IEC 61156-15

Edition 1.0 2024-08

INTERNATIONAL STANDARD

Multicore and symmetrical pair/ quad cables for digital communications – Part 15: Symmetrical pair/quad cables for horizontal floor wiring with transmission characteristics up to 1 000 MHz and resistance to fire performance characteristics – Sectional specification

IEC 61156-15:2024-08(en)

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC 61156-15

Edition 1.0 2024-08

INTERNATIONAL STANDARD

Multicore and symmetrical pair/ quad cables for digital communications – Part 15: Symmetrical pair/quad cables for horizontal floor wiring with transmission characteristics up to 1 000 MHz and resistance to fire performance characteristics – Sectional specification

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 33.120.20

ISBN 978-2-8322-9555-7

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

MULTICORE AND SYMMETRICAL PAIR/ QUAD CABLES FOR DIGITAL COMMUNICATIONS –

Part 15: Symmetrical pair/quad cables for horizontal floor wiring with transmission characteristics up to 1 000 MHz and resistance to fire performance characteristics – Sectional specification

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.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 61156-15 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.

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

Draft	Report on voting
46C/1272/CDV	46C/1290/RVC

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, or
- revised.

INTRODUCTION

The demand for applications using cables maintaining power and data transmission under fire attack is rising. Current installation standards address mainly the "short circuit" protection issue, and some electrical parameters. Data transmission information is limited and further important parameters are not addressed.

For the evaluation of the circuit integrity (both short circuit protection and maintaining data transmission capability), two different samples and two different tests should be performed. The cable should pass the test as per IEC 60331-23:1999 and only then be evaluated to its data transmission integrity under flame attack as per IEC 60331-23:1999 by the definitions and instructions stated in this document.

Compliance with this document is not an indication that the cable will suite all types of applications or attack by any fire scenario. It only ensures that the circuit integrity, as defined, is maintained using the test procedures and flame application described.

MULTICORE AND SYMMETRICAL PAIR/ QUAD CABLES FOR DIGITAL COMMUNICATIONS –

Part 15: Symmetrical pair/quad cables for horizontal floor wiring with transmission characteristics up to 1 000 MHz and resistance to fire performance characteristics – Sectional specification

1 Scope

This part of IEC 61156 refers to cables as described in IEC 61156-5:2020 or cables containing element(s) from cables as described in IEC 61156-5 which are required to maintain both circuit integrity and data transmission capability before, during and after flame application under specified conditions.

In addition to the basic cable construction, it describes the means of sample preparation, checking arrangements and gives the performance requirements, means to evaluate the data transmission capability during and after subjecting to fire, and gives means for evaluating test results and the parameters that are specified in the detail specification.

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 and have no rated voltage and are used for extra low voltage circuits.

For the purpose of this document, fire conditions as currently listed in IEC 60331-23:1999 and basic test apparatus as per IEC 60331-11:1999 apply.

As the test method according to IEC 60331-23:1999 will not be developed further, other test methods could be used or added in future editions of this document.

IEC 60331-1 and IEC 60331-2 will be added in a future revision as the standard tests for circuit integrity and the test rig to be used for all testing.

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 60331-11:1999, *Tests for electric cables under fire conditions – Circuit integrity – Part 11: Apparatus – Fire alone at a flame temperature of at least 750 °C*

IEC 60331-23:1999, *Tests for electric cables under fire conditions – Circuit integrity – Part 23: Procedures and requirements – Electric data cables*

IEC 61156 (all parts), *Multicore and symmetrical pair/quad cables for digital communications*

IEC 61156-1:2023, *Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification*

IEC 61156-5:2020, *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*

ISO/IEC 11801-1:2017, *Information technology − Generic cabling for customer premises – Part 1: General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61156-5 and the following 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

3.1
sample 1
sample one
finished cable used to achieve the circuit integrity test as per IEC 60331-23:1999

3.2
sample 2
sample two
finished cable, used for the transmission characteristic test during and after flame application

3.3
resistance to fire
fire resistance
ability to continue to operate in the designated manner, both in terms of circuit integrity and transmission integrity, whilst subjected to a specified flame source for a specified period of time under specified conditions

3.4
circuit integrity
ability to continue to operate without short circuit between elements or wire breaks whilst subjected to a specified flame source for a specified period of time

Note 1 to entry: There shall be no short circuits during and after the flame attack.

