INTERNATIONAL STANDARD

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Second edition
2006-06

Connectors for electronic equipment –

Part 7-7:
Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 600 MHz

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CONTENTS

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CONNECTORS FOR ELECTRONIC EQUIPMENT –

Part 7-7: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 600 MHz

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International Standard IEC 60603-7-7 has been prepared by subcommittee 48B: Connectors, of IEC technical committee 48: Electromechanical components and mechanical structures for electronic equipment.

This second edition cancels and replaces the first edition published in 2002. This edition constitutes a technical revision.

The following changes to the first edition have been made in this second edition:

- Many minor detail changes concerning the harmonization of this document, its specifications and its test procedures with those contained in the other IEC 60603-7 series standards.
- Significant performance improvements have been made to insertion loss and return loss, now specified to 1 000 MHz, for special applications (ISO/IEC 15018).

The text of this standard is based on the following documents:

FDIS	Report on voting
48B/1664/FDIS	48B/1691/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.

A list of all parts of IEC 60603 series, under the general title *Connectors for frequencies below 3 MHz for use with printed boards*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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- withdrawn;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

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

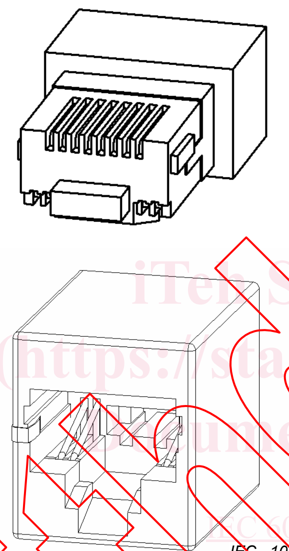
This detail specification describes connectors according to IEC 60603-7 series connectors requirements.

This detail specification describes connectors that are similar to and backward compatible with IEC 60603-7 series connectors. Backward compatibility definition and requirements are given in 2.2.

The complete requirements for the connectors described herein correspond to this detail specification and the current issues of IEC 60603-7 series, which are referenced herein accordingly.

CONNECTORS FOR ELECTRONIC EQUIPMENT –

Part 7-7: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 600 MHz

IEC SC 48B: LF connectors Specification available from: IEC Central Office or the addresses shown on the inside cover.	**IEC 60603-7-7**
 IEC 1068/06	Detail specification for two-part cable to cable connector used in: - high speed communications applications up to 600 MHz - 4 balanced contact pairs (8 contacts) - compatible with IEC 60603-7 series connectors - intended for inside-building cabling systems
	Typical construction is for cable mount for use in communication cabling systems
	Performance level(s): 1, 2 Assessment level(s): not applicable
	Reference data: not applicable
Information on the availability of components qualified to this detail specification is not covered.	

1 General

1.1 Scope

This part of IEC 60603, which is part of the IEC 60603-7 series, covers 8 way connectors, up to 4 pairs, and specifies mechanical and environmental requirements, and electrical transmission requirements for frequencies up to 600 MHz. These connectors are typically used as category 7 connectors in class F cabling systems specified in IS0/IEC 11801:2002.[1]

The connectors are intermateable with IEC 60603-7-X series connectors.[2]

The connectors are interoperable with IEC 60603-7-X series connectors.[3]

The connectors are backward compatible with IEC 60603-7-X series connectors.[4]

1.2 Normative references

The following referenced documents are indispensable for the application 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) – Chapter 581: Electro-mechanical components for electronic equipment*

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

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

IEC 60169-16, *Radio-frequency connectors – Part 16: R.F. coaxial connectors with inner diameter of outer conductor 7 mm (0.276 in) with screw coupling – Characteristic impedance 50 ohms (75 ohms) (Type N)*

IEC 60352-2, *Solderless connections – Part 2: Solderless 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 (all parts), *Connectors for electronic equipment – Tests and measurements*

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1 ISO/IEC 11801 contains various ‘category’ designations corresponding to various frequency ranges.

