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**EN 50117-10-2**

NORME EUROPÉENNE

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English Version

## Coaxial cables - Part 10-2: Sectional specification for coaxial cables for analogue and digital signal transmission - Outdoor drop cables for systems operating at 5 MHz - 3 000 MHz

Câbles coaxiaux - Partie 10-2: Spécification intermédiaire pour câbles coaxiaux pour la transmission de signaux analogiques et numériques - Câbles de raccordement à usage extérieur pour les systèmes fonctionnant entre 5 MHz et 3 000 MHz

Koaxialkabel - Teil 10-2: Rahmenspezifikation für Koaxialkabel für analoge und digitale Signalübertragung - Aussenkabel für Systeme im Bereich von 5 MHz - 3 000 MHz

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (EN 50117-10-2:2019) has been prepared by CLC/SC 46XA "Coaxial cables" of CLC/TC 46X "Communication cables".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-09-29
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2022-03-29

This document supersedes EN 50117-2-5:2004.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

All materials used for cables according to this standard should fulfil the requirements of the current REACH Regulation and ROHS Directives.

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**EN 50117-10-2:2019 (E)****1 Scope**

This part of EN 50117 which is a sectional specification applies to coaxial outdoor drop cables for analogue and digital one and two way signal transmission, e.g. for cable networks for television signals, sound signals and interactive services in accordance with EN 60728-1, EN 60728-1-1, EN 60728-101, EN 60728-10, EN 50173-1 and EN 50173-4. This includes also the transmission of BCT signals provided by a CATV, MATV or SMATV cable network.

The purpose of this European Standard is to specify the applicable test methods and requirements for the electrical, mechanical and environmental characteristics and for fire performance of the cables.

**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.

EN 50117-1:2019, *Coaxial cables - Part 1: Generic specification*

EN 50173-1, *Information technology - Generic cabling systems - Part 1: General requirements*

EN 50173-4, *Information technology - Generic cabling systems - Part 4: Homes*

EN 50289-3-9:2001, *Communication cables - Specifications for test methods - Part 3-9: Mechanical test methods - Bending tests*

EN 50290-1-2:2004, *Communication cables - Part 1-2: Definitions*

EN 50290-2-1:2005, *Communication cables - Part 2-1: Common design rules and construction*

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EN 50290-2-22, *Communication cables - Part 2-22: Common design rules and construction - PVC sheathing compounds*

EN 50290-2-27, *Communication cables - Part 2-27: Common design rules and construction - Halogen free flame retardant thermoplastic sheathing compounds*

EN 50290-2-37, *Communication cables - Part 2-37: Common design rules and construction - Polyethylene insulation for coaxial cables*

EN 50290-2-38, *Communication cables - Part 2-38: Common design rules and construction - Polypropylene insulation for coaxial cables*

EN 50290-4-1:2014, *Communication cables - Part 4-1: General considerations for the use of cables - Environmental conditions and safety aspects*

EN 50290-4-2:2014, *Communication cables - Part 4-2: General considerations for the use of cables - Guide to use*

EN 60728-1, *Cable networks for television signals, sound signals and interactive services - Part 1: System performance of forward paths (IEC 60728-1)*

EN 60728-1-1, *Cable networks for television signals, sound signals and interactive services - Part 1-1: RF cabling for two way home networks (IEC 60728-1-1)*

EN 60728-10, *Cable networks for television signals, sound signals and interactive services - Part 10: System performance for return paths (IEC 60728-10)*

EN 60728-101, *Cable networks for television signals, sound signals and interactive services - Part 101: System performance of forward paths loaded with digital channels only (IEC 60728-101)*

EN 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 62153-1-1)*

IEC 61196-1-112, *Coaxial communication cables – Part 1-115: Electrical test methods – Test for return loss (uniformity of impedance)*

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

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) – Test method for measuring of the screening attenuation as up to and above 3 GHz, triaxial method*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50290-1-2:2004, EN 50117-1:2019 and the following apply.

