IEC 61076-8-101

Edition 1.0 2020-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Connectors for electrical and electronic equipment – Product requirements – Part 8-101: Power connectors – Detail specification for 2-pole or 3-pole power plus 2-pole signal shielded and sealed connectors with plastic housing for rated current of 40 A

Connecteurs pour équipements électriques et électroniques – Exigences de produit –
Partie 8-101: Connecteurs électriques – Spécification particulière pour connecteurs blindés étanches à 2 pôles ou 3 pôles pour la transmission de puissance et à 2 pôles pour la transmission de données avec boîtier plastique pour courant assigné de 40 A

IEC 61076-8-101:2020-04(en-fr)

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International Standard IEC 61076-8-101 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 standard is based on the following documents:

FDIS	Report on voting
48B/2784/FDIS	48B/2801/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.

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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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- withdrawn,
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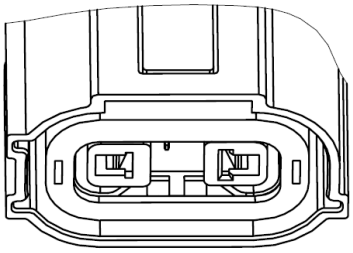
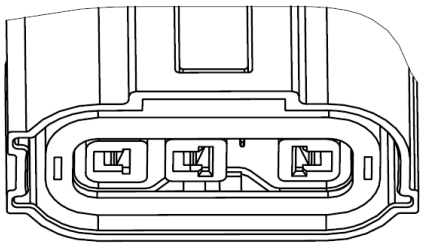
<table>
<tr><td colspan="2">The International Electrotechnical Commission
IEC SC 48B—Electrical connectors</td><td>IEC 61076-8-101 Ed. 1</td></tr>
<tr><td colspan="2">Detail specification in accordance with IEC 61076-1</td><td></td></tr>
<tr><td rowspan="2">Free connector</td><td> 
2-pole 40 A free connector
 
3-pole 40 A free connector</td><td>For rated current of 40 A d.c.;
2-pole;
Female contact for power;
First break last make male signal contact;
Straight insertion and withdrawal;
360° shielding;
Four codings.

For rated current of 40 A a.c.;
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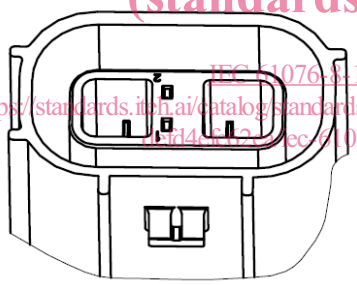
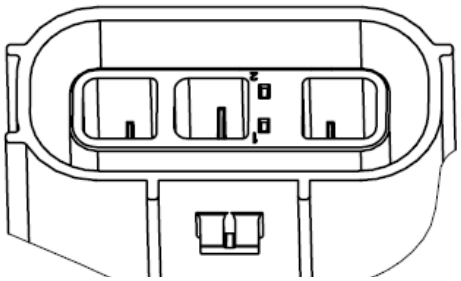
<tr><td>Fixed connector</td><td> 
2-pole 40 A fixed connector
 
3-pole 40 A fixed connector</td><td>For rated current of 40 A d.c.;
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Straight insertion and withdrawal;
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</table>

CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 8-101: Power connectors – Detail specification for 2-pole or 3-pole power plus 2-pole signal shielded and sealed connectors with plastic housing for rated current of 40 A

1 Scope

This part of IEC 61076 describes 2-pole or 3-pole power plus 2-pole signal shielded and sealed connectors with plastic housing (hereinafter referred to as a connector) for electrical and electronic equipment, including overall dimensions, interface dimensions, technical characteristics, performance requirements and test methods.

This document is applicable to electrical connectors with sealing and shielding requirements meeting this document, with a rated voltage up to and including 750 V a.c. or 1 000 V d.c. and a current rating of 40 A, in the field of electrical and electronic equipment.

