

INTERNATIONAL STANDARD

**Coaxial communication cables –
Part 10: Sectional specification for semi-rigid cables with
polytetrafluoroethylene (PTFE) dielectric**

IEC 61196-10:2014

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INTERNATIONAL
ELECTROTECHNICAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COAXIAL COMMUNICATION CABLES –

**Part 10: Sectional specification for semi-rigid cables
with polytetrafluoroethylene (PTFE) dielectric**

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International Standard IEC 61196-10 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.

This first edition cancels and replaces IEC 61196-2 published in 1995. This edition constitutes a technical revision.

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

FDIS	Report on voting
46A/1213/FDIS	46A/1232/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 publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This publication is to be read in conjunction with IEC 61196-1:2005.

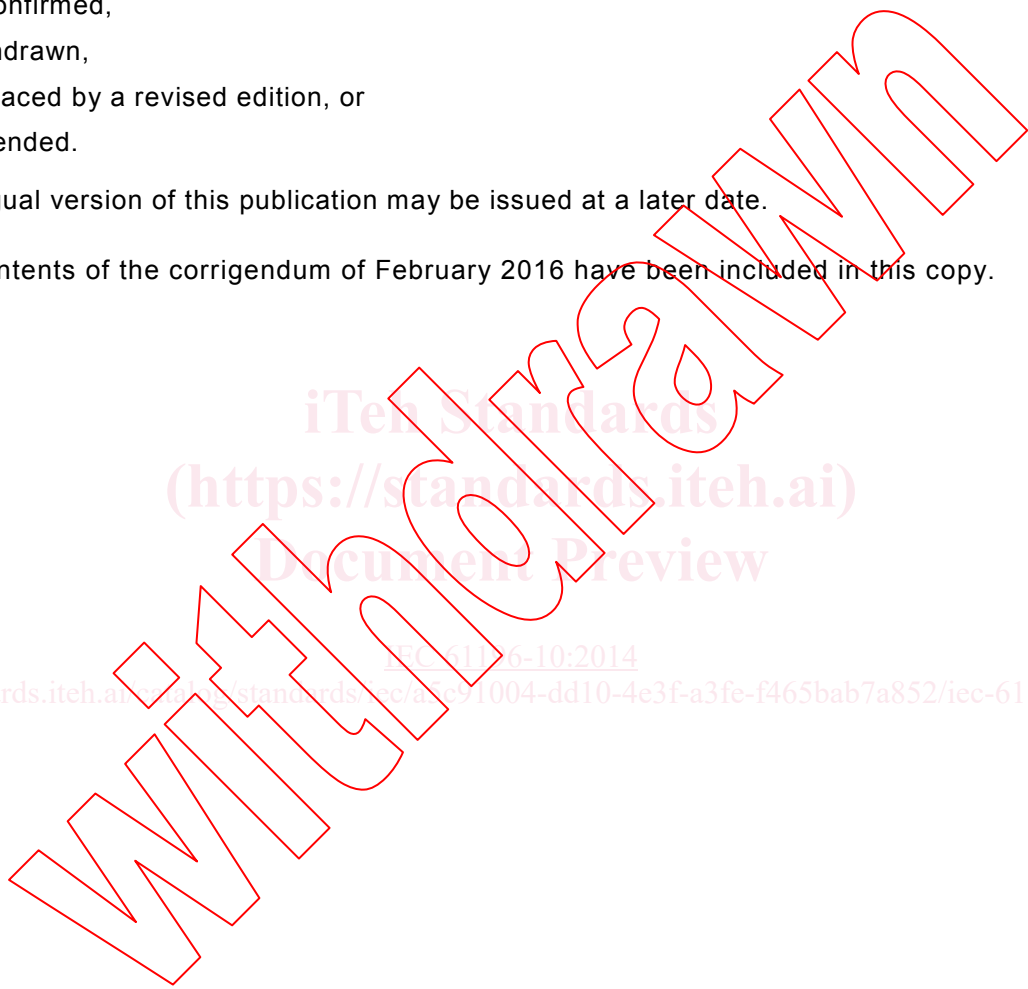
A list of all parts in the IEC 61196 series, published under the general title *Coaxial communication cables*, can be found on the IEC website.

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- withdrawn,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.

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

The contents of the corrigendum of February 2016 have been included in this copy.



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COAXIAL COMMUNICATION CABLES –

Part 10: Sectional specification for semi-rigid cables with polytetrafluoroethylene (PTFE) dielectric

1 Scope

This part of IEC 61196 applies to semi-rigid coaxial communication cables with polytetrafluoroethylene (PTFE) dielectric and tubular outer conductor. These cables are intended for use in microwave and wireless equipments or other signal transmission equipments or units at frequencies above 500 MHz. It is to be read in conjunction with IEC 61196-1:2005.

