IEC 60603-7

Edition 4.0 2020-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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

Connecteurs pour équipements électroniques –
Partie 7: Spécification particulière pour les fiches et les embases non écrantées à 8 voies

IEC 60603-7:2020-10(en-fr)

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INTERNATIONAL
ELECTROTECHNICAL
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COMMISSION
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INTERNATIONALE

ICS 31.220.01

ISBN 978-2-8322-8894-8

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CONNECTORS FOR ELECTRONIC EQUIPMENT –

Part 7: Detail specification for 8-way, unshielded, free and fixed connectors

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60603-7 has been prepared by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment.

This fourth edition cancels and replaces the third edition, published in 2008, its Amendment 1:2011 and its Amendment 2:2019. It constitutes a technical revision.

This edition includes the following significant technical change with respect to the previous edition:

– Revised the definitions for intermateability and interoperability; added new definitions.
– Corrected dimension line for dimension AZ2 in Figure 5.
– Corrected dimension line for dimension F1 in Figure A.1.
– Revised the reference to ISO/IEC 11801 to ISO/IEC 11801-1.

– Added lower limiting temperature and upper limiting temperature definitions.
– Revised Table 1 to Table 8 so the column order is Minimum-Nominal-Maximum dimensions (ascending order).
– Corrected Table 7: Climatic category and Upper temperature values to 90 °C (to be consistent with the graph in Figure 10 and Note 1 in Figure 10).
– Revised the wording in 8.2, contact resistance, for clarification.
– Revised Figure 11 and Figure 12 and the wording in the Key below for clarification.
– Removed the sentences under the figure in the Introduction.
– Added Annex E.

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

FDIS	Report on voting
48B/2832/FDIS	8B/2843/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 of IEC 60603-7 series, under the general title *Connectors for electronic equipment*, 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 "http://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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

IEC 60603-7 is the base specification of the whole series. Subsequent specifications do not duplicate information given in the base document, but list only additional requirements. For complete specifications regarding a component of a higher numbered document, all lower numbered documents must be considered as well. Figure 1 shows the interrelation of the documents.

