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Connectors for electrical and electronic equipment - Product requirements- Part 8-110: Power connectors - Detail specification for 2P 300 A 1 000 V plus 2P 5 A 50 V DC shielded rectangular connectors with IP65/IP68 degree of protection when mated and locked, and IPXXB when unmated

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IEC 61076-8-110 has been prepared by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment. It is an International Standard.

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

Draft	Report on voting
48B/3215/FDIS	48B/3221/RVD

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

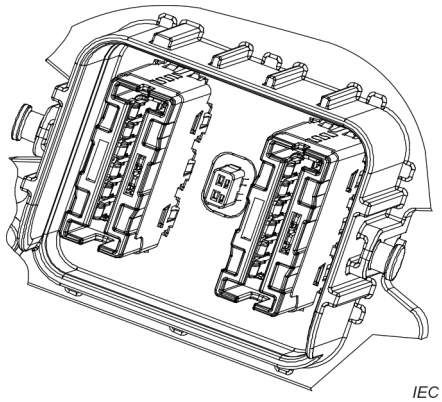
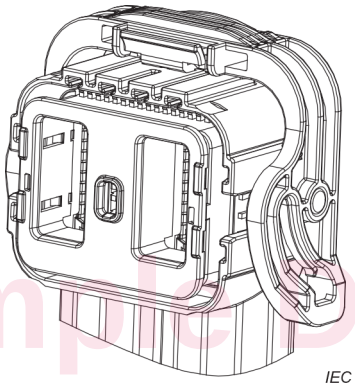
The language used for the development of this International Standard is English.

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/publications.

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.

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– withdrawn, or
– revised.

The International Electrotechnical Commission **IEC SC 48B – Electrical connectors**		**IEC 61076-8-110 Ed.1**
Detail specification in accordance with IEC 61076-1		
Fixed connector	 IEC	For rated current of 300 A, 1 000 V DC; 2P power plus 2P signal (5 A, 50 V DC); Female contacts for power; Female contacts for signal; Straight insertion and withdrawal; 360° shielding; Four codings to prevent mismating.
Free connector	 IEC	For rated current of 300 A, 1 000 V DC; 2P power plus 2P signal (5 A, 50 V DC); Male contacts for power; First break last make male contacts for signal; Straight insertion and withdrawal; 360° shielding; Four codings to prevent mismating.

1 Scope

This part of IEC 61076-8 describes free and fixed rectangular connectors, hereinafter referred to as "connector", with:

– 2P power plus 2P signal contacts;
– plastic housing with locking lever and four possible codings;
– 300 A rated current, 1 000 V DC rated voltage on the power section;
– 5 A rated current, 50 V DC rated voltage on the “first break, last make” signal section;
– individual shielding around each power contact with relevant shielding termination;
– IP65/IP68 degree of protection when mated and locked and IPXXB on both plug and receptacle parts when unmated,

for use in electrical and electronic equipment, including overall dimensions, interface dimensions, technical characteristics, performance requirements and test methods.

Connectors in accordance with this document are intended for use in class II equipment; hence, they are not equipped with PE contact.

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 60228, *Conductors of insulated cables*

IEC 60352 (all parts), *Solderless connections*

IEC 60512-1, *Connectors for electrical and electronic equipment - Tests and measurements - Part 1: Generic specification*

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 - Test 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 60512-5-2, *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 12m: 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 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 60695-2-11:2021, *Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products (GWEPT)*

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

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

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

IEC 62153-4-6, *Metallic cables and other passive components test methods - Part 4-6: Electromagnetic compatibility (EMC) Surface transfer impedance - injection method*

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

ISO 21920-1, *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, IEC 61076-1, IEC 60512-1 and IEC 61984 apply.

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

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

4 Technical information

4.1 Recommended method of termination

4.1.1 General

It is recommended that termination be in accordance with the IEC 60352 series, IEC 60999-1 or IEC 60999-2.

4.1.2 Number of contacts and contact cavities

Number of contacts: power contacts: 2, shielding contacts: 2 (surrounding each power contact), signal contacts: 2.

Number of contact cavities (for removable contacts): 4.

Suitable wire: cross-sectional area for power contacts: 70 mm^2, cross-sectional area for signal contacts: 0,5 mm^2. The core of each power wire is deemed to be individually shielded, each shielding requiring a dedicated termination.

4.2 Ratings and characteristics

Connectors in accordance with this document are without breaking capacity (COC) as defined in IEC 61984; therefore, they are not intended to be engaged or disengaged in normal use when live or under load.

Rated voltage: power contacts: 1 000 V DC, signal contacts: 50 V DC.

Voltage proof of power contacts: 3 310 V AC, voltage proof of signal contacts: 500 V AC.

Pollution degree: 2.

NOTE The complete voltage rating is therefore 1 000 V DC 6 kV 2 (power section) and 50V DC 0,8kV 2 (signal section).

Rated current (at 75 °C): power contacts: 300 A, signal contacts: 5 A. See Figure 9.

Insulation resistance: 5 000 MΩ min.

Climatic category: 40/125/10.

4.3 Systems of levels

4.3.1 Performance levels

The performance level for these connectors is 1.

4.3.2 Compatibility levels

The compatibility level of the products specified by this document shall comply with level 2 – intermateable as described in IEC 61076-1.

4.4 Classification into climatic categories

Conditions: in accordance with IEC 60068-1 and Table 1.

Table 1 – Climatic category

Climatic category	Lower temperature °C	Upper temperature °C	Damp heat, steady state d
40/125/10	-40	+125	10