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TECHNICAL REPORT

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inside

**Multicore and symmetrical pair/quad cables for digital communications –
Part 1-3: Electrical transmission parameters for modelling cable assemblies
using symmetrical pair/quad cables**

INTERNATIONAL
ELECTROTECHNICAL
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The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC/TR 61156-1-3, which is a technical report, 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.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
46C/924/DTR	46C/932/RVC

Full information on the voting for the approval of this technical report 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.

A list of all the 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 publication will remain unchanged until the stability 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- withdrawn,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.

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.

MULTICORE AND SYMMETRICAL PAIR/QUAD CABLES FOR DIGITAL COMMUNICATIONS –

Part 1-3: Electrical transmission parameters for modelling cable assemblies using symmetrical pair/quad cables

1   Scope

This technical report is a supplement to IEC 61156-1 Edition 3 (2007): Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification.

This technical report covers the following topics following this standard:

– the near-end crosstalk test methods and length correction procedures of 6.3.5;

– the far-end crosstalk test methods and length correction procedures of 6.3.6;

– the concatenation of measured cable segments, even if they are of different design.

The final objective of this technical report is to describe the mathematics involved to model the concatenation of cable sections of different length, not based upon measurements but based upon the specification limits of the cables involved. This is required as a base foundation of the complete channel modelling, involving also the connectivity covered by IEC SC48B towards channels, as required and requested by ISO/IEC JTC1/SC25 WG3 for incorporation into ISO/IEC 11801:2002 [1] [1].

This TR is informative and contains observations and recommendations applicable to using the length correction formulas for either measurements or modelling of balanced cables.

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 60050-726, *International Electrotechnical Vocabulary – 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 61156-1-2, *Multicore and symmetrical pair/quad cables for digital communications – Part 1-2: Electrical transmission characteristics and test methods of symmetrical pair/quad cables*

IEC 61156-5, *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*

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[1]   The figures in square brackets refer to the Bibliography.

IEC 61156-6, *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*

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