IEC 61076-3-126

Edition 1.0 2023-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Connectors for electrical and electronic equipment – Product requirements – Part 3-126: Rectangular connectors – Detail specification for 5-way power connectors for industrial environments with push-pull locking

Connecteurs pour équipements électriques et électroniques – Exigences de produit –
Partie 3-126: Connecteurs rectangulaires – Spécification particulière pour les connecteurs de puissance 5 voies destinés aux environnements industriels avec verrouillage de type pousser-tirer

IEC 61076-3-126:2023-01(en-fr)

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CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

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

Draft	Report on voting
48B/3007/FDIS	48B/3017/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

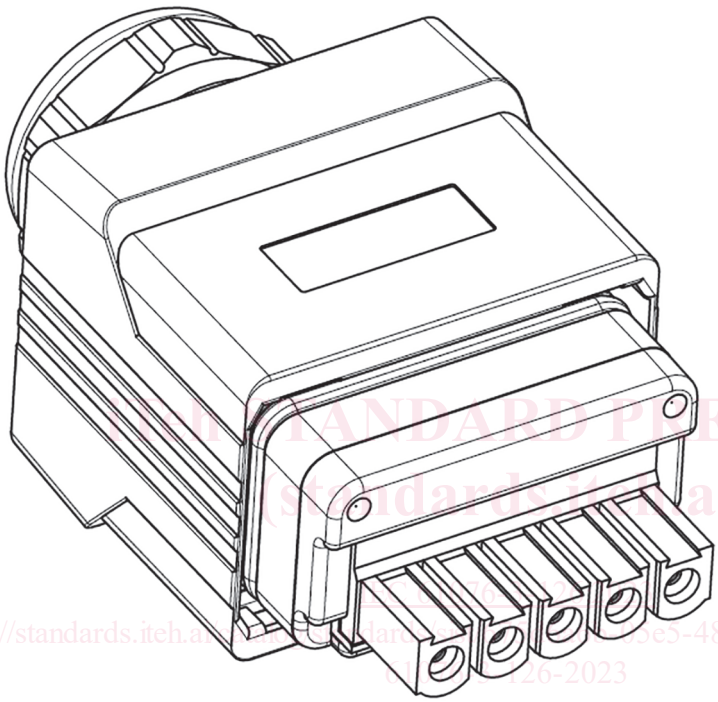
A list of all parts in the IEC 61076 series, published under the general title *Connectors for electrical and electronic equipment – Product requirements*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existingstandards 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 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- withdrawn,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

IEC SC 48B – Electrical connectors Specification available from: IEC General secretariat or from the addresses shown on the inside cover.	IEC 61076-3-126 Ed.1
Detail specification in accordance with IEC 61076-1	
 IEC	Rectangular connectors Detail specification for power connectors for industrial environments with push-pull locking Male and female connectors Male and female contacts Rewirable – Non-rewirable
	Free cable connectors Straight and right angle connectors Fixed connectors Flange mounting Single hole mounting

CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 3-126: Rectangular connectors – Detail specification for 5-way power connectors for industrial environments with push-pull locking

1 Scope

This document covers 5-pole rectangular connectors for electric power supply up to 16 A per pole. These connectors consist of fixed and free connectors, both either rewirable or non-rewirable. This document employs the general function principles of the push-pull connector housing system described in IEC 61076-3-117 with IP65/IP67 degree of protection according to IEC 60529 for harsh applications.

Male connectors have pin contacts with square cross-section with 1 mm side. Connectors according to this document are 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.

