

**Connectors for electronic equipment Part 7-7: Detail specification for 8-way, shielded, free and fixed connectors for data transmission with frequencies up to 600 MHz**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60603-7-7:2010 sisaldab Euroopa standardi EN 60603-7-7:2010 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 31.10.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 17.09.2010.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 60603-7-7:2010 consists of the English text of the European standard EN 60603-7-7:2010.

This standard is ratified with the order of Estonian Centre for Standardisation dated 31.10.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 17.09.2010.

The standard is available from Estonian standardisation organisation.

ICS 31.220.10

### Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

### Right to reproduce and distribute belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:  
Aru str 10 Tallinn 10317 Estonia; [www.evs.ee](http://www.evs.ee); Phone: 605 5050; E-mail: [info@evs.ee](mailto:info@evs.ee)

English version

**Connectors for electronic equipment -  
Part 7-7: Detail specification for 8-way, shielded, free and fixed connectors  
for data transmission with frequencies up to 600 MHz  
(IEC 60603-7-7:2010)**

Connecteurs pour équipements  
électroniques -  
Partie 7-7: Spécification particulière  
pour les fiches et les embases blindées  
à 8 voies pour la transmission de données  
à des fréquences jusqu'à 600 MHz  
(CEI 60603-7-7:2010)

Steckverbinder für elektronische  
Einrichtungen -  
Teil 7-7: Bauartspezifikation  
für geschirmte freie und feste  
Steckverbinder, 8-polig,  
für Datenübertragungen bis 600 MHz  
(IEC 60603-7-7:2010)

This European Standard was approved by CENELEC on 2010-09-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 48B/2152/FDIS, future edition 3 of IEC 60603-7-7, prepared by SC 48B, Connectors, of IEC TC 48, Electromechanical components and mechanical structures for electronic equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60603-7-7 on 2010-09-01.

This European Standard supersedes EN 60603-7-7:2006.

The main technical changes with regard to EN 60603-7-7:2006 are as follows:

- Removal of test methods that are now referenced to EN 60512-26-100.
- Addition of TCL and TCTL requirements.
- Removal of the electrical, mechanical, dimensional, environmental conditioning tests by reference to EN 60603-7.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2011-06-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2013-09-01

Annex ZA has been added by CENELEC.

---

### Endorsement notice

The text of the International Standard IEC 60603-7-7:2010 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

- |                       |      |  |
|-----------------------|------|--|
| IEC 60512-26-100:2008 | NOTE | Harmonized as EN 60512-26-100:2008 (not modified). |
| IEC 60603-7-51        | NOTE | Harmonized as EN 60603-7-51.                       |
-

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60512-1-100	-	Connectors for electronic equipment - Tests and measurements - Part 1-100: General - Applicable publications	EN 60512-1-100	-
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	EN 60512-2-1	-
IEC 60512-25-9	-	Connectors for electronic equipment - Tests and measurements - Part 25-9: Signal integrity tests - Test 25i: Alien crosstalk	EN 60512-25-9	-
IEC 60512-27-100	201X <sup>1)</sup>	Connectors for electronic equipment - Tests and measurements - Part 27-100: Signal integrity tests up to 500 MHz on IEC 60603-7 series connectors - Tests 27a to 27g	EN 60512-27-100	201X <sup>2)</sup>
IEC 60603-7	2008	Connectors for electronic equipment - Part 7: Detail specification for 8-way, unshielded, free and fixed connectors	EN 60603-7	2009
IEC 60603-7-1	2009	Connectors for electronic equipment - Part 7-1: Detail specification for 8-way, shielded, free and fixed connectors	EN 60603-7-1	2009
IEC 60603-7-71	2010	Connectors for electronic equipment - Part 7-71: Detail specification for 8-way, shielded, free and fixed connectors, for data transmission with frequencies up to 1000 MHz	EN 60603-7-71	201X <sup>3)</sup>
IEC 61156	Series	Multicore and symmetrical pair/quad cables for digital communications	-	-

<sup>1)</sup> To be published

<sup>2)</sup> At draft stage.

<sup>3)</sup> To be ratified.

