ICS 31.220.10 SLOVENSKÁ TECHNICKÁ NORMA September 2025

STN	**Konektory pre elektrické a elektronické zariadenia Tienené alebo netienené voľné a pevné konektory pre vyvážený prenos dát jednopárovým vedením s prúdovou kapacitou Všeobecné požiadavky a skúšky**	**STN EN IEC 63171** 35 4621

Connectors for electrical and electronic equipment - Shielded or unshielded free and fixed connectors for balanced single-pair data transmission with current-carrying capacity - General requirements and tests

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/25

Obsahuje: EN IEC 63171:2025, IEC 63171:2025

Oznámením tejto normy sa od 30.06.2028 ruší
STN EN IEC 63171 (35 4621) z júla 2021

obsahuje farebné strany

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 63171

June 2025

ICS 31.220.10

Supersedes EN IEC 63171:2021

English Version

Connectors for electrical and electronic equipment - Shielded or unshielded free and fixed connectors for balanced single-pair data transmission with current-carrying capacity - General requirements and tests (IEC 63171:2025)

Connecteurs pour équipements électriques et électroniques - Fiches et embases écrantées ou non écrantées pour transmission de données sur une seule paire symétrique avec courant admissible - Exigences générales et essais (IEC 63171:2025)

Steckverbinder für elektrische und elektronische Geräte - Geschirmte oder ungeschirmte freie und feste Steckverbinder für symmetrische einpaarige Datenübertragung mit Stromtragfähigkeit - Allgemeine Anforderungen und Prüfungen (IEC 63171:2025)

This European Standard was approved by CENELEC on 2025-05-19. 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.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 63171:2025 E

European foreword

The text of document 48B/3150/FDIS, future edition 2 of IEC 63171, 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 IEC 63171:2025.

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) 2026-06-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2028-06-30

This document supersedes EN IEC 63171:2021 and all of its amendments and corrigenda (if any).

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

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Endorsement notice

The text of the International Standard IEC 63171:2025 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 standard indicated:

IEC 60068-2-61:1991	NOTE	Approved as EN 60068-2-61:1993 (not modified)
IEC 60352 series	NOTE	Approved as EN IEC 60352 series
IEC 60603-7 series	NOTE	Approved as EN 60603-7 series
IEC 61076-2-101	NOTE	Approved as EN IEC 61076-2-101
IEC 61076-2 series	NOTE	Approved as EN IEC 61076-2 series
IEC 61076-2-104	NOTE	Approved as EN 61076-2-104
IEC 61076-3:2008	NOTE	Approved as EN 61076-3:2008 (not modified)
IEC 63171-1	NOTE	Approved as EN IEC 63171-1
IEC 63171-5	NOTE	Approved as EN IEC 63171-5

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60050-581	-	International Electrotechnical Vocabulary - Part 581: Electromechanical components for electronic equipment	-	-
IEC 60068-1	2013	Environmental testing - Part 1: General and guidance	EN 60068-1	2014
IEC 60068-2-38	-	Environmental testing - Part 2-38: Tests - Test Z/AD: Composite temperature/humidity cyclic test	EN IEC 60068-2-38	-
IEC 60512-1	-	Connectors for electrical and electronic equipment - Tests and measurements - Part 1: Generic specification	EN IEC 60512-1	-
IEC 60512-1-1	-	Connectors for electronic equipment - Tests and measurements - Part 1-1: General examination - Test 1a: Visual examination	EN 60512-1-1	-
IEC 60512-1-2	-	Connectors for electronic equipment - Tests and measurements - Part 1-2: General examination - Test 1b: Examination of dimension and mass	EN 60512-1-2	-
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 60512-2-5	-	Connectors for electronic equipment - Tests and measurements - Part 2-5: Electrical continuity and contact resistance tests - Test 2e: Contact disturbance	EN 60512-2-5	-
IEC 60512-3-1	-	Connectors for electronic equipment - Tests and measurements - Part 3-1: Insulation tests - Test 3a: Insulation resistance	EN 60512-3-1	-

EN IEC 63171:2025 (E)

