

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Connectors for electrical and electronic equipment – Product requirements –
Part 2-012: Circular connectors – Detail specification for connectors with inner
push-pull locking based on M12 connector interfaces according to
IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 and IEC 61076-2-113**

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**Connecteurs pour équipements électriques et électroniques – Exigences de
produit –**

**Partie 2-012: Connecteurs circulaires – Spécification particulière relative aux
connecteurs avec verrouillage interne de type pousser-tirer fondée sur les
interfaces de connecteur M12 conformément à l'IEC 61076-2-101,
l'IEC 61076-2-109, l'IEC 61076-2-111 et l'IEC 61076-2-113**



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Connecteurs pour équipements électriques et électroniques – Exigences de produit – Partie 2-012: Connecteurs circulaires – Spécification particulière relative aux connecteurs avec verrouillage interne de type pousser-tirer fondée sur les interfaces de connecteur M12 conformément à l'IEC 61076-2-101, l'IEC 61076-2-109, l'IEC 61076-2-111 et l'IEC 61076-2-113

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**CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT –
PRODUCT REQUIREMENTS –**
**Part 2-012: Circular connectors – Detail specification for connectors with
inner push-pull locking based on M12 connector interfaces according to
IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 and IEC 61076-2-113**

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International Standard IEC 61076-2-012 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/2813/FDIS	48B/2831/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 document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61076 series, published 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.

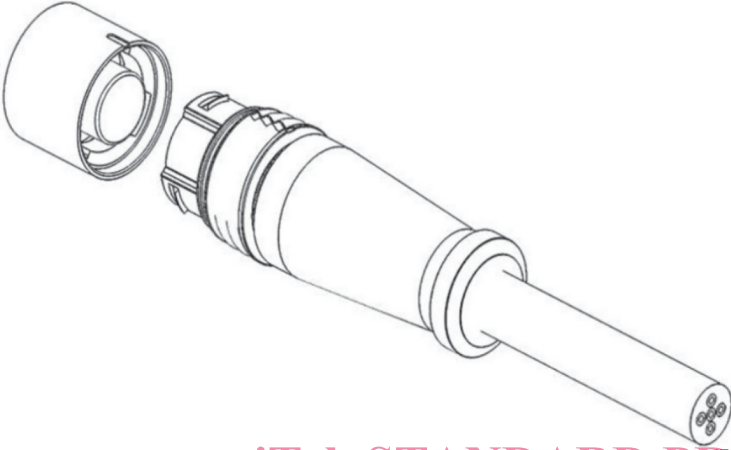
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<p>Detail specification in accordance with IEC 61076-1</p>	
 <p style="text-align: center;">iTeh STANDARD PREVIEW (standards.iteh.ai)</p>	<p>Circular M12 inner push-pull connectors for power and/or signal and/or data transmission</p> <p>Fixed connectors with female contacts and inner push-pull mechanism, mateable with plugs with inner push-pull locking or M12 screw locking</p> <p>Free cable connectors with male contacts and inner push-pull locking</p> <p>Two types of free cable connectors with female contacts, with inner push-pull mechanism and either M12 screw or outer push-pull mechanism according to IEC 61076-2-010</p> <p>Rewirable – Non-rewirable</p> <p>Fixed connectors, with rear or single hole (front) mounting</p> <p>Straight and right-angled free cable connectors</p>

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CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 2-012: Circular connectors – Detail specification for connectors with inner push-pull locking based on M12 connector interfaces according to IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 and IEC 61076-2-113

1 Scope

This part of IEC 61076 specifies circular connectors with an inner push-pull locking mechanism of a size derived from and thus being compatible with M12 screw-locking connectors and with mating interfaces according to IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 and IEC 61076-2-113.

A female fixed connector with inner push-pull locking according to this document is intermateable with a correspondingly coded male free connector with M12 screw-locking according to IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 or IEC 61076-2-113.

NOTE 1 M12 is the dimension of the thread of the screw-locking mechanism of circular connectors with M12 screw-locking.

