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INTERNATIONAL STANDARD

Multicore and symmetrical pair/quad cables for digital communications
Part 2-1: Horizontal floor wiring – Blank detail specification

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FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61156-2-1 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 2003. This edition constitutes a technical revision and takes into account the technical changes made in the IEC 61156-2, Edition 3 (2010).

This sectional specification relates to IEC 61156-2:2010. The cables are specifically intended for horizontal floor wiring as defined in ISO/IEC 11801:1995.

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

CDV	Report on voting
46C/900/CDV	46C/913/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 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 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.

MULTICORE AND SYMMETRICAL PAIR/QUAD CABLES FOR DIGITAL COMMUNICATIONS

Part 2-1: Horizontal floor wiring – Blank detail specification

1 Scope

This blank detail specification relates to multicore and symmetrical pair/quad cables for digital communications in horizontal floor wiring.

This blank detail specification determines the layout and style for detail specifications describing multicore and symmetrical pair/quad cables for digital communication in horizontal floor wiring. Detail specifications based on the blank detail specification may be prepared by a national standards organization, a manufacturer or a user.

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 61156-1:2002[1)], *Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification*

IEC 61156-2:2010, *Multicore and symmetrical pair/quad cables for digital communications – Part 2: Symmetrical pair/quad cables with transmission characteristics up to 100 MHz – Horizontal floor wiring – Sectional specification*

3 Guidance for preparation of detail specifications

It is necessary to keep the transmission characteristics indicated in the relevant sectional specification for the category number (3 or 5) and the characteristic impedance.

NOTE When a characteristic does not apply, then NA (for Not Applicable) may be entered in the appropriate space.

When a characteristic applies but a specific value is not considered necessary, then NS (for Not Specified) should be entered in the appropriate space.

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1) A more recent version of this standard exists (2007), but as not all of the tests cited herein are addressed by the newer edition, it has been decided that the 2002 edition is to be used.

The numbers shown in brackets in this and the following pages correspond to the following items of required information which shall be entered in the spaces provided.

[1] Name and address of the organization that has prepared the document.

[2] IEC document number, issue number and date of issue.

[3] Address of the organization from which the document is available.

[4] Related documents.

[5] Any other reference to the cable, national reference, trade name, etc.

[6] A complete description of the cable:

a) type and number of elements;

b) nominal impedance;

c) screening;

d) application;

e) category;

f) other distinguishing performance characteristics.

Example: Detail specification for 4-pairs cable without common screen for digital communications in horizontal floor wiring category 5.

[7] Details of the cable materials and construction.

[8] Special requirements for bending radius or operation temperatures.

[9] List of cable characteristics. They are separated into electrical, transmission, mechanical and environmental characteristics.

[10] Appropriate subclause references in the sectional specification IEC 61156-2.

[11] Requirements applicable for this cable. The values entered shall at a minimum meet the requirements of sectional specification IEC 61156-2.

[12] Relevant remarks.

4 Blank detail specification for multicore and symmetrical pair/quad cables for digital communication in horizontal floor wiring

[1] Prepared by:		[2] Document: Issue: Date:	
[3] Available from:	[4] Generic specification: Sectional specification: Blank detail specification:		IEC 61156-1:2002 IEC 61156-2 IEC 61156-2-1
[5] Additional references:			
[6] Cable description:			
[7] Cable materials and construction	IEC 61156-2 subclause	Characteristic	comment
	2.2.2	Cable construction	
	2.2.3	Conductor description	
	2.2.4	Insulation description: Nominal thickness Maximum diameter	
	2.2.5	Colour code of insulation	
	2.2.6	Number and type of elements	
	2.2.7	Screening of the element	
	2.2.8	Cable make-up Protective wrapping(s) of the cable core:	
	2.2.9	Screen of the cable core: Tape material Minimum overlap Drain wire Braid wire Braid material Filling factor	

	2.2.10	Sheath: Material Nominal thickness Maximum overall diameter Marking Rip cord	
	2.2.11	Colour of the sheath	
	2.2.12	Identification	
	2.2.13	Packaging of finished cable	