3.5
transmission integrity
ability to maintain a level of data transmission capability according to the transmission characteristics defined in the IEC 61156 series during and after the flame attack as per IEC 60331-23:1999 fire conditions

Note 1 to entry: The designation "fire resistant" given to a cable implies that it fulfils the requirements of the relevant fire resistance test.

4 Installation considerations

For the purposes of this document, the respective requirements of IEC 61156-5:2020, Clause 4 apply.

5 Materials and cable construction

For the purposes of this document, the respective requirements of IEC 61156-5:2020, Clause 5 apply.

In addition, materials to enable circuit integrity can be used as insulation or on any part of the cable's elements.

6 Characteristics and requirements

6.1 General remarks

The cable's transmission characteristics, i.e. the category classification as per its data transmission evaluation, will degrade when the cable is under fire attack. The extreme heat and the geometric modifications in the cable structure will change its performances. As a result, in general, the category classification could be lowered. This is acceptable since under fire, the cable usage might not require high data rates.

6.2 Electrical characteristics and tests

6.2.1 Conductor resistance

The respective requirement of IEC 61156-5:2020, 6.2.1, applies.

6.2.2 Resistance unbalance

The respective requirement of IEC 61156-5:2020, 6.2.2, applies.

6.2.3 Dielectric strength

The respective requirement of IEC 61156-5:2020, 6.2.3, applies.

6.2.4 Insulation resistance

The respective requirement of IEC 61156-5:2020, 6.2.4, applies.

6.2.5 Mutual capacitance

The respective requirement of IEC 61156-5:2020, 6.2.5, applies.

6.2.6 Capacitance unbalance

The respective requirement of IEC 61156-5:2020, 6.2.6, applies.

6.2.7 Transfer impedance

The respective requirement of IEC 61156-5:2020, 6.2.7, applies.

6.2.8 Coupling attenuation

The respective requirement of IEC 61156-5:2020, 6.2.8, applies.

6.2.9 Current-carrying capacity

The respective requirement of IEC 61156-5:2020, 6.2.9, applies.

6.3 Transmission characteristics

6.3.1 Velocity of propagation (phase velocity)

The respective requirement of IEC 61156-5:2020, 6.3.1, applies.

6.3.2 Phase delay and differential delay (delay skew)

The respective requirement of IEC 61156-5:2020, 6.3.2, applies.

6.3.3 Attenuation (α)

6.3.3.1 Attenuation at 20 °C operating temperature

The respective requirement of IEC 61156-5:2020, 6.3.3.1, applies.

6.3.3.2 Category 5e special consideration

The respective requirement of IEC 61156-5:2020, 6.3.3.2, applies.

6.3.3.3 Attenuation at elevated operating temperature

The respective requirement of IEC 61156-5:2020, 6.3.3.3, applies.

6.3.4 Unbalance attenuation (*TCL*)

The respective requirement of IEC 61156-5:2020, 6.3.4, applies.

6.3.5 Near-end crosstalk (*NEXT*)

The respective requirement of IEC 61156-5:2020, 6.3.5, applies.

6.3.6 Far-end crosstalk (*ACR-F*)

The respective requirement of IEC 61156-5:2020, 6.3.6, applies.

6.3.7 Alien (exogenous) near-end crosstalk (*ANEXT*)

The respective requirement of IEC 61156-5:2020, 6.3.7, applies.

6.3.8 Alien (exogenous) far-end crosstalk (*AACR-F*)

The respective requirement of IEC 61156-5:2020, 6.3.8, applies.

6.3.9 Alien (exogenous) crosstalk of bundled cables

The respective requirement of IEC 61156-5:2020, 6.3.9, applies.

6.3.10 Impedance

The respective requirement of IEC 61156-5:2020, 6.3.10, applies.

6.3.11 Return loss (*RL*)

The respective requirement of IEC 61156-5:2020, 6.3.11, applies.

6.4 Mechanical and dimensional characteristics and requirements

6.4.1 Dimensional requirements

The respective requirement of IEC 61156-5:2020, 6.4.1, applies.