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 60068-2-30, *Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

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: Accessible insulation displacement (ID) connections – General requirements, test methods and practical guidance*

IEC 60352-4, *Solderless connections – Part 4: Non-accessible insulation displacement (ID) 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 60352-8, *Solderless connections – Part 8: Compression mount 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 60512-1-2:2002, *Connectors for electronic equipment – Tests and measurements – Part 1-2: General examination – Test 1b: Examination of dimension and mass*

IEC 60512-2-1:2002, *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 60512-3-1:2002, *Connectors for electronic equipment – Tests and measurements – Part 3-1: Insulation tests – Test 3a: Insulation resistance*

IEC 60512-4-1:2003, *Connectors for electronic equipment – Tests and measurements – Part 4-1: Voltage stress tests – Test 4a: Voltage proof*

IEC 60512-5-2:2002, *Connectors for electronic equipment – Tests and measurements – Part 5-2: Current-carrying capacity tests – Test 5b: Current-temperature derating*

IEC 60512-6-1, *Connectors for electronic equipment – Tests and measurements – Part 6-1: Dynamic stress tests – Test 6a: Acceleration, steady state*

IEC 60512-6-2, *Connectors for electronic equipment – Tests and measurements – Part 6-2: Dynamic stress tests – Test 6b: Bump*

IEC 60512-6-3:2002, *Connectors for electronic equipment – Tests and measurements – Part 6-3: Dynamic stress tests – Test 6c: Shock*

IEC 60512-6-4:2002, *Connectors for electronic equipment – Tests and measurements – Part 6-4: Dynamic stress tests – Test 6d: Vibration (sinusoidal)*

IEC 60512-6-5, *Electromechanical components for electronic equipment – Basic testing procedures and measuring methods – Part 6: Dynamic stress tests – Section 5: Test 6e: Random vibration*

IEC 60512-8-1:2010, *Connectors for electronic equipment – Tests and measurements – Part 8-1: Static load tests (fixed connectors) – Test 8a: Static load, transverse*

IEC 60512-8-2:2011, *Connectors for electronic equipment – Tests and measurements – Part 8-2: Static load tests (fixed connectors) – Test 8b: Static load, axial*

IEC 60512-9-1:2010, *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 60512-11-9:2002, *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 60512-11-12, *Connectors for electronic equipment – Tests and measurements – Part 11-12: Climatic tests – Test 11m: Damp heat, cyclic*

IEC 60512-12-4, *Connectors for electronic equipment – Tests and measurements – Part 12-4: Soldering tests – Test 12d: Resistance to soldering heat, solder bath method*

IEC 60512-12-5, *Connectors for electronic equipment – Tests and measurements – Part 12-5: Soldering tests – Test 12e: Resistance to soldering heat, soldering iron method*

IEC 60512-13-1:2006, *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 60512-13-5:2006, *Connectors for electronic equipment – Tests and measurements – Part 13-5: Mechanical operation tests – Test 13e: Polarizing and keying method*

IEC 60512-14-7, *Electromechanical components for electronic equipment – Basic testing procedures and measuring methods – Part 14: Sealing tests – Section 7: Test 14g: Impacting water*

IEC 60512-15-1:2008, *Connectors for electronic equipment – Tests and measurements – Part 15-1: Connector tests (mechanical) – Test 15a: Contact retention in insert*

IEC 60512-15-6:2008, *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 60512-17-3:2010, *Connectors for electronic equipment – Tests and measurements – Part 17-3: Cable clamping tests – Test 17c: Cable clamp resistance to cable pull (tensile)*

IEC 60512-17-4:2010, *Connectors for electronic equipment – Tests and measurements – Part 17-4: Cable clamping tests – Test 17d: Cable clamp resistance to cable torsion*

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 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage supply 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 60999-1:1999, *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 – Product requirements – Part 1: Generic specification*
IEC 61076-1:2006/AMD1:2019

IEC 61076-3:2008, *Connectors for electronic equipment – Product requirements – Part 3: Rectangular connectors – Sectional specification*

IEC 61760-3:2021, *Surface mounting technology – Part 3: Standard method for the specification of components for through-hole reflow (THR) soldering*

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

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

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

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

ISO 128-3:2022, *Technical product documentation (TPD) – General principles of representation – Part 3: Views, sections and cuts*

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

ISO 14405 (all parts): *Geometrical product specifications (GPS) – Dimensional tolerancing*

ISO 21920-1: 2021, *Geometrical product specifications (GPS) – Surface texture: Profile – Part 1: Indication of surface texture*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in 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
protective conductor
PE
conductor provided for purposes of safety, for example protection against electric shock

Note 1 to entry: In an electrical installation, the conductor identified PE is normally also considered as protective earthing conductor.