This document covers both:

- a) power connectors with current ratings up to 16 A and voltage ratings up to 630 V, typically used for power supply of electrical equipment used in industrial premises, and
- b) connectors for data and signal transmission with frequencies up to 500 MHz.

NOTE 2 The power connectors are not suitable as power distribution socket-outlets in electrical installations of buildings.

These connectors consist of both fixed and free connectors, either rewirable or non-rewirable, with M12 inner push-pull locking as explained above. Male connectors have round contacts from $\varnothing 0,6$ mm up to $\varnothing 1,5$ mm.

This document covers various types of connectors identified by their "codings" with different contact arrangement, not mutually interchangeable.

The design of the inner push-pull mechanism prevents the unintended mating of the male inner push-pull free connector with the female connector with M12 screw-locking even for identical coding.

Some styles of free connectors with female contacts covered in this document are equipped with both inner and outer push-pull locking for intermateability also with correspondingly coded male fixed or free connectors according to IEC 61076-2-010.

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 60050-581-2008, *International Electrotechnical Vocabulary – Part 581: Electromechanical components for electronic equipment*

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

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 60512-5-1, *Connectors for electronic equipment – Tests and measurements – Part 5-1: Current-carrying capacity tests – Test 5a: Temperature rise*

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

IEC 60512-13-1, *Connectors for electronic equipment – Tests and measurements – Part 13-1: Mechanical operation tests – Test 13a: Engaging and separating forces*

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

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013

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

IEC 60998-2-1:2002, *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 61076-1:2006, *Connectors for electronic equipment – Product requirements – Part 1: Generic specification*

IEC 61076-2-010, *Connectors for electronic equipment – Product requirements – Part 2-010: Circular connectors – Detail specification for push-pull connectors with outer locking mechanism, based on mating interfaces according to IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 and IEC 61076-2-113*¹

IEC 61076-2-101:2012, *Connectors for electronic equipment – Product requirements – Part 2-101: Circular connectors – Detail specification for M12 connectors with screw-locking*

IEC 61076-2-109:2014, *Connectors for electronic equipment – Product requirements – Part 2-109: Circular connectors – Detail specification for connectors with M 12 × 1 screw-locking, for data transmission frequencies up to 500 MHz*

IEC 61076-2-111:2017, *Connectors for electrical and electronic equipment – Product requirements – Part 2-111: Circular connectors – Detail specification for power connectors with M12 screw-locking*

IEC 61076-2-113:2017, *Connectors for electronic equipment – Product requirements – Part 2-113: Circular connectors – Detail specification for connectors with M12 screw locking with power and signal contacts for data transmission with frequency up to 100 MHz*

IEC 61984, *Connectors – Safety requirements and tests*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61076-1, IEC 60050-581 as well as 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 (mating cycles for the mating interface only) are specified in the applicable standard, either IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 or IEC 61076-2-113. The same performance level (number of cycles of mechanical operations, i.e. one locking and one unlocking operation) shall apply to the specific complete connector with the inner push-pull locking described herein.

¹ Under preparation. Stage at the time of publication: IEC/CCDV 61076-2-010:2020.

A qualification of the inner push-pull locking mechanism for the highest performance level shall cover the qualifications for all the lower performance levels required by the various mating interfaces, which are not subject to re-qualification for all those aspects already covered in the relevant IEC standards mentioned above.

4.1.2 Compatibility levels, according to IEC 61076-1

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

4.2 Classification into climatic categories

For the classifications of the connectors into climatic categories in accordance with the general rules given in IEC 60068-1, see the applicable standard, either IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 or IEC 61076-2-113.

The qualification of the inner push-pull locking interface for the most demanding climatic category (lowest LCT, highest UCT, highest number of days of damp heat, steady state) will cover all less demanding climatic categories established for the mating interfaces described in the above-mentioned IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 or IEC 61076-2-113.

4.3 Contact terminations

The contact terminations shall be of the following types: screw, crimp, insulation piercing, insulation displacement, press-in or solder according to the applicable standard for the mating interface (either IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 or IEC 61076-2-113).