IEC 60603-7-41

Edition 1.0 2010-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Connectors for electronic equipment – Part 7-41: Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 500 MHz

Connecteurs pour équipements électroniques – Partie 7-41: Spécification particulière pour les fiches et les embases non blindées à 8 voies pour la transmission de données à des fréquences jusqu'à 500 MHz

IEC 60603-7-41:2010

Documents
Document Sharing Hub

Full document details: IEC 60603-7-41 2010

THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2010 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.
If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.
Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

- Catalogue of IEC publications: www.iec.ch/searchpub
The IEC on-line Catalogue enables you to search by a variety of criteria (reference number, text, technical committee,…). It also gives information on projects, withdrawn and replaced publications.
- IEC Just Published: www.iec.ch/online_news/justpub
Stay up to date on all new IEC publications. Just Published details twice a month all new publications released. Available on-line and also by email.
- Electropedia: www.electropedia.org
The world's leading online dictionary of electronic and electrical terms containing more than 20 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary online.
- Customer Service Centre: www.iec.ch/webstore/custserv
If you wish to give us your feedback on this publication or need further assistance, please visit the Customer Service Centre FAQ or contact us:
Email: csc@iec.ch
Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

- Catalogue des publications de la CEI: www.iec.ch/searchpub/cur_fut-f.htm
Le Catalogue en-ligne de la CEI vous permet d'effectuer des recherches en utilisant différents critères (numéro de référence, texte, comité d'études,…). Il donne aussi des informations sur les projets et les publications retirées ou remplacées.
- Just Published CEI: www.iec.ch/online_news/justpub
Restez informé sur les nouvelles publications de la CEI. Just Published détaille deux fois par mois les nouvelles publications parues. Disponible en-ligne et aussi par email.
- Electropedia: www.electropedia.org
Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International en ligne.
- Service Clients: www.iec.ch/webstore/custserv/custserv_entry-f.htm
Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions, visitez le FAQ du Service clients ou contactez-nous:
Email: csc@iec.ch
Tél.: +41 22 919 02 11
Fax: +41 22 919 03 00

Documents
Document Sharing Hub

Full document details: IEC 60603-7-41 2010

IEC 60603-7-41

Edition 1.0 2010-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Connectors for electronic equipment – Part 7-41: Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 500 MHz

Connecteurs pour équipements électroniques – Partie 7-41: Spécification particulière pour les fiches et les embases non blindées à 8 voies pour la transmission de données à des fréquences jusqu'à 500 MHz

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX N

ICS 31.220.10

ISBN 978-2-88910-233-4

® Registered trademark of the International Electrotechnical Commission
Marque déposée de la Commission Electrotechnique Internationale

Documents
Document Sharing Hub

Full document details: IEC 60603-7-41 2010

CONTENTS

FOREWORD 4
INTRODUCTION 6
1 General 7
1.1 Scope 7
1.2 Normative references 7
2 Terms and definitions 7
3 Common features and isometric view 8
4 Cable terminations and internal connections – Fixed and free connectors 8
5 Gauges 8
6 Characteristics 8
6.1 General 8
6.2 Pin and pair grouping assignment. 8
6.3 Classification into climatic category 8
6.4 Electrical characteristics 8
6.5 Transmission characteristics 8
6.5.1 General 8
6.5.2 Insertion loss 9
6.5.3 Return loss 9
6.5.4 Propagation delay 9
6.5.5 Delay skew 9
6.5.6 NEXT loss 9
6.5.7 Power sum NEXT loss (for information only) 9
6.5.8 FEXT Loss 10
6.5.9 Power sum FEXT loss (for information only) 10
6.5.10 Transverse conversion loss 10
6.5.11 Transverse conversion transfer loss 10
6.5.12 Power Sum Alien (Exogenous) NEXT 10
6.5.13 Power Sum Alien (Exogenous) FEXT 11
6.6 Mechanical 11
7 Tests and test schedule 11
7.1 General 11
7.2 Arrangement for contact resistance test: 11
7.3 Arrangement for vibration test 11
7.4 Test procedures and measuring methods 11
7.5 Preconditioning 11
7.6 Wiring and mounting of specimens 11
7.6.1 Wiring 11
7.6.2 Mounting 12
7.7 Test schedules 12
7.7.1 Basic (minimum) test schedule 12
7.7.2 Full test schedule 12
Bibliography 14