3.2
functional earthing
functional grounding, US
FE
earthing for purposes other than electrical safety

[SOURCE: IEC 60050-195:2021, 195-01-13]

4 Technical information

4.1 Systems of levels

4.1.1 Performance levels

See Table 9.

4.1.2 Compatibility levels, according to IEC 61076-1:2006

Connectors according to this document are deemed to be intermateable.

4.2 Classification into climatic categories

Table 1 shows the climatic category.

Table 1 – Climatic category

Climatic category	Category temperature		Damp heat steady state		Days
	Lower	Upper	Temperature	Relative humidity	
	°C	°C	°C	%	
25/070/21	−25	+70	40	93	21

4.3 Clearance and creepage distances

Creepage and clearance distances shall meet the requirements given in 6.4.1.

4.4 Current-carrying capacity

See 6.4.3.

4.5 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 Common features

Connectors meant to comply with IP ratings per IEC 60529 shall be appropriately mated and sealed in order to meet the requirements detailed in the test schedules in 7.2.

5.2 Reference system

Coordination dimensions are dimensions without tolerances which indicate the boundary or centre-line references in order to allow arrangement.

Dimensions are given in millimetres, drawings are shown in first angle projection according to ISO 128-3. The shape of connectors may deviate from those shapes given in the following figures as long as the specified dimensions are not influenced.

5.3 Engagement (mating) information

5.3.1 Engaging (mating) direction

5.3.1.1 General

An arrow in Figure 1 indicates the mating direction.

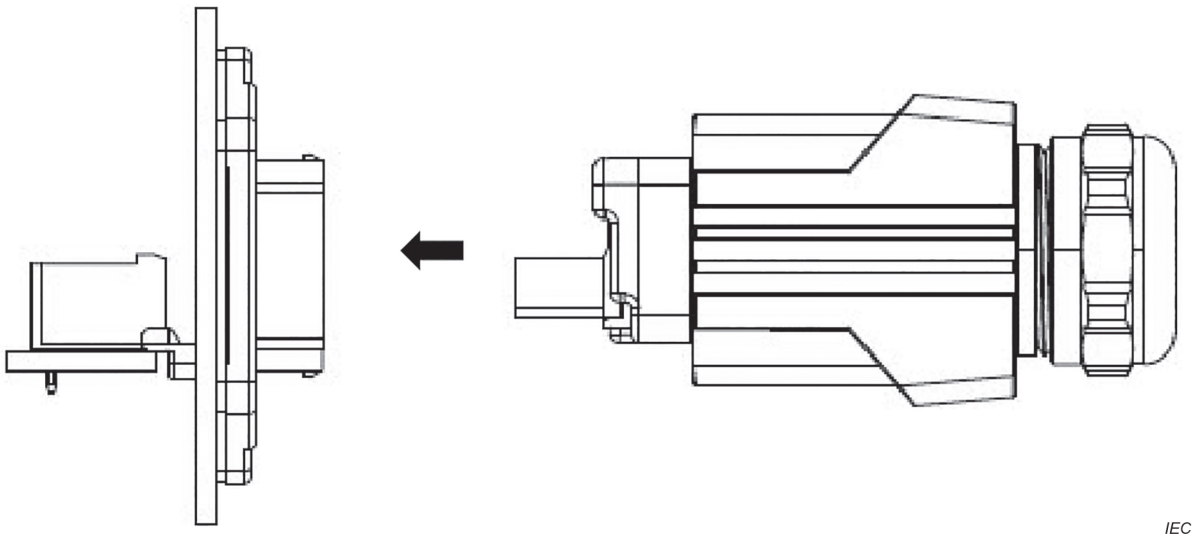


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Figure 1 – View showing mating direction