IEC 61156-11

Edition 2.0 2023-05
REDLINE VERSION

INTERNATIONAL STANDARD

colour inside

Multicore and symmetrical pair/quad cables for digital communications – Part 11: Symmetrical single pair cables with transmission characteristics up to ~~600 MHz~~ 1,25 GHz – Horizontal floor wiring – Sectional specification





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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 33.120.20

ISBN 978-2-8322-6984-8

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MULTICORE AND SYMMETRICAL PAIR/QUAD CABLES FOR DIGITAL COMMUNICATIONS –

Part 11: Symmetrical single pair cables with transmission characteristics up to ~~600 MHz~~ 1,25 GHz – Horizontal floor wiring – Sectional specification

FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 61156-11:2019. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 61156-11 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 an International Standard.

This second edition cancels and replaces the first 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) additional cable type in support of T1-C generic single pair cabling up to 1,25 GHz;
b) introduction of low frequency coupling attenuation as an integral parameter describing screening efficiency at frequencies below 30 MHz.

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

Draft	Report on voting
46C/1254/FDIS	46C/1258/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.

A list of all parts in the IEC 61156 series, published 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
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MULTICORE AND SYMMETRICAL PAIR/QUAD CABLES FOR DIGITAL COMMUNICATIONS –

Part 11: Symmetrical single pair cables with transmission characteristics up to ~~600 MHz~~ 1,25 GHz – Horizontal floor wiring – Sectional specification

1 Scope

~~This part of IEC 61156 describes cables intended to be used for transmission of 1 Gbps over a single twisted pair for office, home and industrial application. An example of existing application is 1000BASE-T1, see ISO/IEC TR 11801-9906[1]. The transmission characteristics of these cables are specified up to a frequency of 600 MHz and at a temperature of 20 °C. The cable type recognised is intended to be used for shielded channels with a nominal length of 40 m. Possible designs are U/FTP, X/UTP and X/FTP, where X stands for F, S or SF.~~ This part of IEC 61156 describes cables intended to be used for single balanced pair (office, home, industrial) applications according to ISO/IEC 11801-1. An example of existing application is 1000BASE-T1, see ISO/IEC TR 11801-9906. The transmission characteristics of these cables are specified up to a frequency of 1,25 GHz and at a temperature of 20 °C. The T1-C type cable is specified up to 600 MHz, the T1-D type cable up to 1,25 GHz. Depending on the MICE environment and the installation conditions either unscreened or screened cables can be used. A blank detail specification can be found in Annex A.

These cables can comprise more than one pair in the event that several systems are operated in parallel. In this case, refer to Clause 7.

The cables covered by this document are intended to operate with voltages and currents normally encountered in communication systems. While these cables are not intended to be used in conjunction with low impedance sources, for example the electric power supplies of public utility mains, they are intended to be used to support the delivery of low-voltage remote powering applications.

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 60708~~:2005~~, *Low-frequency cables with polyolefin insulation and moisture barrier polyolefin sheath*

IEC 61156-1~~:2007~~, *Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification*
~~IEC 61156-1:2007/AMD1:2009[2]~~

~~[1] Under consideration.~~

~~[2] A consolidated version of this publication exists, comprising IEC 61156-1:2007 and IEC 61156-1:2007/AMD1:2009.~~

IEC 61156-5~~:2009~~, *Multicore and symmetrical pair/quad cables for digital communications – Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Horizontal floor wiring – Sectional specification*

IEC 62153-4-3~~:2013~~, *Metallic communication cable test methods – Part 4-3: Electromagnetic compatibility (EMC) – Surface transfer impedance – Triaxial method*

IEC 62153-4-5~~:2006~~, *Metallic communication cables test methods – Part 4-5: Electromagnetic compatibility (EMC) – ~~Coupling~~ Screening or ~~screening~~ coupling attenuation – Absorbing clamp method*

IEC 62153-4-9:2018, *Metallic communication cable test methods – Part 4-9: Electromagnetic compatibility (EMC) – Coupling attenuation of screened balanced cables, triaxial method*
IEC 62153-4-9:2018/AMD1:2020

ISO/IEC TS 29125~~:2017~~, *Information technology – Telecommunications cabling requirements for remote powering of terminal equipment*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61156-1~~:2007 and in IEC 61156-1:2007/AMD1:2009~~ apply.

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

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

4 Installation considerations

4.1 General remarks

Installation area considerations are defined in IEC 61156-1~~:2007~~. Other areas may be considered.

4.2 Bending radius of installed cable

The minimum bending radius of the cable shall be equal to or less than four times the outside diameter of the cable unless otherwise specified.

4.3 Climatic conditions

Under static conditions, the cable shall operate at least in the temperature range of the environment from −20 °C to +60 °C.

The attenuation increase due to the elevated operating temperature (temperature of the environment) is described in 6.3.3.2.

In the case of application of remote powering, the maximum temperature of the conductor shall not exceed the maximum operation temperature under static conditions (60 °C) in order to maintain the integrity of the dielectric material performance which is aligned to the environmental temperature range.

Extended temperature ranges are permitted and ~~may~~ shall be specified in the relevant detail specification.