

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Connectors for electrical and electronic equipment – Product requirements –  
Part 3-124: Rectangular connectors – Detail specification for 10-way, shielded,  
free and fixed connectors for I/O and data transmission with frequencies up to  
500 MHz**

**Connecteurs pour équipements électriques et électroniques – Exigences de  
produit –  
Partie 3-124: Connecteurs rectangulaires – Spécification particulière pour les  
fiches et les embases écrantées à 10 voies pour les entrées/sorties et la  
transmission de données à des fréquences jusqu'à 500 MHz**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT –  
PRODUCT REQUIREMENTS –****Part 3-124: Rectangular connectors – Detail specification for 10-way,  
shielded, free and fixed connectors for I/O and data transmission  
with frequencies up to 500 MHz**

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This International Standard IEC 61076-3-124 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/2711/FDIS | 48B/2726/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.

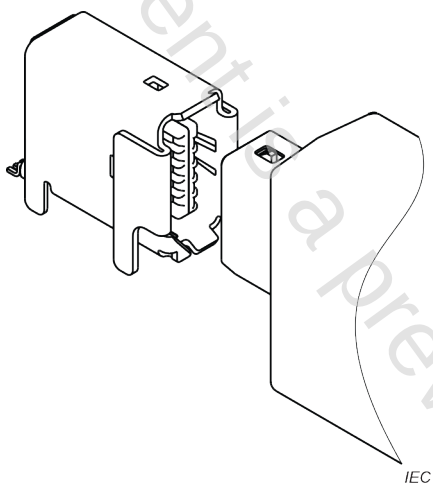
This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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.

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

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- withdrawn,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

|                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>IEC SC 48B – Electrical connectors</b></p> <p>Specification available from:<br/>IEC General secretariat<br/>Or from the addresses shown on the inside cover.</p>                                                        | IEC 61076-3-124 Ed. 1                                                                                                                                                                                                                                                                                                                                            |
| <p>ELECTRONIC COMPONENTS</p> <p>DETAIL SPECIFICATION in accordance with IEC 61076-1</p>                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                                             | <p>10-way, shielded rectangular connectors</p> <p>male and female connectors</p> <p>for data transmission with frequencies up to 500 MHz</p> <p>solderless terminations, solder or printed board connections upon agreement between manufacturer and user</p> <p>rewirable – non-rewirable</p>                                                                   |
| <p>NOTE The above axonometric view shows a Type A connector pair (male fixed, printed board connector style, female free connector style) with coding edge on lower left corner viewed on the fixed connector mating side</p> | <p>free cable connectors</p> <p>straight and right-angle connectors</p> <p>fixed connectors are mounted on printed circuit board by means of soldering or press-in, the free connector is attached to wires by means of soldering, crimping, IDC or other termination technology.</p> <p>locking means to avoid unintended disengagement of mated connectors</p> |
|                                                                                                                                                                                                                               | <p>Performance levels:</p> <p>MPL 750 = 500 mating cycles</p> <p>MPL 2 500 = 2 500 mating cycles</p> <p>MPL 5 000 = 5 000 mating cycles</p> <p>other MPL upon agreement between manufacturer and user</p>                                                                                                                                                        |

## CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

### Part 3-124: Rectangular connectors – Detail specification for 10-way, shielded, free and fixed connectors for I/O and data transmission with frequencies up to 500 MHz

#### 1 Scope

This part of IEC 61076 covers 10-way, shielded, free and fixed rectangular connectors for data transmission with frequencies up to 500 MHz and specifies the common dimensions, mechanical, electrical and transmission characteristics and environmental requirements as well as test specifications respectively.

Connectors covered in this document are provided in three codings that differ only for the position of the polarization key and keyway, in view of their differently intended use:

- Connectors Type A and C are intended for 10/100 Mbit/s as well as for 1/ 2,5 / 5 /10 Gbit/s Ethernet communication.
- Connectors Type B are intended for all other non-Ethernet applications such as signalling, serial or other industrial bus communication systems.

A-coding: The 45° cut corner used as polarization key and keyway system is located on the lower left corner of the male fixed connector (viewed from mating face) (Figures 5a, 5b).

B-coding: The 45° cut corner is located on the upper left corner of the male fixed connector (Figures 5c, 5d).

C-coding: There are two 45° corners located at the upper left and lower left corner (Figures 5e, 5f).

In this document, the three codings, A, B, and C are designated as “Type A”, “Type B” and “Type C”.

#### 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 – Part 581: Electromechanical components for electronic equipment*

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

IEC 60068-2-38, *Environmental testing – Part 2-38: Tests – Test Z/AD: Composite temperature/humidity cyclic test*

IEC 60352 (all parts), *Solderless connections*

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

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

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

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 60512-11-7, *Connectors for electronic equipment – Tests and measurements – Part 11-7: Climatic tests – Test 11g: Flowing mixed gas corrosion test*

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 60512-13-2, *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 60512-25-7, *Connectors for electronic equipment – Tests and measurements – Part 25-7: Test 25g – Impedance, reflection coefficient, and voltage standing wave ratio (VSWR)*

IEC 60512-27-100, *Connectors for electronic equipment – Tests and measurements – Part 27-100: Signal integrity tests up to 500 MHz on 60603-7 series connectors – Tests 27a to 27g*

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

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

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

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

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-581, IEC 61076-1, IEC 61076-3 and IEC 60512-1 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 Systems of levels – Compatibility levels, according to IEC 61076-1:2006

##### 4.1.1 Performance level

Connectors according to this document are classified by mating performance level (MPL). See 6.5.1, Table 12 for details.

##### 4.1.2 Compatibility levels according to IEC 61076

###### a) Intermateability

Intermateability (level 2 of IEC 61076-1:2006) standardizes only dimensions of electrical and mechanical interfaces. Intermateability shall be ensured by application of the “Go” and “No-Go” gauge requirements in the standards that may be referenced, and adherence to the dimensional requirements within.

###### b) Interoperability

Interoperability of different connectors shall be assured by compliance with the specified interface dimensions and by compliance with the relevant signal integrity test group FP.

#### 4.2 Classification into climatic categories

See 6.3.