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 (IEV) – Part 581: Electromechanical components for electronic equipment*

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

IEC 60228:2004, *Conductors of insulated cables*

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

IEC 60352-2, *Solderless connections – Part 2: Crimped connections – General requirements, test methods and practical guidance*

IEC 60352-3, *Solderless connections – Part 3: Solderless accessible insulation displacement connections – General requirements, test methods and practical guidance*

IEC 60352-4, *Solderless connections – Part 4: Solderless non-accessible insulation displacement connections – General requirements, test methods and practical guidance*

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

IEC 60352-6, *Solderless connections – Part 6: Insulation piercing connections – General requirements, test methods and practical guidance*

IEC 60352-7, *Solderless connections – Part 7: Spring clamp connections – General requirements, test methods and practical guidance*

IEC 60512-1-1, *Connectors for electronic equipment – Tests and measurements – Part 1-1: General examination – Test 1a: Visual examination*

IEC 60512-1-2, *Connectors for electronic equipment – Tests and measurements – Part 1-2: General examination – Test 1b: Examination of dimension and mass*

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 60512-2-2, *Connectors for electronic equipment – Tests and measurements – Part 2-2: Electrical continuity and contact resistance tests – Test 2b: Contact resistance – Specified test current method*

IEC 60512-2-5, *Connectors for electronic equipment – Tests and measurements – Part 2-5: Electrical continuity and contact resistance tests – Test 2e: Contact disturbance*

IEC 60512-2-6, *Connectors for electronic equipment – Tests and measurements – Part 2-6: Electrical continuity and contact resistance tests – Test 2f: Housing (shell) electrical continuity*

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 60512-5-2, *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 60512-7-1, *Connectors for electronic equipment – Tests and measurements – Part 7-1: Impact tests (free connectors) – Test 7a: Free fall (repeated)*

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

IEC 60512-9-2, *Connectors for electronic equipment – Tests and measurements – Part 9-2: Endurance tests – Test 9b: Electrical load and temperature*

IEC 60512-11-1, *Connectors for electrical and electronic equipment – Tests and measurements – Part 11-1: Climatic tests – Test 11a: Climatic sequence*

IEC 60512-11-3, *Connectors for electronic equipment – Tests and measurements – Part 11-3: Climatic tests – Test 11c: Damp heat, steady state*

IEC 60512-11-4, *Connectors for electronic equipment – Tests and measurements – Part 11-4: Climatic tests – Test 11d: Rapid change of temperature*

IEC 60512-11-6, *Connectors for electronic equipment – Tests and measurements – Part 11-6: Climatic tests – Test 11f: Corrosion, salt mist*

IEC 60512-11-9, *Connectors for electronic equipment – Tests and measurements – Part 11-9: Climatic tests – Test 11i: Dry heat*

IEC 60512-11-10, *Connectors for electronic equipment – Tests and measurements – Part 11-10: Climatic tests – Test 11j: Cold*

IEC 60512-11-11, *Connectors for electronic equipment – Tests and measurements – Part 11-11: Climatic tests – Test 11k: Low air pressure*

IEC 60512-11-12, *Connectors for electronic equipment – Tests and measurements – Part 11-12: Climatic tests – Test 11m: Damp heat, cyclic*

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

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

IEC 60512-15-1, *Connectors for electronic equipment – Tests and measurements – Part 15-1: Connector tests (mechanical) – Test 15a: Contact retention in insert*

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 60512-16-5, *Connectors for electronic equipment – Tests and measurements – Part 16-5: Mechanical tests on contacts and terminations – Test 16e: Gauge retention force (resilient contacts)*

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

IEC 60695-2-11:2014, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

IEC 60999-1, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm^2 up to 35 mm^2 (included)*

IEC 60999-2, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 2: Particular requirements for clamping units for conductors above 35 mm^2 up to 300 mm^2 (included)*

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

IEC 61984:2008, *Connectors – Safety requirements and tests*

IEC 62430:2019, *Environmentally conscious design (ECD) – Principles, requirements and guidance*

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

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

ISO 6508-1:2015, *Metallic materials – Rockwell hardness test – Part 1: Test method*

ISO 11469:2016, *Plastics – Generic identification and marking of plastics products*

3 Terms and definitions

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

4 Technical information

4.1 Recommended method of termination

4.1.1 General

According to IEC 60352.

4.1.2 Number of contacts and contact cavities

Number of contacts: 2-pole 40 A connector: power contacts: 2, signal contacts: 2.

