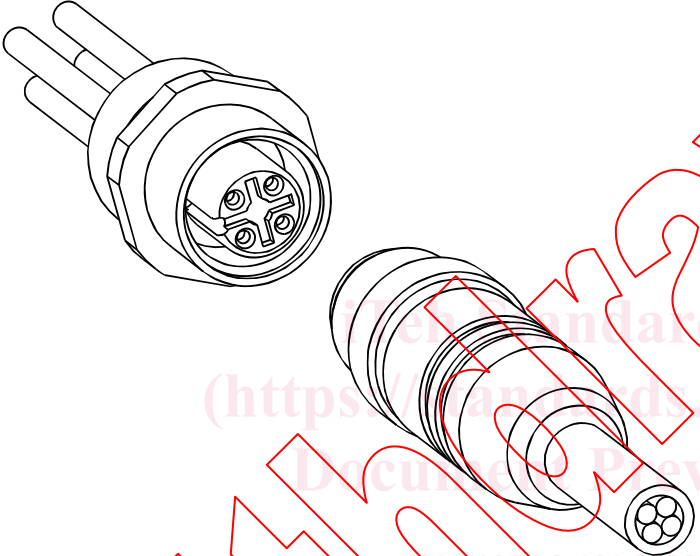
- reconfirmed;
- withdrawn;
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The contents of the corrigendum of March 2010 have been included in this copy.

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<p>IEC SC 48B – Connectors</p> <p>Specification available from: IEC General secretariat or from the addresses shown on the inside cover.</p>	<p>IEC 61076-2-101/Ed. 2.0</p>
<p>ELECTRONIC COMPONENTS</p> <p>DETAIL SPECIFICATION in accordance with IEC 61076-1</p>	
 <p style="text-align: right; font-size: small;">IEC 2336/03</p>	<p>Circular connectors M12 – 2 to 12 way Male and female contacts Male and female connectors Rewireable – Non-rewireable</p>
	<p>Free cable connectors Straight and right angle connectors</p> <p>Fixed connectors</p> <p>Flange mounting Single hole mounting</p> <p>Pin sockets</p>
	<p>https://standards.iteh.ai/standards/iec/7442814a-0b08-471c-9537-545c3acc7524/iec-61076-2-101-2008</p>

CONNECTORS FOR ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 2-101: Circular connectors – Detail specification for M12 connectors with screw-locking

1 General information

Throughout this standard dimensions are in mm.

1.1 Scope

This International Standard describes circular connectors M12 typically used for industrial process measurement and control. These connectors consist of fixed and free connectors either rewirable or non-rewirable, with screw-locking. Male connectors have round contacts \varnothing 0,6 mm, \varnothing 0,76 mm, \varnothing 0,8 mm and \varnothing 1,0 mm.

The different codings prevent the mating of these coded male or female connectors to any other interfaces and cross mating between the different codings.

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

1.2 Recommended method of termination

The contact terminations shall be of the following types: screw, crimp, insulation piercing, insulation displacement, press-in or solder.

1.2.1 Number of contacts or contact cavities

A-coding	2 to 12 contacts
B-coding	5 contacts
C-coding	3 to 6 contacts
D-coding	4 contacts
P-coding	5 contacts (4+PE)

1.3 Ratings and characteristics

Rated Voltage	A-coding	2 to 4 contacts	250 V d.c. or a.c.
		5 contacts	60 V d.c. or a.c.
		6 to 12 contacts	30 V d.c. or a.c.
	B-coding	5 contacts	60 V d.c. or a.c.
		3 and 4 contacts	250 V d.c. or a.c.
	C-coding	5 contacts	60 V d.c. or a.c.
		6 contacts	30 V d.c. or a.c.
	D-coding	4 contacts	250 V d.c. or a.c.
		P-coding (4+PE)	5 contacts (4+PE)
	Rated Current	A-coding	2 to 5 contacts
6 to 8 contacts			2 A
9 to 12 contacts			1,5 A
B-coding		5 contacts	4 A
		C-coding	3 contacts (2+PE)
4 contacts (3+PE)			4 A
5 contacts (4+PE)			2 A
6 contacts (5+PE)			2 A
D-coding		4 contacts	4 A
		P-coding	5 contacts (4+PE)

Insulation Resistance : $10^8 \Omega \text{ min.}$

Climatic category : see 4.1 Table 5

Contact spacing : see 3

1.4 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 60050-581, *Advance edition of the International Electrotechnical Vocabulary – Chapter 581: Electromechanical components for electronic equipment*