Documents
Document Sharing Hub
Full document details: IEC 60603-7-41 2010

Table 1 – Test Group EP 13

Documents
Document Sharing Hub

Full document details: IEC 60603-7-41 2010

INTERNATIONAL ELECTROTECHNICAL COMMISSION

CONNECTORS FOR ELECTRONIC EQUIPMENT –

Part 7-41: Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 500 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 60603-7-41 has been prepared by subcommittee 48B: Connectors, of IEC technical committee 48: Electromechanical components and mechanical structures for electronic equipment.

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

FDIS	Report on voting
48B/2092/FDIS	48B/2142/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.

Documents
Document Sharing Hub

Full document details: IEC 60603-7-41 2010

A list of all parts of the 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

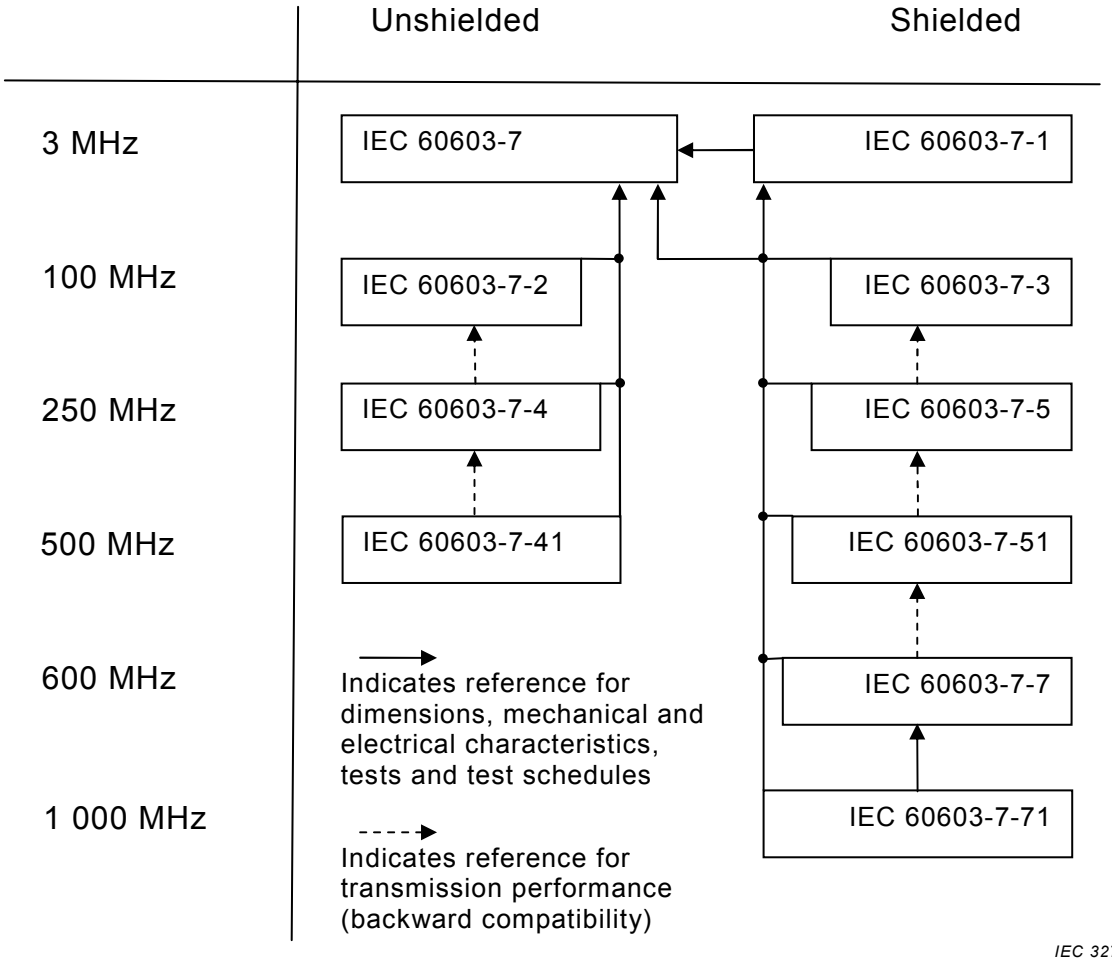
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