## CONTENTS

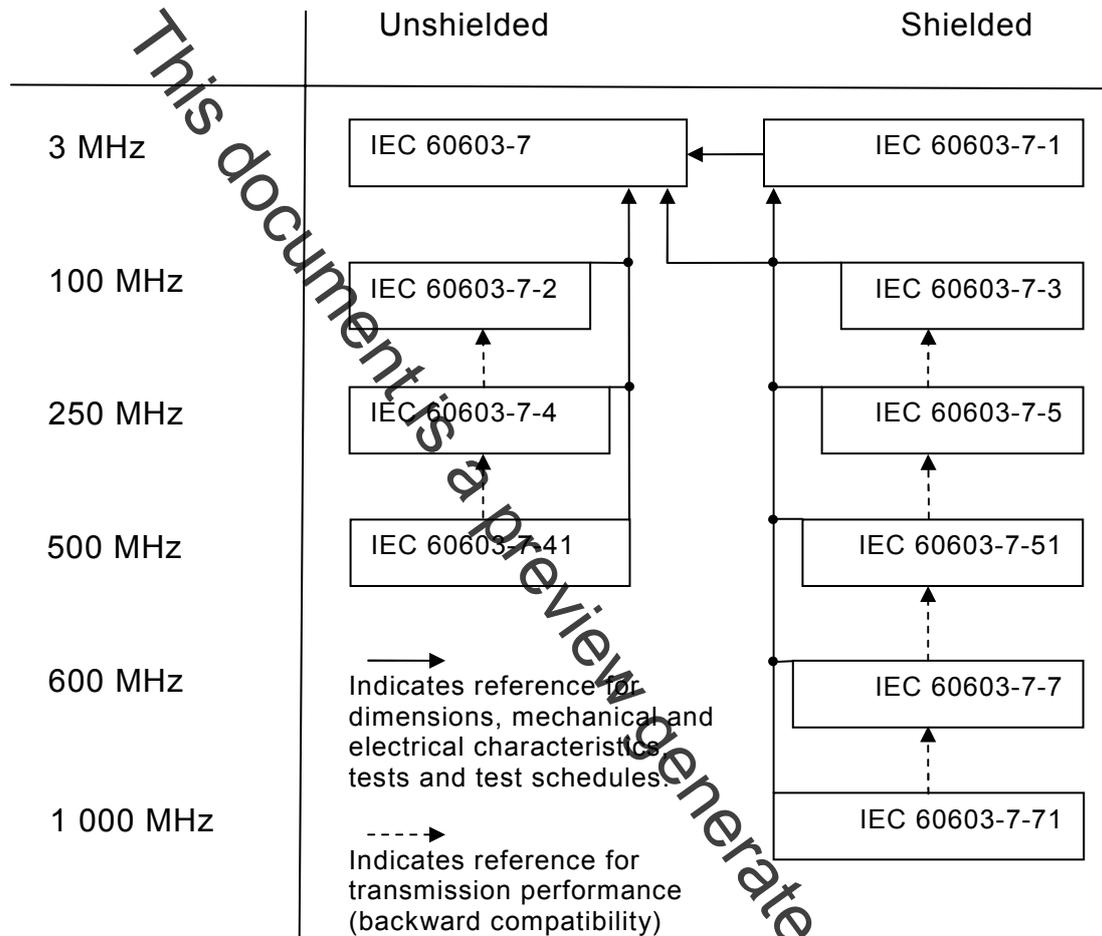
FOREWORD.....	4
INTRODUCTION.....	6
1 General.....	7
1.1 Scope.....	7
1.2 Normative references.....	7
2 Terms and definitions.....	8
3 Common features and isometric view.....	8
3.1 General.....	8
3.2 Isometric view.....	9
3.3 Common features.....	9
3.4 Engagement (mating) information.....	9
3.5 Fixed connectors.....	10
3.6 Free connectors.....	12
4 Cable terminations and internal connections.....	14
4.1 General.....	14
4.1.1 Complete connectors (pairs).....	14
4.1.2 Switch function.....	15
4.2 Termination types.....	15
5 Gauges.....	15
5.1 Fixed connectors.....	15
5.2 Free connectors.....	18
6 Characteristics.....	20
6.1 General.....	20
6.2 Pin and pair grouping assignment.....	21
6.3 Climatic category.....	22
6.4 Electrical characteristics.....	22
6.5 Transmission characteristics.....	22
6.5.1 General.....	22
6.5.2 Insertion loss.....	23
6.5.3 Return loss.....	23
6.5.4 Propagation delay.....	23
6.5.5 Delay skew.....	23
6.5.6 NEXT.....	23
6.5.7 Power sum NEXT (for information only).....	24
6.5.8 FEXT.....	24
6.5.9 Power sum FEXT (for information only).....	24
6.5.10 Transverse conversion loss.....	24
6.5.11 Transverse conversion transfer loss.....	24
6.6 Mechanical characteristics.....	25
6.6.1 Mechanical operation.....	25
6.6.2 Effectiveness of connector coupling devices.....	25
6.6.3 Insertion and withdrawal forces.....	25
7 Tests and test schedule.....	25
7.1 General.....	25
7.2 Arrangement for contact resistance test:.....	25
7.3 Arrangement for vibration test.....	25