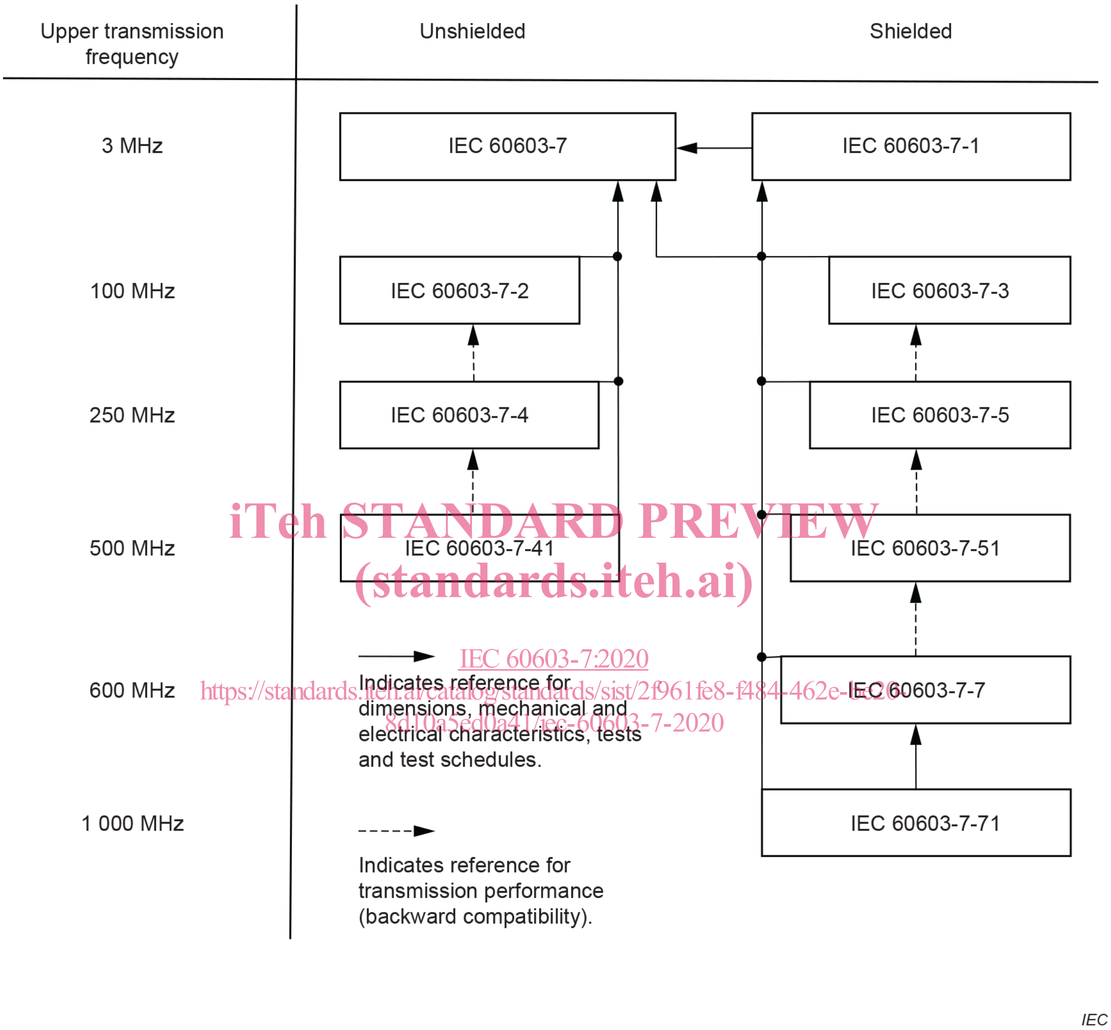

Figure 1 – IEC 60603-7 family document diagram

CONNECTORS FOR ELECTRONIC EQUIPMENT –

Part 7: Detail specification for 8-way, unshielded, free and fixed connectors

1 Scope

This part of IEC 60603-7 covers 8-way, unshielded, free and fixed connectors and is intended to specify the common dimensions (interface dimensions), mechanical, electrical and environmental characteristics and tests for the family of IEC 60603-7-x connectors.

These connectors are intermateable (according to IEC 61076-1 level 2) and interoperable with other IEC 60603-7 series connectors.

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

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 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 – Tests and measurements – Part 1-2: General examination – Test 1b: Examination of dimensions and mass*

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

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 60512-6-4, *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 60512-9-2, *Connectors for electronic equipment – Tests and measurements – Part 9-2: Endurance tests – Test 9b: Electrical load and temperature*

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 60512-13-2, *Connectors for electronic equipment – Tests and measurements – Part 13-2: Mechanical operation tests – Test 13b: Insertion and withdrawal forces*

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 60603-7 (all parts), *Connectors for electronic equipment*

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

IEC 61156-2, *Multicore and symmetrical pair/quad cables for digital communications – Part 2: Symmetrical pair/quad cables with transmission characteristics up to 100 MHz – Horizontal floor wiring – Sectional specification*

IEC 61156-3, *Multicore and symmetrical pair/quad cables for digital communications – Part 3: Work area cable – Sectional specification*

IEC 61156-4, *Multicore and symmetrical pair/quad cables for digital communications – Part 4: Riser cables – Sectional specification*

IEC 61156-5, *Multicore and symmetrical pair/quad cables for digital communications – Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Horizontal floor wiring – Sectional specification*

IEC 61156-6, *Multicore and symmetrical pair/quad cables for digital communications – Part 6: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Work area wiring – Sectional specification*

IEC 61156-7, *Multicore and symmetrical pair/quad cables for digital communications – Part 7: Symmetrical pair cables with transmission characteristics up to 1 200 MHz – Sectional specification for digital and analog communication cables*

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

IEC TR 63040, *Guidance on clearances and creepage distances in particular for distances equal to or less than 2 mm – Test results of research on influencing parameters*

ISO/IEC 11801-1, *Information technology – Generic cabling for customer premises – Part 1: General requirements*

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

ITU-T Recommendation K.20:2000[1], *Resistibility of telecommunication equipment installed in a telecommunications centre to overvoltages and overcurrents*

ITU-T Recommendation K.44:2000[2], *Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents – Basic Recommendation*

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 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

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1 This document has been replaced by a new edition (2003), but for the purposes of this document, the 2000 edition is cited.

2 This document has been replaced by a new edition (2003), but for the purposes of this document, the 2000 edition is cited.

3.1
intermateability
intermateability (level 2 of IEC 61076-1) is ensured by application of the "Go" and "No-Go" gauge requirements in the standards that may be referenced, and by adherence to the dimensional requirements therein

SEE: Clause E.3.

3.2
interoperability
interoperability of different IEC 60603-7 connectors and of IEC 60603-7 connectors with connectors of other families (e.g. IEC 61076-3 series) is ensured by compliance with the specified interface dimensions, when they have the same number of contacts, the same electrical wiring-related dimensions and when the lowest electrical, mechanical and climatic performance (performance level) among the two connectors is suitable for the intended application

SEE: Clause E.5.

3.3
category
relevant level of transmission performance as given in ISO/IEC 11801-1

3.4
Keystone connector
is defined by its mounting features

Note 1 to entry: The dimensional requirements for the connector and its corresponding mounting panel are defined in Annex D.

3.5
number of contacts
number of contacts (or ways) that a connector owns, including the protective and/or functional earth contact(s), if any

Note 1 to entry: A connector for removable contacts is characterized by its number of contact positions (seats): its number of contacts (ways) may be lower than the number of contact positions (seats).

