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Responsible committee: EPL/48 Electromechanical components and mechanical structures for electronic equipment

Interested committees:

Title: Draft BS EN 63171 Ed.2.0 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

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

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- iii) requires additional national guidance or information

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THIS DRAFT IS NOT CURRENT BEYOND 1 August 2022**

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## Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

## UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

## Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

## Template for comments and secretariat observations

|                  |                        |
|------------------|------------------------|
| Date: xx/xx/20xx | Document: ISO/DIS xxxx |
|------------------|------------------------|

| 1  | 2                                          | (3)                          | 4               | 5                                                                                                                                  | (6)                                                                      | 7                                                  |
|----|--------------------------------------------|------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------------|
| MB | Clause No./ Subclause No./Annex (e.g. 3.1) | Paragraph/Figure/ Table/Note | Type of comment | Commend (justification for change) by the MB                                                                                       | Proposed change by the MB                                                | Secretariat observations on each comment submitted |
|    | 3.1                                        | Definition 1                 | ed              | Definition is ambiguous and needs clarifying.                                                                                      | Amend to read '...so that the mains connector to which no connection...' |                                                    |
|    | 6.4                                        | Paragraph 2                  | te              | The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK. | Delete reference to UV photometer.                                       |                                                    |



# 48B/2972/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:

**IEC 63171 ED2**

DATE OF CIRCULATION:

**2022-06-10**

CLOSING DATE FOR COMMENTS:

**2022-09-02**

SUPERSEDES DOCUMENTS:

**48B/2921/RR**

**IEC SC 48B : ELECTRICAL CONNECTORS**

SECRETARIAT:

United States of America

SECRETARY:

Mr Jeffrey Toran

OF INTEREST TO THE FOLLOWING COMMITTEES:

SC 46C, SC 65C, ISO/IEC JTC 1/SC 25

PROPOSED HORIZONTAL STANDARD:



Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☐ EMC

☐ ENVIRONMENT

☐ QUALITY ASSURANCE

☐ SAFETY

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

**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**

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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 2<sup>nd</sup> edition cancels and replaces the 1<sup>st</sup> edition published in 2019. This edition constitutes a technical revision.

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

- a) Adding content related to multipole and combined connectors;
- b) Alignment of transmission requirements with ISO/IEC 11801-1 AMD1;
- c) Updating and reorganising of the test groups.

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

| Draft      | Report on voting |
|------------|------------------|
| XX/XX/FDIS | XX/XX/RVD        |

131  
132 Full information on the voting for its approval can be found in the report on voting indicated in  
133 the above table.

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

135 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in  
136 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available  
137 at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are  
138 described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

139 The committee has decided that the contents of this document will remain unchanged until the stability  
140 date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document.  
141 At this date, the document will be

- 142 • reconfirmed,  
143 • withdrawn,  
144 • replaced by a revised edition, or  
145 • amended.  
146

147

## INTRODUCTION

148 The IEC 63171 series is a set of International Standards covering shielded or unshielded free  
149 and fixed connectors for balanced single-pair data transmission with current carrying capacity.

150 This document, identified as IEC 63171, is the general requirements and general tests part  
151 (general specification) of the whole series.

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

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

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

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

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

167 For the qualification of a connector of this series, both this general specification and the relevant  
168 detail specification – including the references made therein, if any, to other sectional  
169 specification and/or other safety-related documents – shall be met.

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

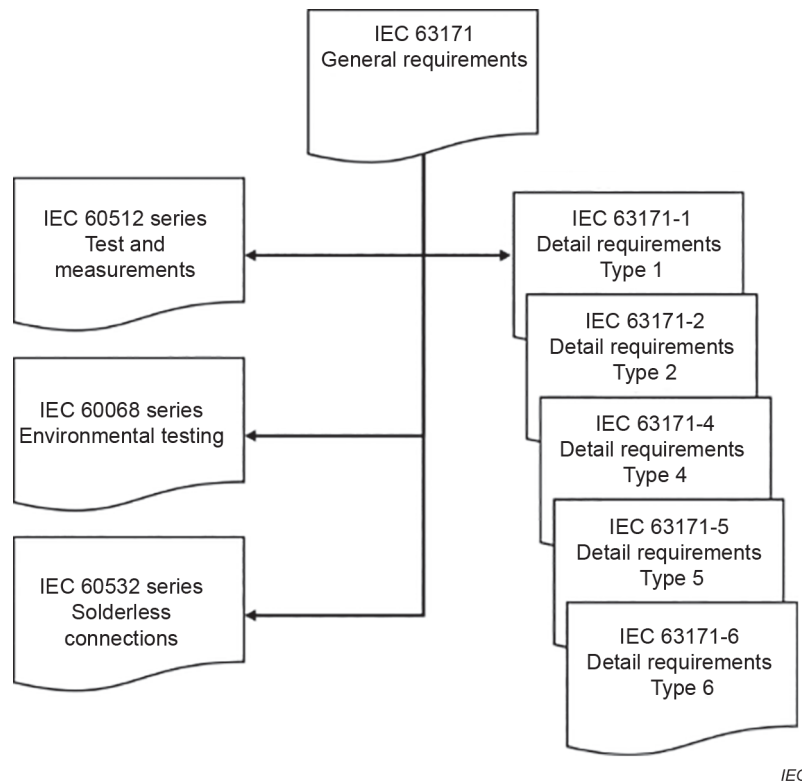


**Figure 1 – Relationships between the IEC 63171 series and their related references**

NOTE IEC 63171-1 and IEC 63171-6 contain duplicate information, which is either equal to or better than the minimum requirements of this document; such duplicate information is due to be removed in later editions.

