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Multicore and symmetrical pair/quad cables for digital communications – Part 1-4: Assessment of conductor heating in bundled cables due to the deployment of remote powering

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International Standard IEC 61156-1-4 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.

This first edition cancels and replaces IEC PAS 61156-1-4, published in 2010. This edition constitutes a technical revision.

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

a) Several test arrangements are considered;
b) The mathematical approach was revised

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

CDV	Report on voting
46C/1089/CDV	46C/1098A/RVC

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

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

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 "http://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- withdrawn,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.

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

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The use of remote powering causes a temperature rise in cables installed in bundles.

This document specifies a method to assess the temperature increase in cable bundles by measuring the temperature change using thermocouples placed on the sheath of the cable at the centre of the bundle.

Several test arrangements are considered as well as current values.

MULTICORE AND SYMMETRICAL PAIR/QUAD CABLES FOR DIGITAL COMMUNICATIONS –

Part 1-4: Assessment of conductor heating in bundled cables due to the deployment of remote powering

1 Scope

This document specifies a method to assess the thermal behaviour of cables arranged in bundles, for digital communications. A method is described to determine the temperature increase in cable bundles for certain remote powering currents as a basis to analyse the expected performance under several test arrangements described in standards dealing with the installation of cabling systems (e.g. [1][1], [2]).

It is only intended to provide guidance to assess the thermal behaviour of cables for digital communications in reference environmental conditions and arrangements. It is therefore not intended to become a type of test method.

The following test arrangements are considered:

c) free air;

d) cable tray;

e) conduits;

f) conduit with sealed ends.

Even though this document covers four-pair data grade cables, the same principles can be applied to other cable types.

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

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1 Numbers in square brackets refer to the Bibliography.