7.4	Test procedures and measuring methods .....	25
7.5	Preconditioning .....	25
7.6	Wiring and mounting of specimens .....	25
7.6.1	Wiring .....	25
7.6.2	Mounting .....	25
7.7	Test schedules .....	25
7.7.1	Basic (minimum) test schedule .....	25
7.7.2	Full test schedule .....	26
	Bibliography.....	28
Figure 1	– Isometric view, example of fixed and free connector, free connector shown with both switch positions .....	9
Figure 2	– Contact interface dimensions with terminated free connector .....	10
Figure 3	– Physical interface, fixed connector, front view .....	11
Figure 4	– Physical interface, fixed connector, side view.....	11
Figure 5	– Physical interface, free connector .....	13
Figure 6	– Fixed connector additional go gauge .....	16
Figure 7	– Fixed connector additional no-go gauges .....	17
Figure 8	– Free connector additional no-go gauges.....	19
Figure 9	– Free connector additional go gauges.....	20
Figure 10	– Fixed connector pin and pair grouping assignment (front view of connector) .....	21
Figure 11	– Basic switch function (Note: colours stated are an example of colours which may be used) .....	21
Figure 12	– Additional switch function (Note: colours stated are an example of colours which may be used) .....	22
Table 1	– Physical interface, contacts interface .....	10
Table 2	– Fixed connector common dimensions .....	12
Table 3	– Common dimensions – free connector .....	14
Table 4	– Fixed connector, additional, gauge dimensions .....	18
Table 5	– Free connector additional gauges dimensions .....	20
Table 6	– Test group EP .....	26

This document is a preview generated by EVS

## 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 specification regarding a component of a higher number document all lower numbered documents shall be considered as well. The following diagram shows the interrelation of the documents:



## CONNECTORS FOR ELECTRONIC EQUIPMENT –

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

#### 1 General

##### 1.1 Scope

This part of IEC 60603 covers 8-way, shielded, free and fixed connectors, references dimensional, mechanical, electrical and environmental characteristics and tests in IEC 60603-7 and IEC 60603-7-1, and specifies 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 ISO/IEC 11801.

These connectors are interchangeable and interoperable with other IEC 60603-7 series connectors as defined in Clause 2 of IEC 60603-7-1,

##### 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 60512-1-100: *Connectors for electronic equipment – 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 60512-25-9, *Connectors for electrical equipment – Tests and measurements – Part 25-9: Signal integrity tests – Test 25i: Alien crosstalk*

IEC 60512-27-100, *Connectors for electronic equipment – Tests and measurements – Part 27-100: Signal integrity tests up to 500 MHz on IEC 60603-7 series connectors – Tests 27a to 27g<sup>1</sup>*

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

IEC 60603-7-1:2009, *Connectors for electronic equipment – Part 7: Detail specification for 8-way, shielded, free and fixed connectors*

IEC 60603-7-71, *Connectors for electronic equipment – Part 7-51: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 1 000 MHz<sup>2</sup>*

IEC 61156 (all parts): *Multi-core and symmetrical pair/quad cables for digital communications*

<sup>1</sup> To be published.

<sup>2</sup> To be published.