Publication	Year	Title	EN/HD	Year
IEC 60512-4-1	-	Connectors for electronic equipment - Tests and measurements - Part 4-1: Voltage stress tests - Test 4a: Voltage proof	EN 60512-4-1	-
IEC 60512-5-2	-	Connectors for electronic equipment - Tests and measurements - Part 5-2: Current-carrying capacity tests - Test 5b: Current-temperature derating	EN 60512-5-2	-
IEC 60512-6-3	-	Connectors for electronic equipment - Tests and measurements - Part 6-3: Dynamic stress tests - Test 6c: Shock	EN 60512-6-3	-
IEC 60512-6-4	-	Connectors for electronic equipment - Tests and measurements - Part 6-4: Dynamic stress tests - Test 6d: Vibration (sinusoidal)	EN 60512-6-4	-
IEC 60512-9-1	-	Connectors for electronic equipment - Tests and measurements - Part 9-1: Endurance tests - Test 9a: Mechanical operation	EN 60512-9-1	-
IEC 60512-9-2	-	Connectors for electronic equipment - Tests and measurements - Part 9-2: Endurance tests - Test 9b: Electrical load and temperature	EN 60512-9-2	-
IEC 60512-11-1	-	Connectors for electrical and electronic equipment - Tests and measurements - Part 11-1: Climatic tests - Test 11a - Climatic sequence	EN IEC 60512-11-1	-
IEC 60512-11-3	-	Connectors for electronic equipment - Tests and measurements - Part 11-3: Climatic tests - Test 11c: Damp heat, steady state	EN 60512-11-3	-
IEC 60512-11-4	-	Connectors for electronic equipment - Tests and measurements - Part 11-4: Climatic tests - Test 11d: Rapid change of temperature	EN 60512-11-4	-
IEC 60512-11-7	-	Connectors for electronic equipment - Tests and measurements - Part 11-7: Climatic tests - Test 11g: Flowing mixed gas corrosion test	EN 60512-11-7	-
IEC 60512-11-9	-	Connectors for electronic equipment - Tests and measurements - Part 11-9: Climatic tests - Test 11i: Dry heat	EN 60512-11-9	-
IEC 60512-13-2	-	Connectors for electronic equipment - Tests and measurements - Part 13-2: Mechanical operation tests - Test 13b: Insertion and withdrawal forces	EN 60512-13-2	-
IEC 60512-13-5	-	Connectors for electronic equipment - Tests and measurements - Part 13-5: Mechanical operation tests - Test 13e: Polarizing and keying method	EN 60512-13-5	-

Publication	Year	Title	EN/HD	Year
IEC 60512-15-6	-	Connectors for electronic equipment - Tests and measurements - Part 15-6: Connector tests (mechanical) - Test 15f: Effectiveness of connector coupling devices	EN 60512-15-6	-
IEC 60512-15-7	-	Connectors for electronic equipment - Tests and measurements - Part 15-7: Connector tests (mechanical) - Test 15g: Robustness of protective cover attachment	EN 60512-15-7	-
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 60512-26-100	-	Connectors for electronic equipment - Tests and measurements - Part 26-100: Measurement setup, test and reference arrangements and measurements for connectors according to IEC 60603-7 - Tests 26a to 26g	EN 60512-26-100	-
IEC 60512-28-100	-	Connectors for electrical and electronic equipment - Tests and measurements - Part 28-100: Signal integrity tests up to 2 000 MHz - Tests 28a to 28g	EN IEC 60512-28-100	-
IEC 60664-1	-	Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests	EN IEC 60664-1	-
IEC 61156	series	Multicore and symmetrical pair/quad cables for digital communications	-	-
IEC 61984	-	Connectors - Safety requirements and tests	EN 61984	-
IEC 62153-4-9	-	Metallic communication cable test methods - Part 4 - 9: Electromagnetic compatibility (EMC) - Coupling attenuation of screened balanced cables, triaxial method	-	-
IEC 62153-4-15	-	Metallic cables and other passive components test methods - Part 4-15: Electromagnetic compatibility (EMC) - Test method for measuring transfer impedance and screening attenuation - or coupling attenuation with triaxial cell	EN IEC 62153-4-15	-
ISO/IEC 11801-1	-	Information technology - Generic cabling for customer premises - Part 1: General requirements	-	-

IEC 63171

Edition 2.0 2025-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Connectors for electrical and electronic equipment – Shielded or unshielded free and fixed connectors for balanced single-pair data transmission with current-carrying capacity – General requirements and tests

Connecteurs pour équipements électriques et électroniques – Fiches et embases écrantées ou non écrantées pour transmission de données sur une seule paire symétrique avec courant admissible – Exigences générales et essais

IEC 63171:2025-04(en-fr)

IEC 63171

Edition 2.0 2025-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Connectors for electrical and electronic equipment – Shielded or unshielded free and fixed connectors for balanced single-pair data transmission with current-carrying capacity – General requirements and tests

Connecteurs pour équipements électriques et électroniques – Fiches et embases écrantées ou non écrantées pour transmission de données sur une seule paire symétrique avec courant admissible – Exigences générales et essais

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – SHIELDED OR UNSHIELDED FREE AND FIXED CONNECTORS FOR BALANCED SINGLE-PAIR DATA TRANSMISSION WITH CURRENT-CARRYING CAPACITY – GENERAL REQUIREMENTS AND TESTS

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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9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 63171 has been prepared by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment. It is an International Standard.