3-pole 40 A connector: power contacts: 3, signal contacts: 2.

Number of contact cavities : 2-pole 40 A connector: 4, 3-pole 40 A connector: 5.

Suitable wire: cross-sectional area for power contacts: 6 mm^2, cross-sectional area for signal contacts: 0,5 mm^2.

4.2 Ratings and characteristics

Connectors according this specification are connectors without breaking capacity (COC) according to IEC 61984, therefore they are not intended to be engaged or disengaged in normal use when live or under load, if not otherwise specified by the manufacturer.

Rated voltage: power contacts: 750 V a.c. (1 000 V d.c.), signal contacts: 48 V d.c.

Voltage proof of power contacts: 4 kV, voltage proof of signal contacts: 1 kV.

Pollution degree: 2.

Rated current: power contacts: 40 A, signal contacts: 3 A.

Insulation resistance: 5 000 MΩ min.

Climatic categories : 55/125/10.

4.3 Systems of levels

4.3.1 Performance levels

Performance level for these connectors is 1.

4.3.2 Compatibility levels

The compatibility levels of the products specified by this document shall comply with 2.2.3.3 of IEC 61076-1:2006.

4.4 Classification into climatic categories

Conditions: according to IEC 60068-1 and Table 1.

Table 1 – Climatic categories

Climatic categories	Lower temperature °C	Upper temperature °C	Steady state damp-heat d
55/125/10	-55	+125	10

4.5 Clearance and creepage distance

Clearance and creepage distances shall be measured according to IEC 60512-1-2 with the following additional requirements.

For these connectors clearance and creepage distances shall be measured only in mated condition (connector without breaking capacity as defined in IEC 61984).

Power contacts: clearance 12 mm min., creepage distance 12 mm min.

Signal contacts: clearance 2 mm min., creepage distance 2 mm min.

Between any power contact and the most adjacent signal contact: clearance 12 mm min., creepage distance 12 mm min.

4.6 Current-carrying capacity

The current-carrying capacity shall be measured according to IEC 60512, Test 5b and stated by the manufacturer.

4.7 Marking

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

5 Dimensional information

5.1 General

Dimensions are given in millimetres. 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.

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

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

5.2 Isometric view and common features

5.2.1 General

Figure 1 and Figure 2 show isometric views of free and fixed connectors.

5.2.2 Isometric view of free connectors

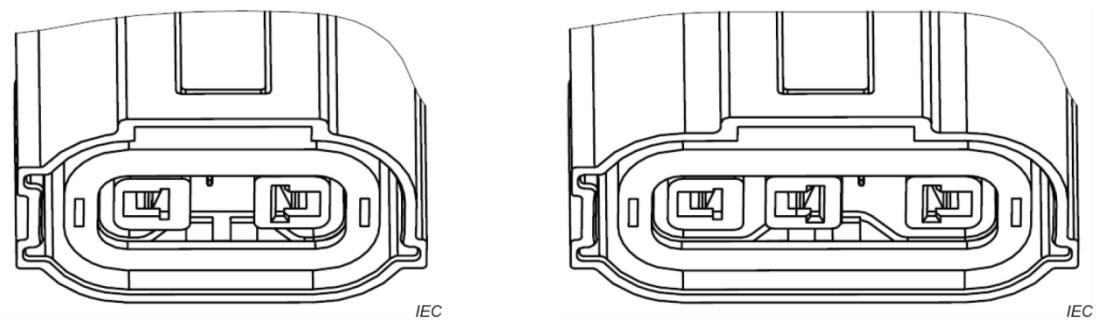

Figure 1 – 2-pole and 3-pole free connector

5.2.3 Isometric view of fixed connectors

Figure 2 – 2-pole and 3-pole fixed connector

5.3 Engagement (mating) information

5.3.1 Engagement (mating) direction

5.3.1.1 General

Not applicable.

5.3.1.2 Contact levels and sequencing

Power contacts shall be engaged prior to signal contacts in the mating process of connectors. Power contacts shall be withdrawn posterior to signal contacts in the separating process of connectors. In other words, signal contacts shall be of the FBLM (first break last make) type.

5.3.2 Perpendicular to the engaging (mating) direction

Not applicable.

5.3.3 Inclination

Not applicable.