6.4.2 Elongation at break of the conductors

The respective requirement of IEC 61156-5:2020, 6.4.2, applies.

6.4.3 Tensile strength of the insulation

The respective requirement of IEC 61156-5:2020, 6.4.3, applies.

6.4.4 Elongation at break of the insulation

The respective requirement of IEC 61156-5:2020, 6.4.4, applies.

6.4.5 Adhesion of the insulation to the conductor

The respective requirement of IEC 61156-5:2020, 6.4.5, applies.

6.4.6 Elongation at break of the sheath

The respective requirement of IEC 61156-5:2020, 6.4.6, applies.

6.4.7 Tensile strength of the sheath

The respective requirement of IEC 61156-5:2020, 6.4.7, applies.

6.4.8 Crush test of the cable

The respective requirement of IEC 61156-5:2020, 6.4.8, applies.

6.4.9 Impact test of the cable

The respective requirement of IEC 61156-5:2020, 6.4.9, applies.

6.4.10 Bending under tension

The respective requirement of IEC 61156-5:2020, 6.4.10, applies.

6.4.11 Repeated bending of the cable

The respective requirement of IEC 61156-5:2020, 6.4.11, applies.

6.4.12 Tensile performance of the cable

The respective requirement of IEC 61156-5:2020, 6.4.12, applies.

6.4.13 Shock-test requirements of the cable

The respective requirement of IEC 61156-5:2020, 6.4.13, applies.

6.4.14 Bump-test requirements of the cable

The respective requirement of IEC 61156-5:2020, 6.4.14, applies.

6.4.15 Vibration-test requirements of a cable

The respective requirement of IEC 61156-5:2020, 6.4.15, applies.

6.5 Environmental characteristics

6.5.1 Shrinkage of insulation

The respective requirement of IEC 61156-5:2020, 6.5.1, applies.

6.5.2 Wrapping test of insulation after thermal ageing

The respective requirement of IEC 61156-5:2020, 6.5.2, applies.

6.5.3 Bending test of insulation at low temperature

The respective requirement of IEC 61156-5:2020, 6.5.3, applies.

6.5.4 Elongation at break of the sheath after ageing

The respective requirement of IEC 61156-5:2020, 6.5.4, applies.

6.5.5 Tensile strength of the sheath after ageing

The respective requirement of IEC 61156-5:2020, 6.5.5, applies.

6.5.6 Sheath pressure test at high temperature

The respective requirement of IEC 61156-5:2020, 6.5.6, applies.

6.5.7 Cold bend test of the cable

The respective requirement of IEC 61156-5:2020, 6.5.7, applies.

6.5.8 Heat shock test

The respective requirement of IEC 61156-5:2020, 6.5.8, applies.

6.5.9 Damp heat steady state

The respective requirement of IEC 61156-5:2020, 6.5.9, applies.

6.5.10 Solar radiation (UV test)

The respective requirement of IEC 61156-5:2020, 6.5.10, applies.

6.5.11 Solvents and contaminating fluids

The respective requirement of IEC 61156-5:2020, 6.5.11, applies.

6.5.12 Salt mist and sulphur dioxide

The respective requirement of IEC 61156-5:2020, 6.5.12, applies.

6.5.13 Water immersion

The respective requirement of IEC 61156-5:2020, 6.5.13, applies.

6.5.14 Hygroscopicity

The respective requirement of IEC 61156-5:2020, 6.5.14, applies.

6.5.15 Wicking

The respective requirement of IEC 61156-5:2020, 6.5.15, applies.

6.5.16 Flame propagation characteristics of a single cable

The respective requirement of IEC 61156-5:2020, 6.5.16, applies. Additional regional or local regulations apply as well.

6.5.17 Flame propagation characteristics of bunched cables

The respective requirement of IEC 61156-5:2020, 6.5.17, applies. Additional regional or local regulations apply as well.

6.5.18 Halogen gas evolution

The respective requirement of IEC 61156-5:2020, 6.5.18, applies. Additional regional or local regulations apply as well.

6.5.19 Smoke generation

The respective requirement of IEC 61156-5:2020, 6.5.19, applies. Additional regional or local regulations apply as well.