Editor's note: Figure 1 has to be amended by the IEC figure committee to add a type 7 and type n.

**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 and 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 detail specification of the IEC 63171-X series, (type X connectors), or in a separate document, either IEC detail specification or manufacturer's specification.

It specifies the IEC 63171 series' common mechanical, electrical and transmission characteristics and environmental requirements, as well as required test specifications.

This document does not describe a specific mating interface. Detail specifications of mating interfaces complying with this document can be found in the family of detail specification standards IEC 63171-X (type X connectors).

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

Single-pair connectors of this series might 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.

**Editor's note: Additional information is needed for multipole and combined connectors in the respective clauses.**

**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 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 60512-2-1, *Connectors for electronic equipment – Tests and measurements – Part 2-1: Electrical continuity and contact resistance tests – Test 2a: Contact resistance – Millivolt level method*

- 218 IEC 60512-2-5, *Connectors for electronic equipment – Tests and measurements – Part 2-5:*  
219 *Electrical continuity and contact resistance tests – Test 2e: Contact disturbance*
- 220 IEC 60512-3-1, *Connectors for electronic equipment – Tests and measurements – Part 3-1:*  
221 *Insulation tests – Test 3a: Insulation resistance*
- 222 IEC 60512-4-1, *Connectors for electronic equipment – Tests and measurements – Part 4-1:*  
223 *Voltage stress tests – Test 4a: Voltage proof*
- 224 IEC 60512-5-2, *Connectors for electronic equipment – Tests and measurements – Part 5-2:*  
225 *Current-carrying capacity tests – Test 5b: Current-temperature derating*
- 226 IEC 60512-6-4, *Connectors for electronic equipment – Tests and measurements – Part 6-4:*  
227 *Dynamic stress tests – Test 6d: Vibration (sinusoidal)*
- 228 IEC 60512-9-1, *Connectors for electronic equipment – Tests and measurements – Part 9-1:*  
229 *Endurance tests – Test 9a: Mechanical operation*
- 230 IEC 60512-9-2, *Connectors for electronic equipment – Tests and measurements – Part 9-2:*  
231 *Endurance tests – Test 9b: Electrical load and temperature*
- 232 IEC 60512-11-4, *Connectors for electronic equipment – Tests and measurements – Part 11-4:*  
233 *Climatic tests – Test 11d: Rapid change of temperature*
- 234 IEC 60512-11-7, *Connectors for electronic equipment – Tests and measurements – Part 11-7:*  
235 *Climatic tests – Test 11g: Flowing mixed gas corrosion test*
- 236 IEC 60512-11-12, *Connectors for electronic equipment – Tests and measurements –*  
237 *Part 11-12: Climatic tests – Test 11m: Damp heat, cyclic*
- 238 IEC 60512-13-2, *Connectors for electronic equipment – Tests and measurements – Part 13-2:*  
239 *Mechanical operation tests – Test 13b: Insertion and withdrawal forces*
- 240 IEC 60512-15-6, *Connectors for electronic equipment – Tests and measurements – Part 15-6:*  
241 *Connector tests (mechanical) – Test 15f: Effectiveness of connector coupling devices*
- 242 IEC 60512-25-9, *Connectors for electronic equipment – Tests and measurements – Part 25-9:*  
243 *Signal integrity tests – Test 25i: Alien crosstalk*
- 244 IEC 60512-26-100, *Connectors for electronic equipment – Tests and measurements – Part 26-*  
245 *100: Measurement setup, test and reference arrangements and measurements for connectors*  
246 *according to IEC 60603-7 – Tests 26a to 26g*
- 247 IEC 60512-28-100, *Connectors for electronic equipment – Tests and measurements –*  
248 *Part 28-100: Signal integrity tests up to 2 000 MHz – Tests 28a to 28g*
- 249 IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1:*  
250 *Principles, requirements and tests*
- 251 IEC 62153-4-9:2018/AMD1:2020, *Metallic communication cable test methods – Part 4-9:*  
252 *Electromagnetic compatibility (EMC) – Coupling attenuation of screened balanced cables,*  
253 *triaxial method*
- 254 IEC 62153-4-15, *Metallic communication cable test methods – Part 4-15: Electromagnetic*  
255 *compatibility (EMC) – Test method for measuring transfer impedance and screening attenuation*  
256 *– or coupling attenuation with triaxial cell*