BS EN 61076-3-110:2016

BSI Standards Publication

Connectors for electronic equipment — Product requirements

Part 3-110: Detail specification for free and fixed connectors for data transmission with frequencies up to 3 000 MHz

bsi.

National foreword

This British Standard is the UK implementation of EN 61076-3-110:2016. It is identical to IEC 61076-3-110:2016. It supersedes BS EN 61076-3-110:2012 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/48, Electromechanical components and mechanical structures for electronic equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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EUROPEAN STANDARD

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EN 61076-3-110

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Connectors for electronic equipment - Product requirements - Part 3-110: Detail specification for free and fixed connectors for data transmission with frequencies up to 3 000 MHz (IEC 61076-3-110:2016)

Connecteurs pour équipements électroniques - Exigences de produit - Partie 3-110: Spécification particulière pour les fiches et les embases pour la transmission de données à des fréquences jusqu'à 3 000 MHz (IEC 61076-3-110:2016)

Steckverbinder für elektronische Einrichtungen - Produktanforderungen - Teil 3-110: Bauartspezifikation für freie und feste Steckverbinder für Datenübertragungen bis 3 000 MHz (IEC 61076-3-110:2016)

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

The text of document 48B/2496/FDIS, future edition 3 of IEC 61076-3-110, prepared by SC 48B “Electrical connectors” of IEC/TC 48 “Electrical connectors and mechanical structures for electrical and electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61076-3-110:2016.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2017-07-04
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2019-10-04

This document supersedes EN 61076-3-110:2012.

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

Endorsement notice

The text of the International Standard IEC 61076-3-110:2016 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 60068-2-38	NOTE	Harmonized as EN 60068-2-38.
IEC 60603-7-81:2015	NOTE	Harmonized as EN 60603-7-81:2016 (not modified).
IEC 61076 Series	NOTE	Harmonized as EN 61076 Series.
IEC 61076-3:2008	NOTE	Harmonized as EN 61076-3:2008 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

Publication	Year	Title	EN/HD	Year
IEC 60068-1	-	Environmental testing - Part 1: General and guidance	EN 60068-1	-
IEC 60512	Series	Connectors for electronic equipment - Tests and measurements	EN 60512	Series
IEC 60512-1	-	Connectors for electronic equipment - Tests and measurements - Part 1: General	EN 60512-1	-
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 60512-28-100	-	Connectors for electronic equipment - Tests and measurements - Part 28-100: Signal integrity tests up to 1 000 MHz on IEC 60603-7 and IEC 61076-3 series connectors - Tests 28a to 28g	EN 60512-28-100	-
IEC 60603-7	-	Connectors for electronic equipment - Part 7: Detail specification for 8-way, unshielded, free and fixed connectors	EN 60603-7	-
IEC 60603-7-1	-	Connectors for electronic equipment - Part 7-1: Detail specification for 8-way, shielded, free and fixed connectors	EN 60603-7-1	-
IEC 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	EN 60603-7-7	2010
IEC 60603-7-71	-	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	-

Publication	Year	Title	EN/HD	Year
IEC 60603-7-82	2016	Connectors for electronic equipment - Part 7-82: Detail specification for 8-way, 12 contacts, shielded, free and fixed connectors, for data transmission with frequencies up to 2 000 MHz	EN 60603-7-82	201X [1)]
IEC 61076-1	-	Connectors for electronic equipment - Product requirements - Part 1: Generic specification	EN 61076-1	-
IEC 62153-4-15	2015	Metallic communication cable test methods - - Part 4-15: Electromagnetic compatibility (EMC) - Test method for measuring transfer impedance and screening attenuation - or coupling attenuation with triaxial cell	-	-

[1)] To be published.

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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CONNECTORS FOR ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 3-110: Detail specification for free and fixed connectors for data transmission with frequencies up to 3 000 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.
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International Standard IEC 61076-3-110 has been prepared by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment.

This third edition cancels and replaces the second edition published in 2012. This edition constitutes a technical revision.

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

- IEC 61076-3-110 series connectors have been updated to support intermateability with IEC 60603-7-82 (up to 2 000 MHz) connectors, in addition to IEC 60603-7-71 (up to 1 000 MHz) connectors and IEC 60603-7-7 (up to 600 MHz) connectors for prior editions;
- the specifications cover electrical transmission requirements for frequencies up to 3 000 MHz.