Documents
Document Sharing Hub

Full document details: IEC 60603-7-41 2010

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:



Documents
Document Sharing Hub
Full document details: IEC 60603-7-41 2010

CONNECTORS FOR ELECTRONIC EQUIPMENT –

Part 7-41: Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 500 MHz

1 General

1.1 Scope

This part of IEC 60603 covers 8-way, unshielded, free and fixed connectors, references dimensional, mechanical, electrical and environmental characteristics and tests in IEC 60603-7, and specifies electrical transmission requirements, including power sum alien (exogenous) crosstalk, for frequencies up to 500 MHz.

These connectors are typically used as category 6_A connectors in class E_A 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.

These connectors are backward compatible with other IEC 60603-7 series connectors.

NOTE Transmission performance categories: in this IEC standard, the term “category”, when used in reference to transmission performance, refers to those categories defined by ISO/IEC 11801.

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 – Tests and measurements – Part 1-100: General – Applicable publications*

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

IEC 60512-27-100[1], *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*

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

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

2 Terms and definitions

For the purposes of this document, the terms and definitions in IEC 60603-7, Clause 2 apply as well as the following.

[1] To be published.

Documents
Document Sharing Hub

Full document details: IEC 60603-7-41 2010

2.1
backward compatibility
the backward compatibility requirement ensures that a free or fixed connector which is in compliance with this standard, mated with a fixed or free connector in compliance with any lower frequency IEC 60603-7 series connector, fully complies with the requirements of the lower frequency IEC 60603-7 series connector

3 Common features and isometric view

See Clause 3 of IEC 60603-7 for dimensions, views and requirements.

4 Cable terminations and internal connections – Fixed and free connectors

See IEC 60603-7 Clause 4 for cable termination and internal connections types.

5 Gauges

The gauges as defined by Clause 5 of IEC 60603-7 shall apply.

6 Characteristics

6.1 General

Connectors according to IEC 60603-7-41 shall also conform to all relevant requirements specified by IEC 60603-7.

6.2 Pin and pair grouping assignment

The pin and pair grouping assignment of 6.2 of IEC 60603-7 applies.

6.3 Classification into climatic category

Connectors according to IEC 60603-7-41 are classified in the same climatic categories as defined by IEC 60603-7.

6.4 Electrical characteristics

Connectors according to IEC 60603-7-41 shall also conform to the electrical characteristics specified by IEC 60603-7.

6.5 Transmission characteristics

6.5.1 General

Compliance to this standard in respect to transmission characteristics, is determined according to specific test methods described in test group EP, see Table 1. The interoperability of connectors compliant to this standard shall be demonstrated by testing the fixed connectors with the full range of free connectors according to future IEC 60512-27-100, Compliance to this standard in respect to the alien (exogenous) crosstalk is determined according to specific test methods described in IEC 60512-25-9.

All transmission performance requirements apply between the reference planes specified in future IEC 60512-27-100.

NOTE In the following subclauses *f* is the frequency expressed in MHz.

Documents
Document Sharing Hub

Full document details: IEC 60603-7-41 2010