IEC 61076-2-114

Edition 1.0 2020-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Connectors for electrical and electronic equipment – Product requirements – Part 2-114: Circular connectors – Detail specification for connectors with M8 screw-locking with power contacts and signal contacts for data transmission up to 100 MHz

Connecteurs pour équipements électriques et électroniques – Exigences de produit –
Partie 2-114: Connecteurs circulaires – Spécification particulière pour les connecteurs avec verrouillage à vis M8 avec contacts de puissance et contact de signaux pour transmission de données jusqu'à 100 MHz

IEC 61076-2-114:2020-09(en-fr)

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CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 2-114: Circular connectors – Detail specification for connectors with M8 screw-locking with power contacts and signal contacts for data transmission up to 100 MHz

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International Standard IEC 61076-2-114 has been prepared by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment

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

FDIS	Report on voting
48B/2814/FDIS	48B/2830/RVD

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

This first edition cancels and replaces IEC PAS 61076-2-114, published in 2016.

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

A list of all parts of IEC 61076 series, under the general title *Connectors for electrical and electronic equipment – Product requirements*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

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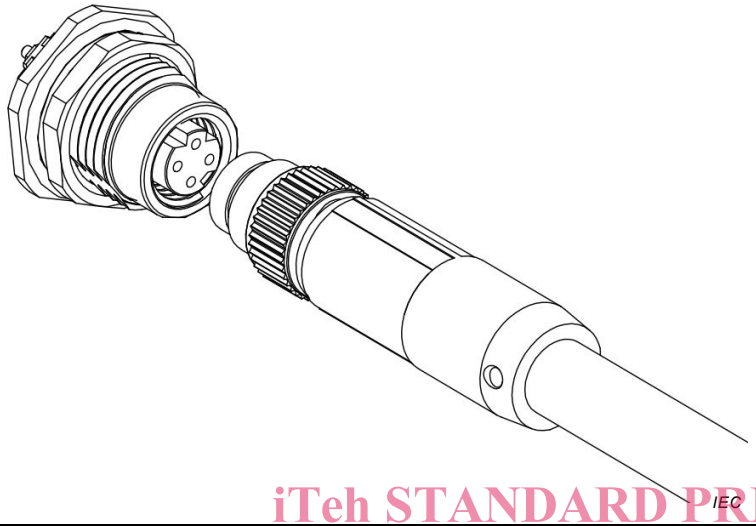
<tr><td rowspan="2"> 
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CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 2-114: Circular connectors – Detail specification for connectors with M8 screw-locking with power contacts and signal contacts for data transmission up to 100 MHz

1 Scope

This part of IEC 61076 describes circular connectors with M8 screw locking typically used for data and power transmissions in industrial applications. These connectors consist of fixed and free connectors that are either rewireable or non-rewireable. Data transmission performance is for Category 5 up to 100 MHz.

Two coded versions, identified as D-coded and P-coded, are provided that differ by their pin size and optionally by number of poles, hence by the function provided for field applications.

Male connectors have round contacts Ø 0,8 mm for D-coded, and Ø 1 mm for P-coded connectors.

The coding provided by this document prevents the mating of accordingly coded male or female connectors to any other similarly sized interfaces covered by other standards.

NOTE M8 is the dimension of the thread of the screw-locking mechanism of these circular connectors.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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, *International Electrotechnical Vocabulary (IEV) – Part 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 60512-2-1, *Connectors for electronic equipment – Tests and measurements – Part 2-1: Electrical continuity and contact resistance tests – Test 2a: Contact resistance – Millivolt level method*

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

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

IEC 60512-5-2, *Connectors for electronic equipment – Tests and measurements – Part 5-2: Current-carrying capacity tests – Test 5b: Current-temperature derating*

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

IEC 60512-6-4, *Connectors for electronic equipment – Tests and measurements – Part 6-4: Dynamic stress tests – Test 6d: Vibration (sinusoidal)*

IEC 60512-8-1, *Connectors for electronic equipment – Tests and measurements – Part 8-1: Static load tests (fixed connectors) – Test 8a: Static load, transverse*

IEC 60512-9-1, *Connectors for electronic equipment – Tests and measurements – Part 9-1: Endurance tests – Test 9a: Mechanical operation*

IEC 60512-12-2, *Connectors for electronic equipment – Tests and measurements – Part 12-2: Soldering tests – Test 12b: Solderability, wetting, soldering iron method*

IEC 60512-13-2, *Connectors for electronic equipment – Tests and measurements – Part 13-2: Mechanical operation tests – Test 13b: Insertion and withdrawal forces*

IEC 60512-13-5, *Connectors for electronic equipment – Tests and measurements – Part 13-5: Mechanical operation tests – Test 13e: Polarizing and keying method*

IEC 60512-15-6, *Connectors for electronic equipment – Tests and measurements – Part 15-6: Connector tests (mechanical) – Test 15f: Effectiveness of connector coupling devices*

IEC 60512-19-3, *Electromechanical components for electronic equipment – Basic testing procedures and measuring methods – Part 19: Chemical resistance tests – Section 3: Test 19c – Fluid resistance*

IEC 60512-25-7:2004, *Connectors for electronic equipment – Tests and measurements – Part 25-7: Test 25g – Impedance, reflection coefficient, and voltage standing wave ratio (VSWR)*

IEC 60512-29-100, *Connectors for electronic equipment – Tests and measurements – Part 29-100: Signal integrity tests up to 500 MHz on M12 style connectors – Tests 29a to 29g*

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

IEC 60603-7 (all parts), *Connectors for electronic equipment – Part 7: Detail specification for 8-way, unshielded, free and fixed connectors*