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

FDIS	Report on voting
48B/2496/FDIS	48B/2509/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 61076 series, under the general title *Connectors for electronic equipment – Product requirements*, 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 website 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

This detail specification describes connectors according to the IEC 61076-3 series connector requirements.

This detail specification describes connectors that are similar to, intermateable with, and intended to be used with IEC 60603-7 series connectors.

The IEC 61076-3-110 series connectors include alternative arrangements of additional contacts and features, which extend the functionality of the IEC 60603-7 series connectors.

This detail specification covers electrical transmission requirements for frequencies up to 3 000 MHz.

This detail specification describes connectors that support unshielded and three types of shielded cables used with separated pairs of contacts: individual pair unshielded, with or without an overall shield; and individual pair shielded, with or without an overall shield.

The IEC 60603-7 series connectors are typically used in ISO/IEC 11801 balanced cabling systems. The ISO/IEC 11801 balanced cabling systems are organized by categories according to frequency range and by basic cabling types according to shielding configurations.

Typically a IEC 61076-3-110 free connector, using the alternative four separated pairs' contacts, is mated with the IEC 60603-7-7, IEC 60603-7-71, or IEC 60603-7-82 fixed connectors operating in their higher-frequency mode.

The complete requirements for the connectors described herein are comprised by this detail specification and the current editions of IEC 61076-3 and IEC 60603-7 series, particularly IEC 60603-7-1, IEC 60603-7-7, IEC 60603-7-71, and IEC 60603-7-82, which are referenced herein accordingly.

CONNECTORS FOR ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 3-110: Detail specification for free and fixed connectors for data transmission with frequencies up to 3 000 MHz

1 Scope

This part of IEC 61076 is a detail specification for two-part rectangular connectors.

This detail specification covers mechanical, electrical and environmental requirements and electrical transmission requirements for frequencies up to 3 000 MHz.These connector's transmission requirements are specifically intended for specific pairs of contacts, which are separated from the other pairs of contacts, such as by means of individual pair shields within the connector.

These connectors are similar to, intermateable with, and intended to be used with the IEC 60603-7 series connectors.

The IEC 60603-7 series connectors are typically used in ISO/IEC 11801 balanced cabling systems. The ISO/IEC 11801 balanced cabling systems are organized by categories according to frequency range and by basic cabling component types, e.g. according to shielding configurations.

A primary common feature among the IEC 60603-7 series connectors is backward compatibility to lower frequency categories. The IEC 61076-3-110 series connectors are backward compatible with IEC 60603-7-7, IEC 60603-7-71 and IEC 60603-7-82 connectors. The IEC 61076-3-110 series connectors are not backward compatible with some IEC 60603-7 series connectors.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

IEC 60512 (all parts), *Connectors for electronic equipment – Tests and measurements*

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

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

IEC 60512-28-100, *Connectors for electronic equipment – Tests and measurements – Part 28-100: Signal integrity tests up to 1 000 MHz on IEC 60603-7 and IEC 61076-3 series connectors – Tests 28a to 28g*[1]

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

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

IEC 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 60603-7-71, *Connectors for electronic equipment – Part 7-71: Detail specification for 8-way, shielded, free and fixed connectors for data transmission with frequencies up to 1 000 MHz*

IEC 60603-7-82:—, *Connectors for electronic equipment – Part 7-82: Detail specification for 8-way, 12 contacts, shielded, free and fixed connectors, for data transmission with frequencies up to 2 000 MHz*[2]

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

IEC 62153-4-15:2015, *Metallic communication cable test methods – Part 4-15: Electromagnetic compatibility (EMC) – Test method for measuring transfer impedance and screening attenuation – or coupling attenuation with triaxial cell*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in 2.1 of IEC 61076-1:2006, some terms and definitions from IEC 60512-1, and the following apply.

3.1
backward compatibility
set of requirements which ensure that a free or fixed connector which is in compliance with this standard, when mated with a fixed or free connector in compliance with a lower frequency IEC 60603-7 series connector, fully complies with the transmission performance requirements of the lower frequency IEC 60603-7 series connector.