[9] Characteristics	[10] Subclause	[11] Requirements	[12] Comments
Electrical characteristics	**3.2**		
Conductor resistance	3.2.1	≤ .... Ω/km	
Resistance unbalance	3.2.2	≤ .... %	
Dielectric strength conductor/conductor conductor/screen screen/screen	3.2.3	 .... kV .... kV .... kV	
Insulation resistance conductor/conductor conductor/screen screen/screen	3.2.4	 ≥ .... MΩ·km ≥ .... MΩ·km ≥ .... MΩ·km	
Mutual capacitance	3.2.5		NS
Capacitance unbalance pair to ground	3.2.6	 ≤ .... pF/500 m	
Transfer impedance at 1 MHz 10 MHz 30 MHz 100 MHz	3.2.7	≤ .... mΩ/m ≤ .... mΩ/m ≤ .... mΩ/m ≤ .... mΩ/m	
Transmission characteristics	**3.3**		
Velocity of propagation (phase velocity) Phase delay Differential phase delay Environmental effects in the temperature range from –40 °C to +60 °C	3.3.1 3.3.1.1 3.3.1.2 3.3.1.2.1		NS NS for Cat 3 NS for Cat 3
Attenuation at 1 MHz 4 MHz 10 MHz 16 MHz 20 MHz 31,25 MHz 62,5 MHz 100 MHz	3.3.2	≤ ... dB/100 m ≤ ... dB/100 m ≤ ... dB/100 m ≤ ... dB/100 m ≤ ... dB/100 m ≤ ... dB/100 m ≤ ... dB/100 m ≤ ... dB/100 m	Equation (1)
Unbalance attenuation near-end (*TCL*)	3.3.3		NS

[9] Characteristics	[10] Subclause	[11] Requirements	[12] Comments
Unbalance attenuation far-end (*EL-TCTL*)	3.3.3		NS
Near-end crosstalk at 1 MHz 4 MHz 10 MHz 16 MHz 20 MHz 31,25 MHz 62,5 MHz 100 MHz	3.3.4	≥ .... dB ≥ .... dB ≥ .... dB ≥ .... dB ≥ .... dB ≥ .... dB ≥ .... dB ≥ .... dB	Equation (2)
Characteristic impedance Input impedance 1 MHz / .... MHz Function fitted impedance / mean characteristic impedance	3.3.6 3.3.6.2 3.3.6.3	.... Ω .... Ω ±15 Ω .... Ω	
Structural return loss (*SRL*)	3.3.7	< ... dB	
Mechanical characteristics	**3.4**		
Dimensional requirements Insulation diameter Sheath thickness Cable diameter	3.4.1	... mm	
Elongation at break of the conductors	3.4.2	≥ .... %	
Elongation at break of the insulation	3.4.3	≥ .... %	
Elongation at break of the sheath	3.4.4	≥ .... %	
Tensile strength of the sheath	3.4.5	≥ .... MPa	
Crush test of the cable	3.4.6		
Impact test of the cable	3.4.7		
Repeated bending of the cable	3.4.8		
Tensile performance of the cable	3.4.9	.... N	

[9] Characteristics	[10] Subclause	[11] Requirements	[12] Comments
Environmental characteristics	**3.5**		
Shrinkage of insulation	3.5.1	≤ .... %	
Wrapping test of insulation after thermal ageing	3.5.2		
Bending test of insulation at low temperature	3.5.3		
Elongation at break of the sheath after ageing	3.5.4	≥ .... %	Initial value
Tensile strength of the sheath after ageing	3.5.5	≥ .... %	Initial value
Sheath pressure test at high temperature	3.5.6		
Cold bend test of the cable	3.5.7		
Heat shock test	3.5.8		
Flame propagation characteristics of a single cable	3.5.9		
Flame propagation charac-teristics of bunched cables	3.5.10		
Acid gas evolution	3.5.11		
Smoke generation	3.5.12		
Toxic gas emission	3.5.13		
Combined flame and smoke test for cables in environmental air handling space	3.5.14		

Bibliography

ISO/IEC 11801:1995, *Information technology – Generic cabling for customer premises*

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