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Multicore and symmetrical pair/quad cables for digital communications – Part 6: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Work area wiring – Sectional specification

INTERNATIONAL
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COMMISSION

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MULTICORE AND SYMMETRICAL PAIR/QUAD CABLES FOR DIGITAL COMMUNICATIONS –

Part 6: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Work area wiring – Sectional specification

FOREWORD

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International Standard IEC 61156-6 has been prepared by subcommittee 46C: Wires and symmetric cables, of IEC technical committee 46: Cables, wires, waveguides, r.f. connectors, r.f. and microwave passive components and accessories.

This third edition cancels and replaces the second edition published in 2007. This third edition constitutes a technical revision.

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

a) new requirements for new cables $Cat6_A$, $Cat7_A$;
b) revised requirements and tests for the cables.

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The text of this standard is based on the following documents:

FDIS	Report on voting
46C/903/FDIS	46C/908/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This standard shall be read in conjunction with IEC 61156-1:2007.

The list of all the 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 publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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MULTICORE AND SYMMETRICAL PAIR/QUAD CABLES FOR DIGITAL COMMUNICATIONS –

Part 6: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Work area wiring – Sectional specification

1 Scope

This part of IEC 61156 makes reference to IEC 61156-1. The cables described herein are intended primarily for work area wiring as defined in ISO/IEC 11801 and ISO/IEC 24702.

It covers individually screened, common screened and unscreened pairs or quads. The transmission characteristics and the frequency range (see Table 1) of the cables are specified at 20 °C.

Table 1 – Cable categories

Cable designation	**Maximum referenced frequency** MHz
Category 5e	100
Category 6	250
Category 6_A	500
Category 7	600
Category 7_A	1 000

These cables can be used for various communication channels which use as many as four pairs simultaneously. In this sense, this sectional specification provides the cable characteristics required by system developers to evaluate new systems.

The cables covered by this standard are intended to operate with voltages and currents normally encountered in communication systems. 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 and power applications such as IEEE's 802.3af (Power over Ethernet) and 802.3at (Power over Ethernet Plus).

2 Normative references

The following referenced documents are indispensable for the application 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 61156-1:2007, *Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification*

IEC 61156-6-1, *Multicore and symmetrical pair/quad cables for digital communications – Part 6-1: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Work area wiring – Blank detail specification*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61156-1 apply.

4 Installation considerations

See Clause 4 of IEC 61156-1.

4.1 Climatic conditions

Under static conditions, the cables shall operate in the temperature range from –20 °C to +60 °C. The conductor and cable temperature dependence is specified for screened and unscreened cables and should be taken into account for the design of an actual cabling system.

5 Materials and cable construction

5.1 General remarks

The choice of materials and cable construction shall be suitable for the intended application and installation of the cable. Particular care shall be taken to meet any special requirements for EMC and fire performance (such as burning properties, smoke generation, evolution of halogen gas, etc.).

5.2 Cable construction

The cable construction shall be in accordance with the details and dimensions given in the relevant detail specification.

5.2.1 Conductor

The conductor shall be a solid or stranded annealed copper, in accordance with 5.2.1 of IEC 61156-1 and should have a nominal diameter between 0,4 mm and 0,65 mm. A conductor diameter of up to 0,8 mm may be used.

5.2.2 Insulation

The conductor shall be insulated with a suitable material. Examples of suitable materials are

– polyolefin;
– fluoropolymer;
– low-smoke zero-halogen thermoplastic material.

5.2.3 Cable element

The cable element shall be a pair or quad and shall be twisted.

5.2.3.1 Screening of the cable element

When required, the screen for the cable element shall be in accordance with 5.2.3.1 of IEC 61156-1.