Note 1 to entry: These IEC 61076-3-110 series connectors are backward compatible with IEC 60603-7-7, IEC 60603-7-71 and IEC 60603-7-82 connectors, and other IEC 60603-7 series connectors.

Note 2 to entry: The complete specification of the categories and the backward compatibility system for the IEC 60603-7 series connectors, when used in standard balanced cabling systems, is specified in referenced ISO/IEC 11801.

[SOURCE: IEC 60603-7-81:2015, 3.1, modified – The definition has been updated, Note 1 to entry has been modified and is now Note 2, a new Note 1 has been added and the additional reference to Clause 3 of IEC 60603-7-1:2011 has been deleted.]

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1 The tests include frequencies up to 2 000 MHz.

2 To be published. Currently at FDIS stage. Is likely to be published at the same time as this document.

3.2
crosstalk loss
near-end-crosstalk (NEXT) and far-end-crosstalk (FEXT), commonly referred to as crosstalk loss, are the specific transmission characteristics associated with the reverse and forward crosstalk coupling attenuation between two pairs

4 Common features and isometric view

4.1 General

The IEC 61076-3-110 series connectors include alternative arrangements of additional contacts and features, which extend the functionality of the IEC 60603-7 series connectors.

The IEC 61076-3-110 series connectors include up to 12 contacts, including up to 8 contacts (1, 2, 3, 4, 5, 6, 7, 8) that are similar to a standard IEC 60603-7 series connector. In addition, the IEC 61076-3-110 connector includes up to 4 additional contacts (6',3',4',5') located on the side of the connector opposite from the original contacts' positions of a basic IEC 60603-7 series connector (see Figure 3).

Typically a IEC 61076-3-110 free connector using alternative contacts is used in data communication cabling systems with the IEC 60603-7-7, IEC 60603-7-71, and IEC 60603-7-82, fixed connectors.