IEC 60603-7:2008, *Connectors for electronic equipment – Part 7: Detail specification for 8-way, unshielded, free and fixed connectors*

IEC 60603-7-1:2011, *Connectors for electronic equipment – Part 7-1: Detail specification for 8-way, shielded, free and fixed connectors*

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 61131-2, *Industrial-process measurement and control – Programmable controllers – Part 2: Equipment requirements and tests*

IEC 61784-5 (all parts), *Industrial communication networks – Profiles*

IEC 61784-5-12, *Industrial communication networks – Profiles – Part 5-12: Installation of fieldbuses – Installation profiles for CPF 12*

IEC 61918, *Industrial communication networks – Installation of communication networks in industrial premises*

IEC 61984, *Connectors – Safety requirements and tests*

IEC 62197-1, *Connectors for electronic equipment – Quality assessment requirements – Part 1: Generic specification*

IEC 62430, *Environmentally conscious design (ECD) – Principles, requirements and guidance*

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

ISO/IEC TR 11801 (all parts), *Information technology – Generic cabling for customer premises*

ISO 1302, *Geometrical product specifications (GPS) – Indication of surface texture in technical product documentation*

ISO 11469, *Plastics – Generic identification and marking of plastic products*

TIA-568 SET 2019*, Commercial building telecommunications cabling standard set*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-581 and the following apply.

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

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

3.1
mounting orientation
circular mounting position of the connector in relation to the polarization of the mating interface

Note 1 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.

4 Technical information

4.1 Systems of levels

4.1.1 Performance levels

Performance levels for these connectors are specified in Table 12.

4.1.2 Compatibility levels, according to IEC 61076-1

Connectors according to this document are intermateable according to IEC 61076-1.

4.2 Codings

Connectors according to this document are foreseen with the following codings:

D-coding: 2 or 4 contacts, Ø 0,8 mm

P-coding: 4 contacts, Ø 1 mm

4.3 Classification into climatic categories

Classification into climatic categories is specified in 6.3.

4.4 Creepage and clearance distances

See 7.1.3.

4.5 Current-carrying capacity

Conditions: IEC 60512-5-2, test 5b

All contacts

Values at 40 °C

D-coding = 4 A

P-coding = 4 A

NOTE The current-carrying capacity depends on the terminated wires and other influences.

4.6 Marking

The marking of the connector and the package shall be in accordance with 2.7 of IEC 61076-1:2006.

4.7 Characteristics

Recommended applications for the connectors can be found in Annex A and Annex B.

5 Dimensional information

5.1 General

Throughout this document, dimensions are in mm. Drawings are shown in the first angle projection. The shape of the connectors may deviate from those given in the following drawings as long as the specified dimensions are not influenced.

Missing dimensions shall be chosen according to common characteristics and intended use.

5.2 Isometric view and common features

5.2.1 General

For all connector styles with cables or wires, the length of the cable shall be agreed between manufacturer and user. For interface dimensions, see 5.3.

5.2.2 Common features

Not applicable.

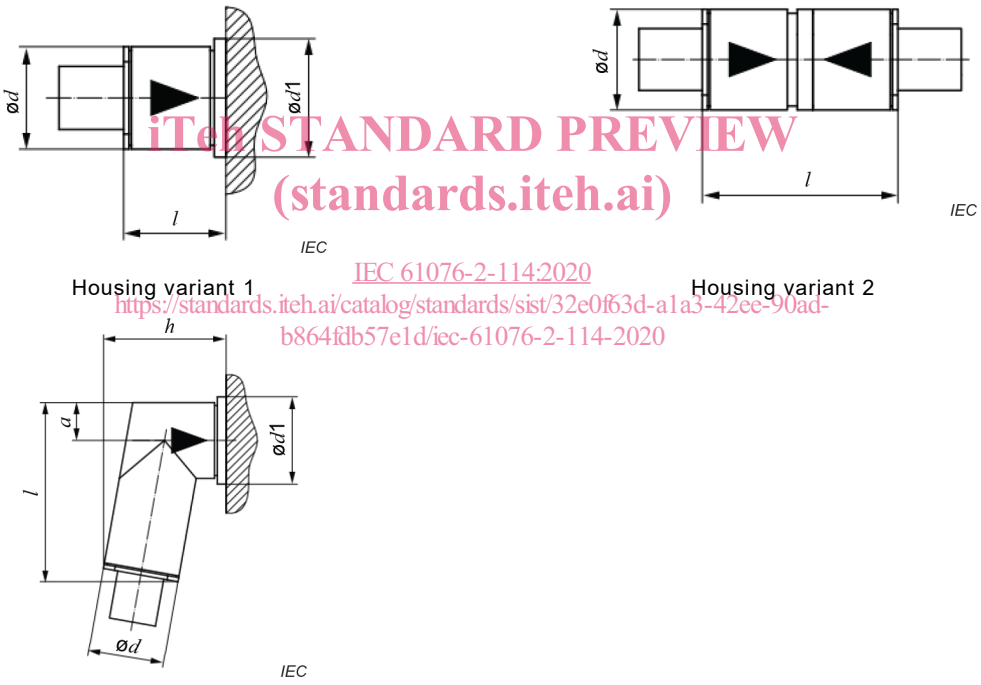
5.2.3 Reference system

Not applicable.

5.3 Engagement (mating) information

5.3.1 Engaging (mating) direction

Arrows in Figure 1 indicates the mating direction.



Housing variant 1 Housing variant 2

Housing variant 3

Figure 1 – Engagement (mating) information

Table 1 shows connectors dimensions in mated and locked position.