

# INTERNATIONAL STANDARD

**Coaxial communication cables –  
Part 5: Sectional specification for CATV trunk and distribution cables**

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61196-5-2012

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**Coaxial communication cables –  
Part 5: Sectional specification for CATV trunk and distribution cables**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## COAXIAL COMMUNICATION CABLES –

Part 5: Sectional specification for  
CATV trunk and distribution cables

## FOREWORD

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International Standard IEC 61196-5 has been prepared by subcommittee 46A: Coaxial cables, of IEC technical committee 46: Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories.

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

FDIS	Report on voting
46A/1095/FDIS	46A/1117/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 second edition cancels and replaces the first edition published in 2007. It constitutes a technical revision.

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

This standard has been updated and different requirements have been updated or added.

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

This standard is intended to be read in conjunction with IEC 61196-1. It is based on the second edition (2005) of that standard.

A list of all parts of the IEC 61196 series, under the general title: *Coaxial communication cables*, 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- withdrawn,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.

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## COAXIAL COMMUNICATION CABLES –

### Part 5: Sectional specification for CATV trunk and distribution cables

#### 1 Scope

This part of IEC 61196 applies to coaxial communications cables. It specifies the requirements for trunk and distribution cables for use in cabled television distribution networks operating at temperatures between  $-40\text{ °C}$  and  $+65\text{ °C}$  and in the frequency range of 5 MHz to 1 002 MHz.

#### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-1, — *Environmental testing – Part 1: General and guidance*<sup>1</sup>

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60096-0-1, *Radio Frequency cables – Part 0-1: Guide to the design of detail specifications – Coaxial cables*

IEC 60811-4-1, *Insulating and sheathing materials of electric and optical cables – Common test methods – Part 4-1: Methods specific to polyethylene and polypropylene compounds – Resistance to environmental stress cracking – Measurement of the melt flow index – Carbon black and/or mineral filler content measurement in polyethylene by direct combustion – Measurement of carbon black content by thermogravimetric analysis (TGA) – Assessment of carbon black dispersion in polyethylene using a microscope*

IEC 61196-1:2005, *Coaxial communication cables – Part 1: Generic specification – General, definitions and requirements*

IEC 61196-1-1, *Coaxial communication cables – Part 1-1: Capability approval for coaxial cables*

IEC 61196-1-100 (all parts), *Coaxial communication cables – Part 1-1XX: Electrical test methods*

IEC 61196-1-101, *Coaxial communication cables – Part 1-101: Electrical test methods – Test for conductor d.c. resistance of cable*

IEC 61196-1-102, *Coaxial communication cables – Part 1-102: Electrical test methods – Test for insulation resistance of cable dielectric*

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<sup>1</sup> 7<sup>th</sup> edition to be published.

IEC 61196-1-105, *Coaxial communication cables – Part 1-105: Electrical test methods – Test for withstand voltage of cable dielectric*

IEC 61196-1-106, *Coaxial communication cables – Part 1-106: Electrical test methods – Test for withstand voltage of cable sheath*

IEC 61196-1-108, *Coaxial communication cables – Part 1-108: Electrical test methods – Test for characteristic impedance, phase and group delay, electrical length and propagation velocity*

IEC 61196-1-112, *Coaxial communication cables – Part 1-112: Electrical test methods – Test for return loss (uniformity of impedance)*

IEC 61196-1-113, *Coaxial communication cables – Part 1-113: Electrical test methods – Test for attenuation constant*

IEC 61196-1-115, *Coaxial communication cables – Part 1-115: Electrical test methods – Test for regularity of impedance (pulse/step function return loss)*

IEC 61196-1-200 (all parts), *Coaxial communication cables – Part 1-2XX: Environmental test methods*

IEC 61196-1-201, *Coaxial communication cables – Part 1-201: Environmental test methods – Test for cold bend performance of cable*

IEC 61196-1-203, *Coaxial communication cables – Part 1-203: Environmental test methods – Test for water penetration of cable*

IEC 61196-1-206, *Coaxial communication cables – Part 1-206: Environmental test methods – Climatic sequence*

IEC 61196-1-300 (all parts), *Coaxial communication cables – Part 1-3XX: Mechanical test methods*

IEC 61196-1-301, *Coaxial communication cables – Part 1-301: Mechanical test methods – Test for ovality*

IEC 61196-1-302, *Coaxial communication cables – Part 1-302: Mechanical test methods – Test for eccentricity*

IEC 61196-1-308, *Coaxial communication cables – Part 1-308: Mechanical test methods – Test for tensile strength and elongation for copper-clad metals*

IEC 61196-1-310, *Coaxial communication cables – Part 1-310: Mechanical test methods – Test for torsion characteristics of copper-clad metals*

IEC 61196-1-313, *Coaxial communication cables – Part 1-313: Mechanical test methods – Adhesion of dielectric and sheath*

IEC 61196-1-314:2006, *Coaxial communication cables – Part 1-314: Mechanical test methods – Test for bending*

IEC 61196-1-316, *Coaxial communication cables – Part 1-316: Mechanical test methods – Test of maximum pulling force of cable*