6.5.20 Toxic gas emission

The respective requirement of IEC 61156-5:2020, 6.5.20, applies. Additional regional or local regulations as well apply.

6.5.21 Integrated fire test

The respective requirement of IEC 61156-5:2020, 6.5.21, applies. Additional regional or local regulations apply as well.

7 Fire resistance/resistance to fire

7.1 Test of sample 1 – Circuit integrity

Sample 1 shall be tested and approved as per IEC 60331-23:1999, i.e. no short circuit between wires, between wires to screen, and continuity maintained.

A test voltage according to IEC 60331-23:1999 shall be used, unless otherwise specified in the detail specification.

The flame application time of the test of sample 1 shall be noted as it is to be applied exactly the same as the flame application time for the test of sample 2.

7.2 Test of sample 2 – Transmission integrity

7.2.1 General remarks

After testing sample 1 as per 7.1, a secondary test on sample 2 shall be performed in order to measure the electrical and transmission characteristics to evaluate the cable's category during and after flame application.

Sample 2 shall be taken from the same reel or manufacturing batch as sample 1.

The fire test apparatus (i.e. flaming device) used for testing sample 2 shall be the same used for the test in IEC 60331-23:1999.

7.2.2 Sample preparation

Sample 2 shall be prepared as instructed in IEC 61156-5:2020.

Each end of the cable or the elements under examination shall be connected to the data transmission measurement instrument as instructed in IEC 61156-5:2020.

7.2.3 Checking arrangement

The fire test apparatus (i.e. flaming device) used for testing sample 2 shall be the same used for the test in IEC 60331-23:1999.

Sample 2 shall be placed in the flaming device as instructed in IEC 60331-23:1999.

Sample 2 is not connected to the IEC 60331-11:1999 electrical measuring system, instead it will pass once through the flaming device (once through the flame from the burner), unless otherwise indicated in the detail specification.

The flaming device shall be at the distance of 15 m from the end of the sample that is connected to the "stimulus port" of the measuring device.

Both ends of the cable of sample 2 shall exit the flame chamber and shall be connected to the data transmission measuring device as instructed in the IEC 61156 series.

If necessary and agreed between the customer and the manufacturer, the cable can pass several times in the flaming device, but the minimum bending radius of the cable shall be considered.

It should be considered that repeated looping of the sample through the burner could cause RL spikes which can influence the test result.

7.2.4 Measurements of the transmission characteristics under fire

Parameters to be measured during the evaluation of sample 2 are given in Table 1:

Table 1 – parameters

1	Continuity
2	Insertion loss
3	Return loss
4	*NEXT*
5	*PS ACR-F*
6	*TCL*
7	*EL TCTL*

After installing sample 2 as instructed in 7.2.2, a reference measurement shall be taken before ignition.

After ignition of the burner, test shall be taken after 15 min, 30 min and should be taken every 30 following min until the end of the fire application time as of sample 1 and the fire shall be extinguished.

The cable shall remain connected to the measuring device for 15 min, during the cooling period, after which a final measurement test is performed.

The total test duration shall be the flame application time together with the 15 min cooling period.

If a failure has occurred in parameter 1 (continuity of wires), the test result is failing, and the failing time shall be noted. In case the attenuation measurement shows values greater than 90 dB for the entire frequency range specified by the respective category, there is no continuity.

The parameters in Table 1 shall be measured in all tests taken during the evaluation of sample 2.

7.2.5 Performance requirement

7.2.5.1 Flame application

The flame application time shall be the same as sample 1 and within the indicated period, unless agreed and indicated between customer and manufacturer or indicated in the detail specification.

7.2.5.2 Acceptance criteria

No wire breaks are allowed in any of the measurements taken.

Transmission integrity is evaluated according to the categories as defined in IEC 61156-5:2020.

The cable's category during and after flame attack will be the lowest category according to the value of the parameters of Table 1 that were measured as per 7.2.3.

Data transmission capability (cable category) during flame attack can differ from the cable's category and capability before it was burned, and also can change during the fire application within the different measuring time frames.