This second edition cancels and replaces the first edition published in 2021. This edition constitutes a technical revision.

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

a) added requirements related to multipole and combined connectors (that are connectors including multiple data modules of this series, or connectors including one data module and additional signal or power contacts);
b) alignment of transmission requirements with ISO/IEC 11801-1;

c) updating and reorganising of test groups.

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

Draft	Report on voting
48B/3150/FDIS	48B/3157/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

This document, identified as IEC 63171, provides the general requirements and general tests (general specification) of the whole IEC 63171 series, a set of International Standards covering shielded or unshielded free and fixed connectors for balanced single-pair data transmission with current-carrying capacity.

It provides the signal integrity requirements, common to the whole series.

Subsequent parts, identified as IEC 63171 followed by a dash and a progressive number starting with 1, are the product detail specifications of this series; see Annex A, and do not duplicate information given in this document, but list only additional requirements.

Each subsequent part is identified by a type of connector – or a set of connectors – covered with the same number identifying the part. Some parts can describe more connector geometries (rectangular, circular), sharing the core element and the relevant features.

Other requirements, which are necessary to describe e.g., additional power portion – if any – of that connector, can be covered by referencing requirements provided by other relevant documents, e.g.: IEC 61076-2 series, IEC 61076-3, or IEC 61984, as applicable.

For the complete specifications regarding a connector of this series, as well as of other series calling up this document for the signal integrity requirements, both this product general specification and the relevant product detail specification, see Annex A, as well as any other sectional specification or safety requirement document referenced in the relevant subsequent part of this series or in the relevant product detail specification, see Annex A, are therefore required.

For the qualification of a connector of this series, all the requirements according to this general specification and the relevant product detail specification, see Annex A, – including the references made therein, if any, to other sectional specification or other safety-related documents – are met.

Figure 1 shows the interrelation of the standards within this series:

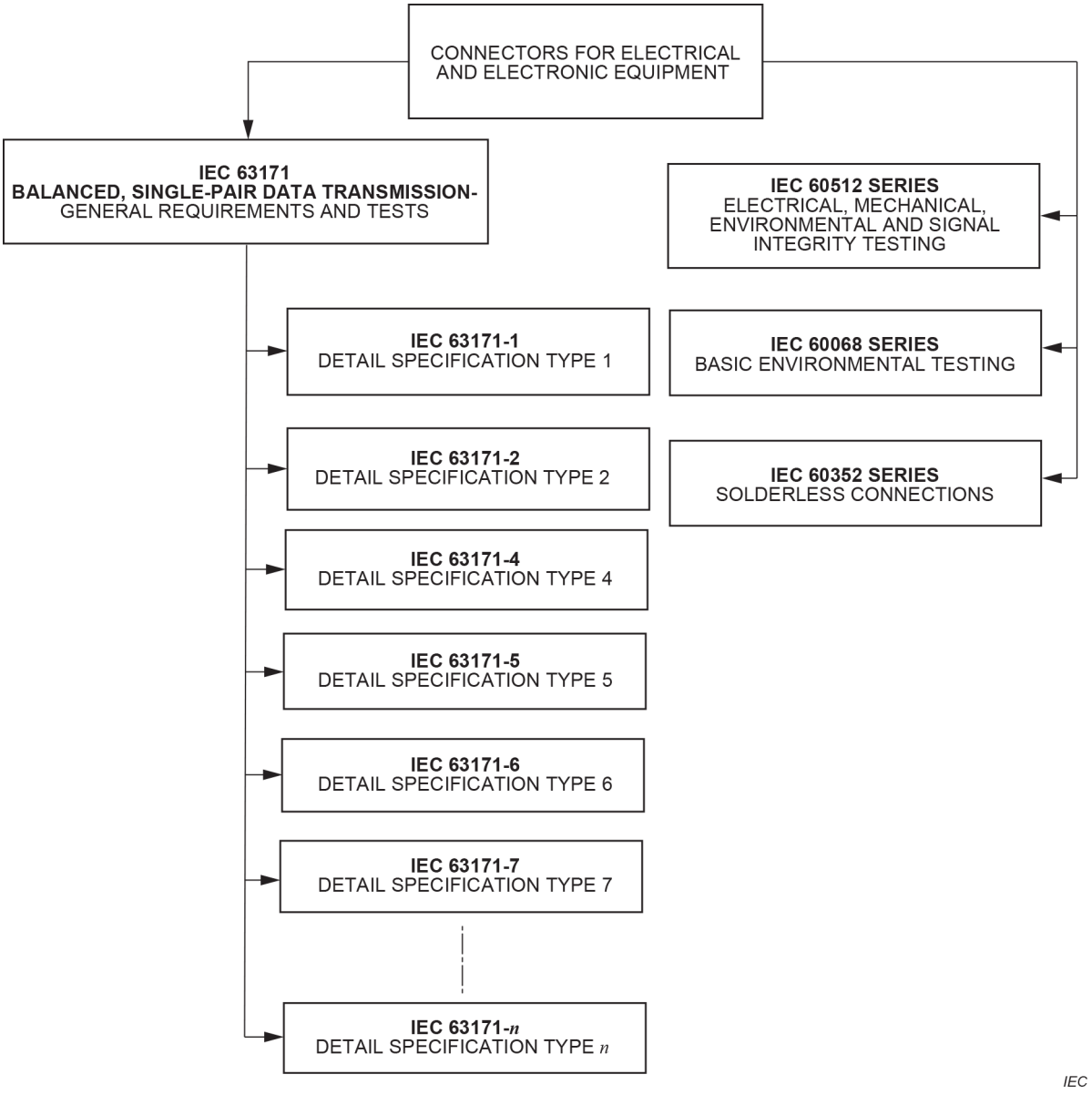

Figure 1 – Relationship between the IEC 63171 series and their related references

CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – SHIELDED OR UNSHIELDED FREE AND FIXED CONNECTORS FOR BALANCED SINGLE-PAIR DATA TRANSMISSION WITH CURRENT-CARRYING CAPACITY – GENERAL REQUIREMENTS AND TESTS

1 Scope

This document covers shielded or unshielded free and fixed connectors, circular or rectangular, for balanced single-pair data transmission, with current-carrying capacity.

It also covers the portion for balanced single-pair data transmission of combined, shielded or unshielded, free and fixed connectors, circular or rectangular, having additional contacts for power transmission, whose performance requirements are described in a product detail specification, see Annex A, of the IEC 63171-X series, (type X connectors), or in a separate document, either an IEC product detail specification, see Annex A, or manufacturer's specification.

This document does not describe a specific mating interface. It specifies the IEC 63171 series – or other documents referencing it – common mechanical, electrical and transmission characteristics and environmental requirements, as well as required test specifications.

Within their own type, the shielded and unshielded connectors are interoperable for their transmission performance and can be exchanged, although the shielded version has improved alien crosstalk and coupling attenuation properties.

Single-pair connectors of this series can be grouped to one body of multipole connectors or combined with other connectors, e.g., power connectors, also known as combined (data or signal, and power) 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, *International Electrotechnical Vocabulary (IEV) – Part 581: Electromechanical components for electronic equipment*

IEC 60068-1:2013, *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 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 dimension and mass*

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 60512-6-3, *Connectors for electronic equipment – Tests and measurements – Part 6-3: Dynamic stress tests – Test 6c: Shock*

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 60512-11-1, *Connectors for electrical and electronic equipment – Tests and measurements – Part 11-1: Climatic tests – Test 11a – Climatic sequence*

IEC 60512-11-3, *Connectors for electronic equipment – Tests and measurements – Part 11-3: Climatic tests – Test 11c: Damp heat, steady state*

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 60512-11-9, *Connectors for electronic equipment – Tests and measurements – Part 11-9: Climatic tests – Test 11i: Dry heat*

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

IEC 60512-13-5, *Connectors for electronic equipment – Tests and measurements – Part 13-5: Mechanical operation tests – Test 13e: Polarizing and keying method*

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 60512-15-7, *Connectors for electronic equipment – Tests and measurements – Part 15-7: Connector tests (mechanical) – Test 15g: Robustness of protective cover attachment*

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

IEC 60512-26-100, *Connectors for electronic equipment – Tests and measurements – Part 26-100: Measurement setup, test and reference arrangements and measurements for connectors according to IEC 60603-7 – Tests 26a to 26g*

IEC 60512-28-100, *Connectors for electrical and electronic equipment – Tests and measurements – Part 28-100: Signal integrity tests up to 2 000 MHz – Tests 28a to 28g*

IEC 60664-1, *Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests*

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

IEC 61984, *Connectors – Safety requirements and tests*

IEC 62153-4-9, *Metallic communication cable test methods – Part 4-9: Electromagnetic compatibility (EMC) – Coupling attenuation of screened balanced cables, triaxial method*

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

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