PD IEC TS 61156-1-2:2023



BSI Standards Publication

Multicore and symmetrical pair/quad cables for digital communications

Part 1-2: Electrical transmission characteristics and test methods of symmetrical pair/quad cables

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National foreword

This British Standard is the UK implementation of IEC TS 61156-1-2:2023. It supersedes PD IEC/TR 61156-1-2:2009+A1:2014, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/46, Cables, wires and waveguides, radio frequency connectors and accessories for communication and signalling.

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

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Published by BSI Standards Limited 2023

ISBN 978 0 539 24793 0

ICS 21.220; 33.120.20

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2023.

Amendments/corrigenda issued since publication

Date	Text affected

IEC TS 61156-1-2

Edition 1.0 2023-11

TECHNICAL SPECIFICATION

colour inside

Multicore and symmetrical pair/quad cables for digital communications – Part 1-2: Electrical transmission characteristics and test methods of symmetrical pair/quad cables

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 21.220

ISBN 978-2-8322-7881-9

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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MULTICORE AND SYMMETRICAL PAIR/QUAD CABLES FOR DIGITAL COMMUNICATIONS –

Part 1-2: Electrical transmission characteristics and test methods of symmetrical pair/quad cables

FOREWORD

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IEC TS 61156-1-2 has been prepared by subcommittee 46C: Wires and symmetric cables, of IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories. It is a Technical Specification.

This first edition cancels and replaces the first edition of IEC TR 61156-1-2 published in 2009 and Amendment 1:2014. This edition constitutes a technical revision.

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

a) typos and editorial corrections;

b) the scope was updated;

c) Figure 14: ports swapped between port 2 and port 3;

d) new figures for balunless testing.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
46C/1247DTS	46C/1259e/RVDTS

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 Technical Specification 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.

A list of all parts of the IEC 61156 series, under the general title: *Multicore and symmetrical pair/quad cables for digital communications*, can be found on the IEC website.

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

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MULTICORE AND SYMMETRICAL PAIR/QUAD CABLES FOR DIGITAL COMMUNICATIONS –

Part 1-2: Electrical transmission characteristics and test methods of symmetrical pair/quad cables

1 Scope

This part of IEC 61156 specifies symmetrical pair/quad electrical transmission characteristics and test methods present in IEC 61156-1:2002 (Edition 2) and not carried into IEC 61156-1:2007 (Edition 3). It details characteristic impedance test methods and function fitting procedures, the open/short-circuit method and the background of unbalance attenuation measurement.

It is extended by a description of the balunless measurements technique, which is an amendment to the former technical report and is improved and incorporated into this new edition. The complete document is transferred into a technical specification.

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 60050-726, *International Electrotechnical Vocabulary (IEV) – Part 726: Transmission lines and waveguides*

IEC 61156-1:2007, *Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification*

IEC TR 62152, *Transmission properties of cascaded two-ports or quadripols – Background of terms and definitions*

3 Terms, definitions, symbols, units and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-726, IEC 61156-1, IEC TR 62152 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at https://www.iso.org/obp
- IEC Electropedia: available at http://www.electropedia.org/

3.1.1
single-ended
measurement with respect to a fixed potential, usually ground