7.2.6 Retest procedure

7.2.6.1 Retesting

In the event of failure, two other samples, from the same manufacturing batch, shall be tested according to 7.2. If both samples pass, the test is approved and the cable's category during and after fire is according to the lowest category measured.

7.2.6.2 Cable rating in case of failure of sample 2 retests

In the event of any failure during the retest before the end of the fire exposure time as defined in the measurement of sample 1, that cable's rating will be the shortest time in which the cable achieves a designated category and continuity.

8 Test report

The test report shall include, at least, the following information:

a) full description of cable tested;
b) manufacturer of the cable tested;
c) test voltage of sample 1;
d) any deviations in methodology from the requirements of this document;
e) flame application time (the shortest between sample 1 and sample 2)
f) transmission integrity capability – cable category as defined in IEC 61156-5:2020 as per the measured parameters:
   - before burning,
   - in the end of the test,
   - during the fire in different time frames can be indicated as well;
g) optional: possible applications (e.g. in terms of classes as per ISO/IEC 11801-1:2017).

NOTE The flame application time is that time normally stated in the cable specification as the circuit integrity rating of the cable.

9 Bundled cables requirements

For further study.

10 Introduction to the blank detail specification

The blank detail specification for cables described in this document is given in Annex A.

When completing the detail specification, the following information shall be supplied:

a) conductor size;
b) number of elements;
c) cable construction details;
d) cable category (before, burning and after the test);
e) mechanical requirements;
f) environmental requirements;
g) fire performance.

Annex A
(informative)

Blank detail specification

The blank detail specification determines the layout and style for detail specifications describing symmetrical pair/quad cables for digital communications. Detail specifications, based on the blank detail specification, can be prepared by a national organization, a manufacturer, or a user.

This blank detail specification includes additional recommended environmental characteristics and severities, which are derived from the environmental classifications that are specified for cabling for various environments.

NOTE Environmental classifications are presented in ISO/IEC 11801-1:2017 with three levels of severity in four areas: mechanical, ingress, climatic, and electromagnetic; thus, in tabular form, they are referred to as the "MICE table".

It is necessary to keep the transmission characteristics indicated in this sectional specification for the referenced category number, i.e. 5e, 6, 6_A, 7 or 7_A. The detail specification shall be written in accordance with the layout of the blank detail specification described here.

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 which shall include
   a) type and number of elements;
   b) nominal impedance;
   c) screening;
   d) application;
   e) category;
   f) other distinguishing performance characteristics.

   EXAMPLE Four-pair, unshielded twisted pair cable for use in horizontal floor wiring, having a nominal impedance of 100 Ω, and meeting the transmission requirements of Category 6 and the coupling attenuation requirements of Type III.
7) Details of the cable material and construction.
8) Special requirements for bending radius or operating 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 61156-15.
11) Requirements applicable to this cable. The values entered shall meet as a minimum the requirements of sectional specification IEC 61156-1.
12) Comments – Relevant remarks.

[1] Prepared by:		[2] Document: Issue: Date:	
[3] Available from:		[4] Generic specification: IEC 61156-1:2023 Sectional specification: IEC 61156-15:2024 Blank detail specification: IEC 61156-15:2024, Annex A	
[5] Additional references:			
[6] Cable description: a) Type and number of elements: b) Nominal impedance: c) Screening: d) Application: e) Category: f) Other distinguishing performance characteristics:			
[7] Cable construction:	**IEC 61156-15:2024 Clause**		**Comments**
	5	Conductor description:	
	5	Insulation description: Maximum diameter: Colour code of elements:	
	5	Number of elements (pair(s)/quad(s)):	
	5	Screening of the cable element: Tape material Drain wire Braid wire Braid material	
	5	Cross web, spacer or protective wrapping(s):	
	5	Screen of the cable core: Tape material Minimum overlap Drain wire Braid wire Braid material	
	5	Sheath Material Nominal thickness Colour Maximum overall Diameter Marking Ripcord	
	5	Identification	
	5	Packaging of finished cable	
[8] Minimum bending radius for static bending: Minimum bending radius for dynamic bending: Temperature range for installation: Operating temperature range under static conditions: C1: −10 °C to +60 °C C2: −25 °C to +70 °C C3: −40 °C to +70 °C			