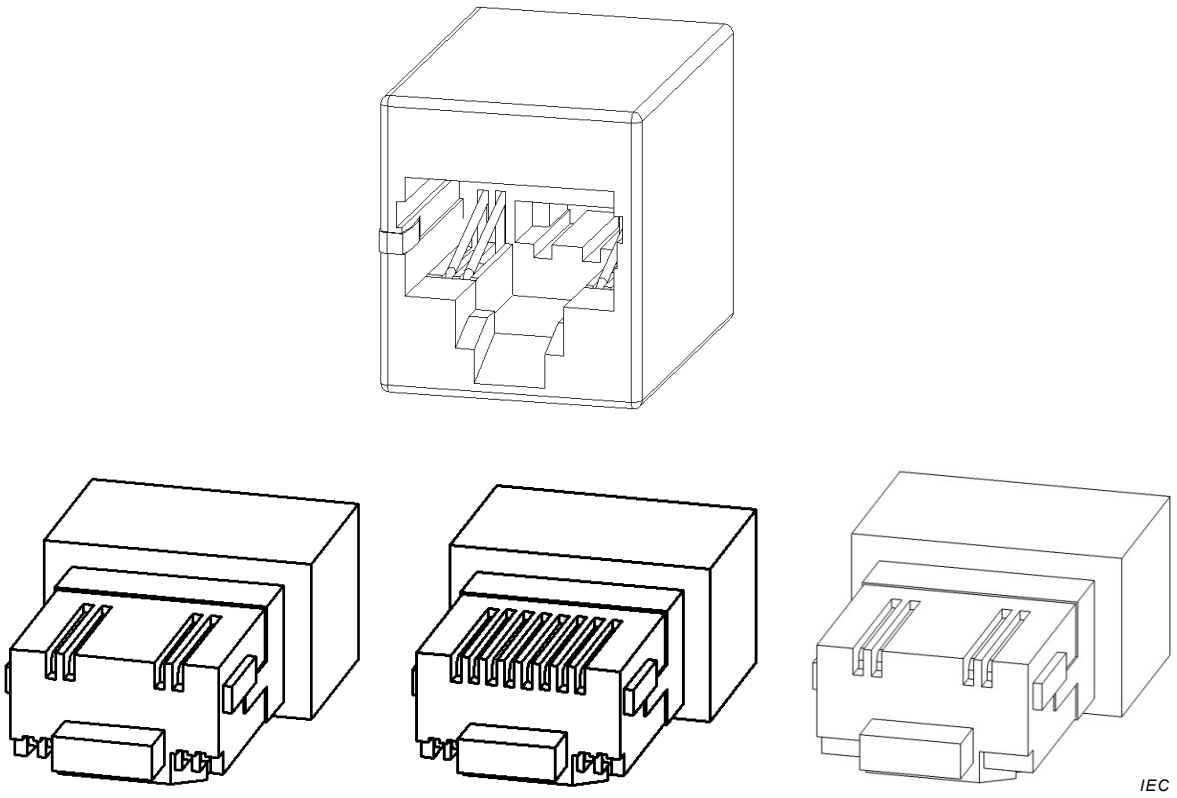

Figure 1 – Isometric view of fixed cable connector and free 4, 6 and 2 pair connectors, examples

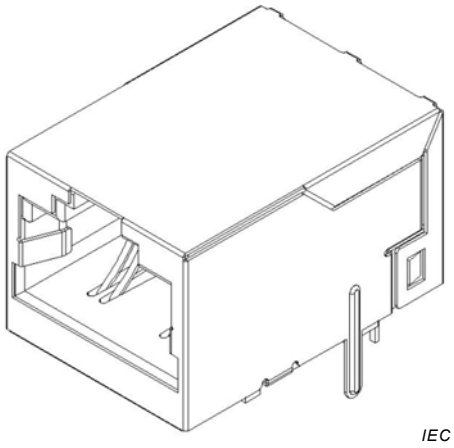

Figure 2 – Isometric view of fixed board connector, example

Fixed and free connectors may include cavities channels and related switch actuator protrusions for engaging features within IEC 60603-7-7, IEC 60603-7-71, and IEC 60603-7-82 connectors (see Figure 1 and Figure 2).

See IEC 60603-7-7 and IEC 60603-7-1 for views, dimensions and requirements.

4.2 Cable terminations and internal connections – Fixed and free connectors

These connectors typically use pin and pair numbering and grouping assignments similar to the IEC 60603-7 series connectors, as shown in Figure 3. The 8-contact type typically uses contact numbers 1, 2, 7, 8, 6', 3', 4', 5'. The 4-contact type may use contact numbers 1, 2, 7, 8. For transmission requirements for the special case when contact numbers 3, 4, 5, 6, are arranged in pair combinations 3-6, 4-5, see other IEC 60603-7 series standards.

The complete specification for the pin and pair numbering and grouping assignments, for the IEC 60603-7 series connectors used in balanced cabling systems is specified in ISO/IEC 11801.

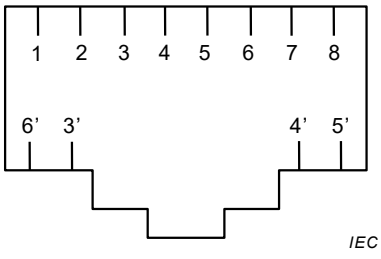

Figure 3 – Fixed connector pin numbering assignments (front view of connector), example

See IEC 60603-7-7 for cable termination and internal connection types.

4.3 Mating information

See IEC 60603-7-7 and IEC 60603-7-1 for views, dimensions and requirements.

4.4 Mounting information

Fixed and free connector mounting information is not specified and is to be determined by the manufacturer.

5 Gauges

The gauges as defined by IEC 60603-7, IEC 60603-7-7 shall apply.

6 Characteristics

6.1 General

All requirements and test schedules apply to the entire mated connectors unless otherwise specified.

6.2 Classification into climate categories, clearance and creepage distances and current carrying capacity

The relevant requirements of IEC 60603-7-7 and of IEC 60603-7-1 apply.

6.3 Electrical characteristics

Connectors according to IEC 61076-3-110 shall also conform to the electrical characteristics specified by IEC 60603-7-7.

6.4 Transmission characteristics

6.4.1 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 connectors according to IEC 60512-28-100 procedures, unless stated otherwise, for 2 000 MHz, adapted to 3 000 MHz by increasing the upper frequency limit of all measurements of transmission parameters and the same time extending the test parameters using the same formulas as to be used up to 2 000 MHz.

These transmission performance requirements apply to mated connectors.

