



**NSAI**  
Standards

Irish Standard  
I.S. EN 60603-7-7:2010

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 (EQV))

## I.S. EN 60603-7-7:2010

*Incorporating amendments/corrigenda issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

|   |  |   |
|---|--|---|
| <i>This document replaces:</i><br>EN 60603-7-7:2006   | <i>This document is based on:</i><br>EN 60603-7-7:2010<br>EN 60603-7-7:2006    | <i>Published:</i><br>17 September, 2010<br>26 July, 2006                  |
| This document was published under the authority of the NSAI and comes into effect on:<br>28 September, 2010 |  | ICS number:<br>31.220.10  |
| <b>NSAI</b><br>1 Swift Square,<br>Northwood, Santry<br>Dublin 9   | T +353 1 807 3800<br>F +353 1 807 3838<br>E standards@nsai.ie<br><br>W NSAI.ie | <b>Sales:</b><br>T +353 1 857 6730<br>F +353 1 857 6729<br>W standards.ie |
| Údarás um Chaighdeáin Náisiúnta na hÉireann   |  |   |

EUROPEAN STANDARD

**EN 60603-7-7**

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2010

ICS 31.220.10

Supersedes EN 60603-7-7:2006

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.

*This page is intentionally left BLANK.*

## 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 |



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

### 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**

#### 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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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 third edition of IEC 60603-7-7 cancels and replaces the second edition issued in 2006, and constitutes a technical revision.

The main technical changes with regard to the previous edition are as follows:

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

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

| FDIS          | Report on voting |
|---------------|------------------|
| 48B/2152/FDIS | 48B/2187/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.

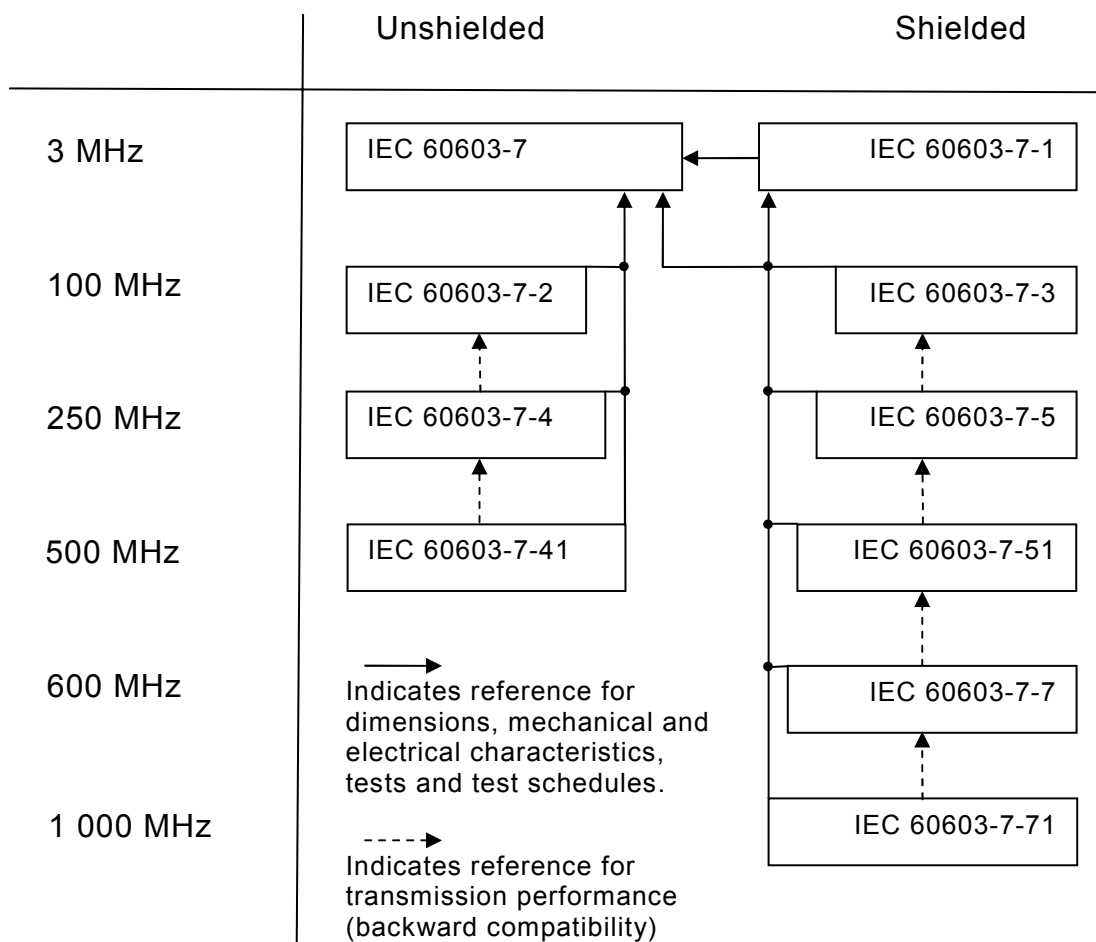
A list of all parts of IEC 60603 series, under the general title *Connectors for electronic equipment*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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.

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 intermateable 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.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-