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

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

IEC 60352 (all parts), *Solderless connections*

IEC 60512 (all parts), *Connectors for electronic equipment – Tests and measurements*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*

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

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*

IEC 60999 (all parts), *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units*

IEC 61076-1:2006, *Connectors for electronic equipment – Product requirements – Part 1: Generic specification*

IEC 61984, *Connectors – Safety requirements and tests*

ISO 1302, *Technical drawings – Methods of indicating surface texture*

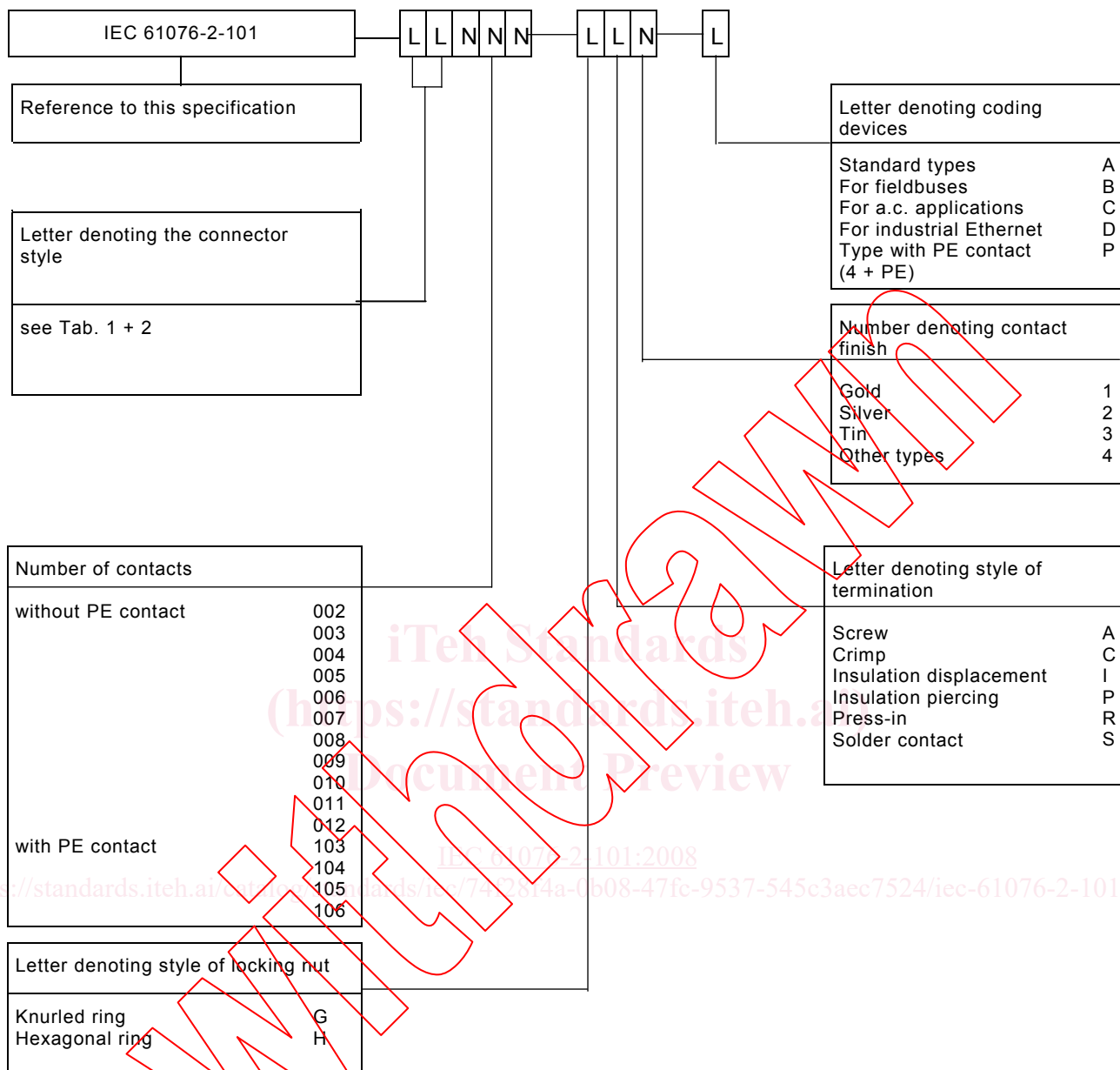
EN 50289-1-14, *Communication cables – Specifications for test methods – Part 1-14: Electrical test methods – Coupling attenuation or screening attenuation of connecting hardware (only available in English)*

DIN 46320, *Screwed glands for cables: general application, dimensions, mounting instructions*

1.5 Marking

The marking of the connector and the package shall be in accordance with 2.7 of IEC 61076-1.