These transmission performance requirements apply to all separated pairs of contacts. In the case of crosstalk requirements, requirements apply between all combinations of separated pairs of contacts, e.g. 1-2, 7-8, 3'-6', 4'-5', see 4.1.

These transmission performance requirements do not apply to non-separated pairs of contacts, e.g. 3-6, 4-5 according to IEC 60603-7 series connectors.

In the following sub-clauses, the variable f contained in the equations is the frequency expressed in MHz.

6.4.2 Insertion loss (IL)

All pairs: $\leq 0{,}02\ \sqrt{(f)}$ dB, from 1 MHz to 1 000 MHz.

All pairs: $\leq 0{,}02\ \sqrt{(f)} + 0{,}0005\ (f - 1\,000)$ dB, from 1 000 MHz to 3 000 MHz

Whenever the formula results in a value less than 0,1 dB, the requirement shall revert to 0,1 dB.

6.4.3 Return loss (RL)

All pairs: $\geq 72 - 20\ \log_{10}(f)$ dB, from 1 MHz to 3 000 MHz

Whenever the formula results in a value less than 12 dB, the requirement shall revert to 12 dB.

Whenever the requirement results in a value greater than 30 dB, the requirement shall revert to 30 dB.

6.4.4 Propagation delay

All pairs: ≤2,5 ns, from 1 MHz to 3 000 MHz.

Propagation delay test needs not to be performed. It is assumed that connectors comply by design.

6.4.5 Delay skew

All pairs: ≤1,25 ns, from 1 MHz to 3 000 MHz.

Delay skew test needs not to be performed. It is assumed that connectors comply by design.

6.4.6 Near-end crosstalk (NEXT)

All pair combinations: ≥ 117,4 – 20 $\log_{10}(f)$ dB, from 1 MHz to 3 000 MHz

Whenever the formula results in a value greater than 80 dB, the requirement shall revert to 80 dB.

6.4.7 Power sum NEXT (PSNEXT) (for information only)

All pair combinations: ≥114,4 – 20 $\log_{10}(f)$ dB, from 1 MHz to 3 000 MHz.

This characteristic is achieved by compliance to PP NEXT (6.4.6) and there is no necessity to test it.

6.4.8 Far-end crosstalk (FEXT)

All pair combinations: ≥105 – 20 $\log_{10}(f)$ dB, from 1 MHz to 3 000 MHz

Whenever the formula results in a value greater than 80 dB, the requirement shall revert to 80 dB.

6.4.9 Power sum FEXT (PSFEXT) (for information only)

All pair combinations: ≥102 – 20 $\log_{10}(f)$ dB, from 1 MHz to 3 000 MHz.

This characteristic is achieved by compliance to PP FEXT (6.4.8) and there is no necessity to test it.

6.4.10 Transverse conversion loss (TCL)

All pairs: ≥74 – 20 $\log_{10}(f)$ dB, from 1 MHz to 3 000 MHz.

Whenever the formula results in a value greater than 40 dB, the requirement shall revert to 40 dB.

6.4.11 Transverse conversion transfer loss (TCTL)

All pairs: ≥78 – 20 $\log_{10}(f)$ dB, from 1 MHz to 3 000 MHz.

Whenever the formula results in a value greater than 40 dB, the requirement shall revert to 40 dB.

6.4.12 Power sum alien (exogenous) NEXT (PSANEXT)

All pair combinations: $\geq 135{,}5 - 20 \log_{10}(f)$ dB, from 1 MHz to 3 000 MHz.

Whenever the formula results in a value greater than 84 dB, the requirement shall revert to 84 dB.

The PS ANEXT and PS AFEXT requirements are fulfilled when the coupling attenuation is verified, and it is 25 dB better than the PS ANEXT and the PS AFEXT minimum requirements.

6.4.13 Power sum alien (exogenous) FEXT (PSAFEXT)

All pair combinations: $\geq 128{,}8 - 20 \log_{10}(f)$ dB, from 1 MHz to 3 000 MHz.

Whenever the formula results in a value greater than 84 dB, the requirement shall revert to 84 dB.

The PS ANEXT and PS AFEXT requirements are fulfilled when the coupling attenuation is verified and it is 25 dB better than the PS ANEXT and the PS AFEXT minimum requirements.