2 Intermateability definition and requirements are given in 2.2.

3 Interoperability definition and requirements are given in 2.2.

4 Backward compatibility definition and requirements are given in 2.2.

IEC 60512-1-100, *Connectors for electronic equipment – Tests and measurements – Part 1-100: General – Applicable publications*

IEC 60603-1, *Connectors for frequencies below 3 MHz for use with printed boards – Part 1: Generic specification – General requirements and guide for the preparation of detail specifications, with assessed quality*

IEC 60603-7, *Connectors for frequencies below 3 MHz for use with printed boards – Part 7: Detail specification for connectors, 8-way, including fixed and free connectors with common mating features*

IEC 60603-7-5, *Connectors for electronic equipment – Part 7-5: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 250 MHz* [5]

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

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

IEC 61156 (all parts), *Multicore and symmetrical pair/quad cables for digital communications*

ISO/IEC 11801:2002, *Information technology – Generic cabling for customer premises*

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

ITU-T G.117, *Transmission aspects of unbalance about earth*

ITU-T K.20, *Resistibility of telecommunication equipment installed in a telecommunications centre to overvoltages and overcurrents*

ITU-T K.44, *Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents – Basic recommendation*

ITU-T O.9, *Measuring arrangements to assess the degree of unbalance about earth*

EN 50289-1-14, *Communication Cables – Specifications for Test Methods – Part 1-14: Electrical Test Methods – Coupling attenuation or screening attenuation of connecting hardware*

2 Technical information

This detail specification covers connectors intended for use in inside-building communication cabling systems.

2.1 Terms and definitions

For the purposes of this part of IEC 60603, the terms and definitions given in 2.1 of IEC 61076-1 and IEC 60050(581) apply. Some applicable terms are also covered in IEC 60512-1.

2.2 Information on application

These connectors are interoperable with lower frequency or “category” IEC 60603-7 series connectors.

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[5] To be published.

2.2.1 Transmission performance categories

In this detail specification, the term “category”, when used in reference to transmission performance, refers to those categories defined by ISO/IEC 11801:2002.

2.2.2 Complete connectors (pairs)

The complete connectors engage a total of 8 contacts.

The IEC 60603-7-7 connector includes the 8 contacts (1,2,3,4,5,6,7,8) of a standard IEC 60603-7 series connector. In addition, the IEC 60603-7-7 connector includes 4 alternative contacts (6’,3’,4’,5’) located on the opposite side to the original contacts of a basic IEC 60603-7 series connector.

A switch is employed within the connectors to engage transmission paths between 4 pairs of terminations and the respective 4 out of 6 pairs of contacts, which operate above or below 250 MHz, see 4.2.

Switch operation is implemented by means of moving switch actuator protrusions on the free connector (see 2.2.2.1 and 2.2.2.2).

2.2.2.1 Fixed connectors

IEC 60603-7-7 fixed connectors include a rear switch actuator and side channels.

These features accommodate the switch actuator protrusions on IEC 60603-7-7 free connectors.

The fixed connector (rear) switch actuator is operated by the free connector front switch actuator protrusion placed in the extended position.

2.2.2.2 Free connectors

IEC 60603-7-7 free connectors include front and side switch actuator protrusions.

The free connector front switch actuator protrusion, when placed in the extended position, operates the fixed connector switch actuator.

The free connector side switch actuator protrusions operate the free connector switch. The absence of fixed connector side channels (as in lower frequency or “category” IEC 60603-7-X series fixed connectors) cause the extended free connector switch actuator protrusions to move into the retracted position upon insertion.

NOTE A free connector with fixed protrusions, which is not backward compatible with IEC 60603-7 series connectors, but is intermateable and interoperable with IEC 60603-7-7 fixed connectors, is specified in IEC 61076-3-110[6].

2.2.3 Interchangeability level

These connectors are intermateable, interoperable and backward compatible with IEC 60603-7 series connectors.

Interoperability of a IEC 60603-7-7 connector with a lower frequency IEC 60603-7 series connector is assured by compliance with all transmission requirements of the lower frequency IEC 60603-7 series connector when the fixed connector is mated with a full range of “test” free connectors, or “test plugs”, as described in the lower frequency IEC 60603-7 series connector.

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6 Under consideration.