1.6 IEC Type designation



NOTE "L" stands for letter, "N" stands for number

1.7 Ordering information

For ordering connectors to this standard, the type designation described in 1.6 shall be used.

Example 1: Non-rewireable free connector

MF 004 – G11-A

Free connector style MF, non-rewireable, right angled version with female insulation displacement contacts, 4 ways, with knurled ring, gold contact finish, coding A, standard type

Example 2: Rewireable free connector

KM 004 – HC3-D

Free connector style KM, rewireable, right angled version with male contacts, 4 ways, with

knurled ring, crimp terminals, tin contact finish, coding D for Ethernet in industrial environment
e. g. ISO/IEC 24702.

1.8 Safety aspects

For safety aspects IEC 61984 shall be considered unless otherwise specified.

2 Technical information

Dimensions in mm.

2.1 Terms and definitions

For the purposes of this International Standard, terms and definitions from IEC 60050-581 apply.

2.1.1 Mounting orientation

Circular mounting position of the connector in relation to the polarization of the mating interface.

NOTE Where the free connector has an angled cable entry (as opposed to an in-line cable entry), the angle between the cable entry direction and the polarization keyway should be specified.

2.2 Survey of styles and variants

For all connector styles with cables, the length L of the cable shall be agreed between manufacturer and user.

For interface dimensions see 3.2.

The interface dimensions of the female styles shall be chosen according to the common characteristics of the male styles.

For reliable intermateability, the dimensions of the female connector body as detailed in Annex A have to be met.

2.2.1 Fixed connectors

Table 1 shows styles of fixed connectors.

Table 1 – Styles of fixed connectors

Style	Description
AM	Tube insert, male contacts, mounting without thread
BM	Tube insert, male contacts, mounting with thread M12 × 1
DM	Fixed connector, male contacts, mounting with thread M12 × 1, square flange front mounting
EM	Fixed connector, male contacts, mounting with thread M12 × 1, with wire ends, single hole mounting M16 × 1,5
FM	Fixed connector, male contacts, mounting with thread M12 × 1, with wire ends, single hole mounting M20 × 1,5
GM	Fixed connector, male contacts, mounting with thread M12 × 1, with wire ends, single hole mounting M16 × 1,5, mounting orientation
HM	Fixed connector, male contacts, mounting with thread M12 × 1, with wire ends, single hole mounting M20 × 1,5, mounting orientation
EF	Fixed connector, female contacts, with wire ends, single hole mounting M16 × 1,5
FF	Fixed connector, female contacts, with wire ends, single hole mounting M20 × 1,5
GF	Fixed connector, female contacts, with wire ends, single hole mounting M16 × 1,5, mounting orientation
HF	Fixed connector, female contacts, with wire ends, single hole mounting M20 × 1,5, mounting orientation

NOTE For new connectors according to this International Standard, Pg screw threads according to DIN 46320 (withdrawn) should not be applicable. For information on Pg threads, see Annex B.

2.2.1.1 Style AM

Figure 1 shows a tube insert, with male contacts and a mounting with thread (thread on tube).

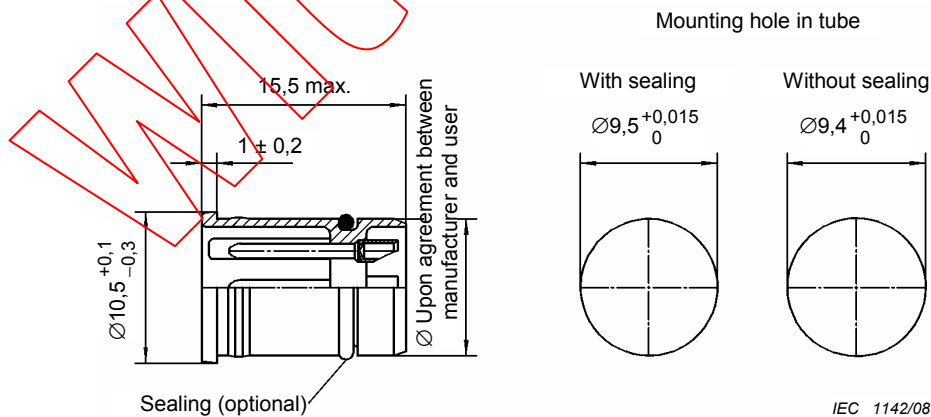


Figure 1 – Tube insert, male contacts, mounting without thread (thread on tube)