6.4.14 Coupling attenuation

IEC 62153-4-15 coupling attenuation with triaxial cell.

All pairs: $\geq 85 - 20 \log_{10}(f)$ dB, from 30 MHz to 3 000 MHz.

Whenever the formula results in a value greater than 85 dB, the requirement shall revert to 85 dB.

The coupling attenuation requirement is assumed to be fulfilled when the transfer impedance and unbalance attenuation (transverse conversion loss and transverse conversion transfer loss) requirements are met on the full bandwidth.

6.5 Mechanical characteristics

See 6.6 of IEC 60603-7-7:2010 for mechanical characteristic requirements.

7 Test schedule

7.1 General

This test schedule shows the tests and the order in which they shall be carried out, as well as the requirements to be met.

Unless otherwise specified, all tests shall be carried out under standard atmospheric conditions for testing as specified in IEC 60068-1, as directed by the applicable part of IEC 60512.

See Clause 7 of IEC 60603-7-7:2010 for test schedules and requirements for test groups AP, BP, CP, DP, FP and GP.

7.2 Test schedule

7.2.1 Test group EP

All specimens shall be subjected to the following tests (see Table 1).

Table 1 – Test group EP

Test phase	Test			Measurement to be performed		
	Title	IEC 60512 Test No.	Severity or condition of test	Title	IEC standard	Requirements
EP1			All pairs	Insertion loss	60512-28-100	Per 6.4.2
EP2			All pairs, both directions (pair to pair)	NEXT loss	60512-28-100	Per 6.4.6
EP3			All pairs, both directions	Return loss	60512-28-100	Per 6.4.3
EP4			All pairs, both directions (pair to pair)	FEXT loss	60512-28-100	Per 6.4.8
EP5			All pairs, both directions	Transverse conversion loss	60512-28-100	Per 6.4.10
EP6			All pairs, both directions	Transverse conversion transfer loss	60512-28-100	Per 6.4.11
EP7			All pairs together	Coupling attenuation	62153-4-15 coupling attenuation with triaxial cell	Per 6.4.14
EP8			Measurement points cable termination to cable termination – as close to the connector housings as possible All input to output conductor paths	Input to output d.c. resistance	60603-7	Per 6.4.5 of IEC 60603-7:2008
EP9			Measurement points cable termination to cable termination – as close to the connector housings as possible All input to output connector paths (conductor path to conductor path)	Input to output d.c. resistance unbalance	60603-7	Per 6.4.6 of IEC 60603-7:2008
EP10			All pairs, both directions	PSANEXT	60512-25-9	Per 6.4.12
EP11			All pairs, both directions	PSAFEXT	60512-25-9	Per 6.4.13
All measurements shall be performed on mated connectors.						

Annex A
(normative)

Gauging requirements

A.1 Fixed connectors

The go gauge specified in Clause 5 shall be capable of being inserted and removed with a force of 8,9 N maximum.

The no-go gauges specified in Clause 5 shall not be capable of entering the fixed connector more than 1,78 mm with an 8,9 N insertion force.

A.2 Free connectors

The connector shall be capable of insertion and latching into the go gauge specified in Clause 5 with a 30 N or less insertion force with the latch bar depressed.

After insertion and latching, the connector shall be capable of removal, with the latch depressed, with a removal force of 30 N or less applied at an advantageous angle.

The free connectors shall not be capable of entering the no-go gauges specified in Clause 5 more than 1,78 mm with an 8,9 N insertion force.

Bibliography

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

IEC 60603-7-81:2015, *Connectors for electronic equipment – Part 7-81: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 2 000 MHz*

IEC 61076-3 (all parts), *Connectors for electronic equipment – Product requirements*

IEC 61076-3:2008, *Connectors for electronic equipment – Product requirements – Part 3: Rectangular connectors – Sectional specification*

ISO/IEC 11801, *Information technology – Generic cabling for customer premises*[3]

ISO/IEC TR 11801-9901, *Information technology – Generic cabling for customer premises – Part 9901: Guidance for balanced cabling in support of at least 40 Gbit/s data transmission*

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3 ISO/IEC 11801-1 to ISO/IEC 11801-6 are under consideration.

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