IEC 61196-1-317, *Coaxial communication cables – Part 1-317: Mechanical test methods – Test for crush resistance of cable*

IEC 61196-1-324, *Coaxial communication cables – Part 1-324: Mechanical test methods – Test for abrasion resistance of cable*

IEC 62153 (all parts), *Metallic communication cables test methods*

IEC 62153-1-1, *Metallic communication cables test methods – Part 1-1: Electrical – Measurement of the pulse/step return loss in the frequency domain using the Inverse Discrete Fourier Transformation (IDFT)*

IEC 62153-4-3, *Metallic communication cable test methods – Part 4-3: Electromagnetic compatibility (EMC) – Surface transfer impedance – Triaxial method*

IEC 62153-4-4, *Metallic communication cable test methods – Part 4-4: Electromagnetic compatibility (EMC) – Shielded screening attenuation, test method for measuring of the screening attenuation as up to and above 3 GHz*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61196-1 apply.

### 4 Materials and cable construction

#### 4.1 Cable construction

The cable construction shall be in accordance with 4.2 to 4.6 of this standard and the requirements stated in the relevant detail specification.

#### 4.2 Inner conductor

##### 4.2.1 Conductor material

Subclause 4.4.1 of IEC 61196-1:2005 applies. The conductor material shall be as stated in the relevant cable detail specification.

##### 4.2.2 Conductor construction

The conductor shall consist of a single strand or tube.

In addition, 4.4.1 of IEC 61196-1:2005 applies.

The centre conductor diameter shall be stated in the relevant detail specification. The tolerance on the centre conductor shall be  $\pm 0,03$  mm for conductors with a diameter  $\leq 4$  mm. For conductors with a diameter above 4 mm, the tolerance shall be stated in the detail specification.

#### 4.3 Dielectric

The construction of the dielectric shall be one of the following:

- solid dielectric,
- air spaced dielectric,
- semi air spaced dielectric,
- gas-injected cellular polymer dielectric.

Life expectancy of the dielectric insulation by oxidative induction time (OIT) before and after ageing is intended to be defined by IEC 61196-1-213<sup>2</sup>.

#### 4.4 Outer conductor or screen

The type, material, nominal thickness and diameter of the outer conductor or screen shall be specified in the relevant detail specification. The tolerance of the outer conductor shall be  $\pm 0,05$  mm for constructions in accordance with 4.6.1 c) of IEC 61196-1:2005, excluding corrugated designs. The tolerance for all other constructions, including corrugated designs, shall be  $\pm 0,3$  mm in accordance with all other designs noted in 4.6.1 of IEC 61196-1:2005.

The construction and material of the outer conductor or screen shall be as stated in the relevant detail specification. The construction shall be in accordance with 4.6.1 c) or 4.6.1 f) or 4.6.1 g) of IEC 61196-1:2005.

For constructions with metal foil and/or braid, braid angle shall be between 15° and 45°. Coverage factor shall be specified in the detail specification.

#### 4.5 Sheath

Subclause 4.7 of IEC 61196-1:2005 applies with the following amendments and additions:

Cables without an outer sheath shall not be subject to 4.5 of this standard.

The outer sheath of the cable shall be a thermoplastic material as specified in the relevant detail specification.

The nominal sheath thickness shall be stated in the relevant detail specification.

The nominal diameter of the sheath shall be stated in the relevant detail specification.

The maximum allowable tolerance of the diameter shall be stated in the relevant detail specification.

The maximum allowable values for ovality and eccentricity are given in Table 4 of this standard.

For aerial cables or cables for outdoor use with a black polyethylene sheath, the carbon black content shall be as specified in Table 3.

For other sheath material and colours of cables for outdoor use, the cable is intended to pass the UV stability test according to IEC 61196-1-212<sup>3</sup>.

The messenger type shall be specified in the relevant detail specification and shall include as a minimum the following criteria: type and material, tensile strength, corrosion properties and elongation.

#### 4.6 Completed cable

The nominal dimensions and tolerances shall be stated in the detail specification.

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<sup>2</sup> Under consideration.

<sup>3</sup> Under consideration, taking into account EN 50289-4-17.

## 5 Standard ratings and characteristics

The ratings and characteristics applicable to each cable shall be specified herein or in the relevant detail specification.

## 6 Identification and marking

### 6.1 Cable identification

Subclause 6.1 of IEC 61196-1:2005 applies.

### 6.2 Cable marking

The cable marking shall be applied to the sheath or to the outer conductor when a sheath is not present. The marking shall consist of the IEC cable type number as given in 6.1.1 of IEC 61196-1:2005 and/or the manufacturer's designated markings when specified in the relevant cable specification.

### 6.3 Labelling

Labelling shall be provided in accordance with 6.3 of IEC 61196-1:2005 and the relevant detail specification.

## 7 Tests for completed cables

### 7.1 General

When tested in accordance with IEC 61196-1, the requirements given below shall apply.

Unless otherwise specified, all measurements shall be carried out under standard atmospheric conditions for testing in accordance with Clause 5 of IEC 60068-14.

Applicable test methods shall be in accordance with the IEC 61196-1-100, IEC 61196-1-200, and IEC 61196-1-300 series and the IEC 62153 series.