

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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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**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

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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.

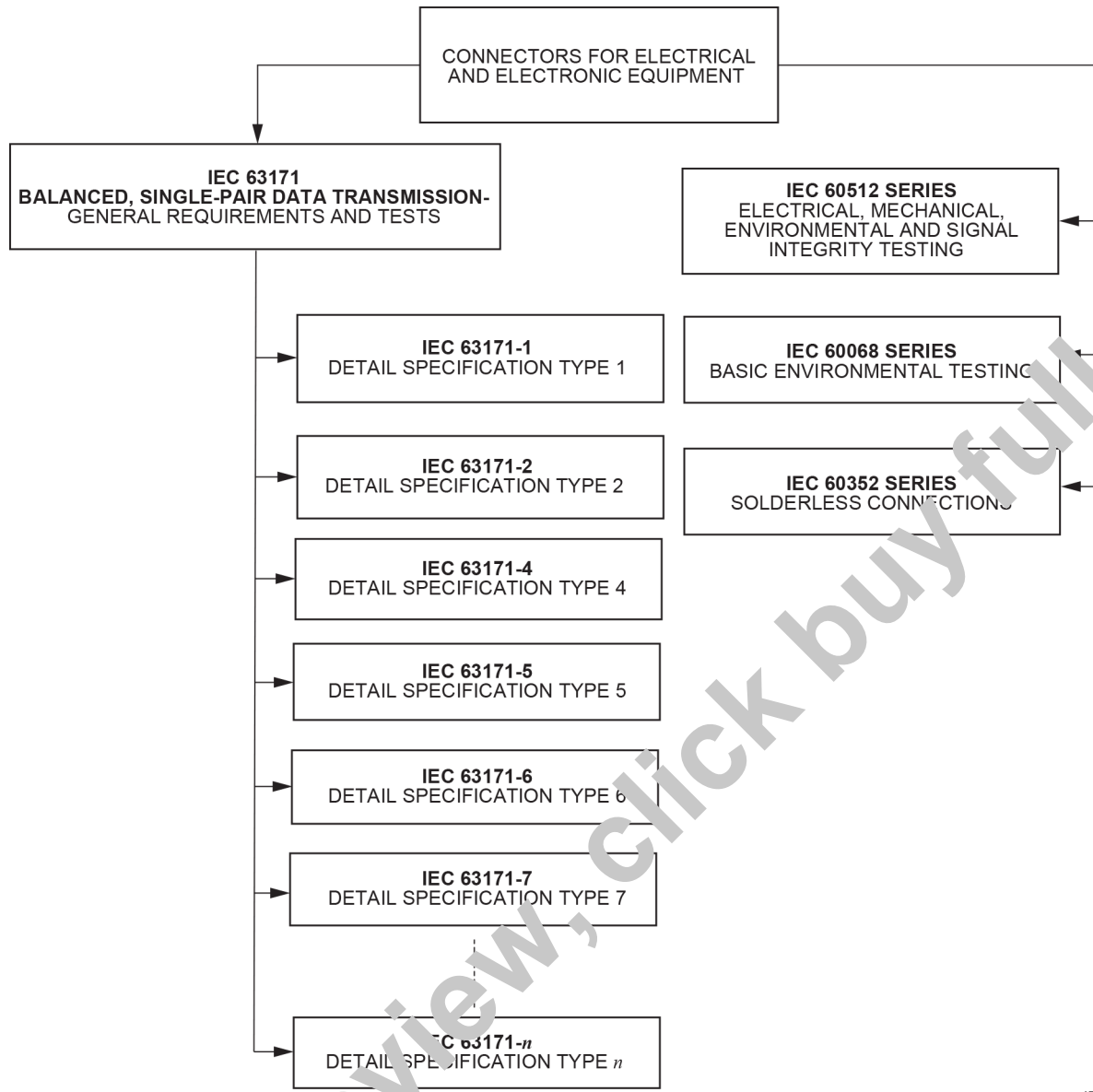
Each subsequent part is identified by a type of connector – or a set of connectors – covered with the same number identifying the part. Some parts can describe more connector geometries (rectangular, circular), sharing the core element and the relevant features.

Other requirements, which are necessary to describe e.g., additional power position – 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:



IEC

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 a 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*