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 60068-1:1988, *Environmental testing – Part 1: General and guidance*
IEC 60068-1:1988/AMD 1:1992

IEC 61169-4, *Radio-frequency connectors – Part 4: RF coaxial connectors with inner diameter of outer conductor 16 mm (0,63 in) with screw lock – Characteristic impedance 50 Ω ; (type 7-16)*

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 61196-1-101, *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*

IEC 61196-1-103, *Coaxial communication cables – Part 1-103: Electrical test methods – Test for capacitance of cable*

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

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 61196-1-301, *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 61196-1-313, *Coaxial communication cables – Part 1-313: Mechanical test methods – Adhesion of dielectric and sheath*

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

IEC 61196-1-318, *Coaxial communication cables – Part 1-318: Mechanical test methods – Heat performance tests*

IEC 62037-4:2012, *Passive RF and microwave devices, intermodulation level measurement – Part 4: Measurement of passive intermodulation in coaxial cables*

IEC 62230:2006, *Electric cables – Spark-test method*

ISO 2859-1:1999, *Sampling procedures for inspection by attributes – Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

3 Terms and definitions

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

3.1

semi-rigid coaxial communication cable

coaxial line, not intended to be bent or flexed in service or not intended to be flexed after initial forming

Note 1 to entry: Any bending or flexing during installation or use may degrade the performance of cable. It is not intended to be bent after installation.

Note 2 to entry: The typical construction for this type of cables is a solid metallic core as inner conductor, polytetrafluoroethylene (PTFE) dielectric and a seamless copper or other metallic tubing outer conductor.

4 Materials and cable construction

4.1 Cable construction

The cable construction shall be in accordance with 4.2 to 4.5 of this standard and the requirements stated in the relevant detail specification.

4.2 Inner conductor

The inner conductor shall be in accordance with 4.4.1 of IEC 61196-1:2005.

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

The tolerance of the diameter shall be $\pm 3\%$.

The inner conductor shall be smooth and continuous.

4.3 Dielectric

The construction of the dielectric shall be one of the materials listed below or a combination of the following:

- solid polytetrafluoroethylene (PTFE) dielectric;
- low-density polytetrafluoroethylene (PTFE) dielectric;

or any other appropriate PTFE type material as stated in the relevant detail specification.

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

The tolerance shall be $\pm 3\%$.

4.4 Outer conductor

The outer conductor shall be a copper or aluminum tube with or without coating.

The coating material and thickness shall be stated in the relevant detail specification.

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

The tolerance of the diameter shall be $\pm 1\%$.

The corrugated outer conductor shall be smooth and continuous.

4.5 Sheath (when applicable)

The sheath of a cable is optional and shall be in accordance with 4.7 of IEC 61196-1:2005 with the following amendments and additions.

- The outer sheath of a cable shall be a thermoplastic material as specified in the relevant detail specification, including the material type.
- 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 tolerance of the sheath shall be stated in the relevant detail specification.

5 Standard rating and characteristics

5.1 Characteristic impedance

The characteristic impedance is specified in the relevant detail specification.

5.2 Rated temperature range

The rated operational, storage and installation temperature range shall be specified in the relevant detail specification.

6 Identification, marking and labeling

6.1 Cable identification

6.1.1 Type name

Cables shall be identified by the following:

- a) A number giving the nominal characteristic impedance of the cable in ohms,
For example, "50".
- b) A number that corresponds to the nominal diameter measured over the outer conductor in inch, i.e. the nominal diameter measured over the outer conductor, in mm, multiplied by 39,38.
For example, "141" which means the nominal diameter of the outer conductor is 3,58 mm.

6.1.2 Variants

The variant of cables should be identified by the following:

- a) Type name: see 6.1.1.
- b) Distinguishing number: It should consist of three digital characters (XYZ) which distinguish the different construction and material and its coating of different cables. It shall be stated in the relevant detail specification.

6.2 IEC marking

IEC marking shall be made up of the following elements:

- a) variants naming (see Clause 6);
- b) the number of the IEC sectional specification.

6.3 Labelling

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

7 Requirements of finished cables

7.1 General

For finished cables, the requirements given below shall apply when they are tested in accordance with the IEC 61196-1 series or Clause 8 of this specification. Unless otherwise specified, all measurements shall be carried out under standard atmospheric conditions for testing in accordance with Clause 5 of IEC 60068-1:1988/AMD 1:1992.

7.2 Electrical requirements (see Table 1)