Note 2 to entry: The same number of contacts does not grant the same electrical interface: the geometry of said contacts may be different while their number is the same.

3.6
overall dimensions
dimensions providing the overall space occupied by a connector

Note 1 to entry: Two connectors of the same gender may have the same overall dimensions but different mounting dimensions and/or different interface dimensions.

3.7
interface dimensions
set of dimensions required to fully describe the connector's mating interface, belonging to both the connector insert and to the relevant electric contacts

Note 1 to entry: Interface dimensions enable the proper functioning of a mated set of connectors according to the relevant detail product specification or manufacturer's detail specification.

Note 2 to entry: Two connectors with same interface dimensions have the same number of contact seats (or positions), whereas they may not show the same number of contacts (ways).

3.8
mounting dimensions
dimensions enabling the mounting of a connector

Note 1 to entry: Examples of mounting dimensions are panel cutout size, size and interaxes of fixing holes or threads.

Note 2 to entry: The geometry of the mounting interface of Printed Circuit Board connectors to the PCB belongs to the mounting dimensions: two Printed Circuit Board connectors of the same gender with the same mounting dimensions share the same pattern and pitch of their contacts.

Note 3 to entry: Two connectors not of the Printed Circuit Board type of the same gender with the same mounting dimensions may have different interface dimensions.

Note 4 to entry: Two connectors of the same gender with the same mounting dimensions may have different overall dimensions.

3.9
electrical wiring-related dimensions
dimensions related to the wiring of the connector, i.e. to its number and type of contacts (ways)

Note 1 to entry: Two connectors of the same gender with the same electrical wiring-related dimensions have the same number of contacts (ways) or contact positions (seats), the same dimensions of these contacts or contact positions, the same overall dimensions, the same interface dimensions, and if they are Printed Circuit Board connectors, the same mounting dimensions.

3.10
electrical, mechanical and climatic performances
levels of electrical, mechanical and climatic performance assigned to a connector in the relevant detail product specification or manufacturer's detail specification, therein verified through dedicated groups of tests

Note 1 to entry: The electrical performance includes signal integrity.

4 Common features and typical connector pair

4.1 View showing typical fixed and free connectors (see Figure 2)

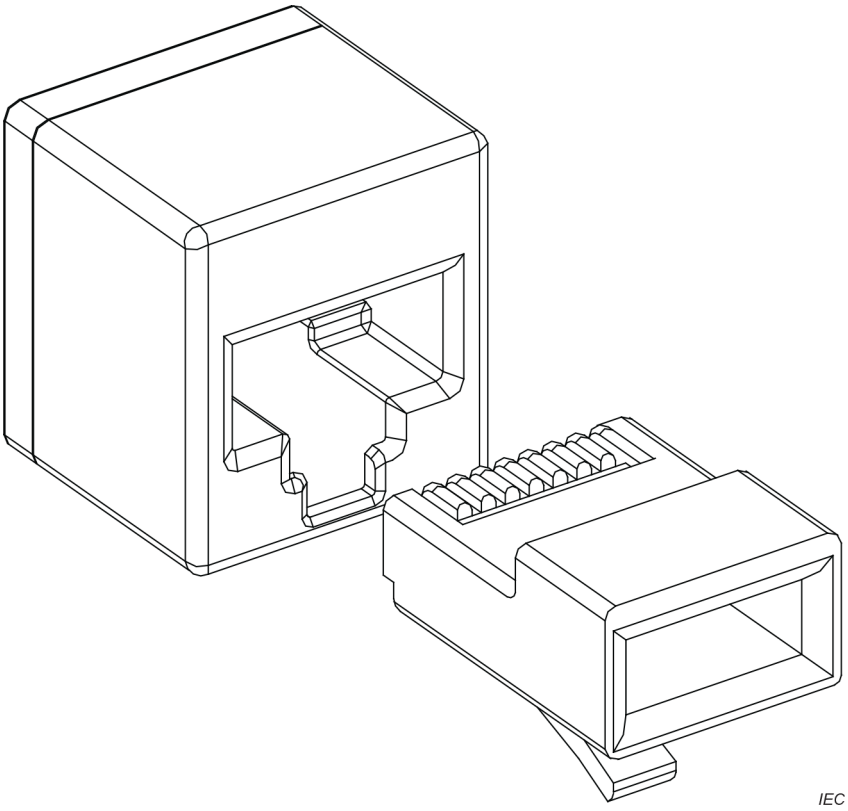

Figure 2 – View showing typical fixed and free connectors

4.2 Mating information

4.2.1 General

Dimensions are given in millimetres. Drawings are shown in third-angle projection. The shape of connectors may deviate from those given in Figure 2 to Figure 5 as long as the dimensions specified are not changed. Table 1 through Table 3 list the dimensions for the connectors in Figure 2 through Figure 5.