#### 3.1

##### drop cable

coaxial cable which is used to connect from

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- a) subscriber tap or a directional coupler to a system outlet,
  - b) subscriber tap to a subscriber splitter,
  - c) subscriber splitter to a system outlet

#### 3.2

##### outdoor drop cable

drop cable for outdoor application

## 4 Requirements for cable construction and design

### 4.1 General

Cables according to this standard are designed for an operating temperature range from  $-40\text{ °C}$  to  $+70\text{ °C}$ <sup>1)</sup> and at frequencies between 5 MHz and 3 000 MHz.

When designing the cable, consideration should be given to the maximum admissible current stated in the detail specification. It is assumed that the raise of temperature of the inner conductor when submitted to the maximum current under nominal ambient conditions does not affect the mechanical and electrical properties of the cable.

Cables according to this standard may be operated at voltages  $> 50\text{ V AC}$  or  $> 75\text{ V DC}$  according to the detail specification of the manufacturer. However, these cables are not intended for direct connection to the mains electricity supply or other low impedance sources.

1) This value is valid for applications without ampacity only, see also Table A.1 concerning max. DC current.

**EN 50117-10-2:2019 (E)**

Cables according to this standard shall be designed according to EN 50290-2-1, *Communication cables Part 2-1: Common design rules and construction*. They shall be used according to EN 50290-4-1, *Communication cables - Part 4-1: General considerations for the use of cables - Environmental conditions and safety aspects*.

The use of cables according to this standard including delivery, storage and installation shall be in accordance with EN 50290-4-2, *Communication cables - Part 4-2: General considerations for the use of cables - Guide to use*, unless otherwise specified.

Cables according to this standard shall be tested for voltage withstanding. The test is performed between conductors and between the conductors or screen and the outer surface of the sheath.

When constructed in accordance with EN 50290-2-1 and EN 50117-1 and submitted to spark testing, CATV cables according to this standard may be installed together with Low Voltage cables.

All cables covered by this standard do not fall under the scope of the RED or the EMC Directive. Nevertheless, transfer impedance and screening attenuation according to 5.1.3.6 and 5.1.3.7 shall be specified in the relevant detail specification, if the intended application of the cable is the use in combination with equipment under the RED or the EMC Directive.

**4.2 Inner conductor**

The conductor shall meet the requirements of 4.2 of EN 50117-1:2019, and shall be solid and may be plain or metal coated. Dimensions shall be in accordance with the detailed specification.

There shall be no joint made subsequent to the last drawing operation.

In case of metal coated conductor, consideration shall be taken for the compatibility of the connector

**4.3 Dielectric**

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The dielectric material(s) shall be in accordance with 4.3 of EN 50117-1:2019 and shall consist of polyolefin materials, with EN 50290-2-37 (polyethylene), EN 50290-2-38 (polypropylene). Dimensions shall be in accordance with the detail specification.

Unless otherwise specified, the nominal diameter over the dielectric should be one of the preferred values, namely 3,7 mm, 4,8 mm and 7,2 mm.

**4.4 Outer conductor or screen**

The construction and material of the outer conductor (or screen) shall meet the requirements of 4.4 items b), f) or g) of EN 50117-1:2019. Where option b) is used, a double braid layer is required.

For braid constructions or helically wound wires, the braid angle shall be between 15° and 45°. The coverage factor shall be greater than or equal to 65 %, or, when the cable is provided with a metal foil, greater than or equal to 25 %. These values are also valid for cables with two bi-directional layers of helically wound wires.

Dimensions shall be in accordance with the detail specification.

**4.5 Filling compounds**

Not applicable.

**4.6 Moisture barriers**

If applicable, in accordance with the relevant detail specification.

**4.7 Wrapping layers**

Not applicable.



#### 4.8 Sheath

Sheath material(s) shall meet the requirements of the EN 50290-2-22 for PVC, EN 50290-2-24 for PE or EN 50290-2-27 for halogen free flame retardant materials.

The sheath shall also meet the requirements of 4.8 of EN 50117-1:2019.

Sheath colour shall be agreed between the provider and the customer.

Dimensions and minimum wall thickness shall be in accordance with the detail specification.

#### 4.9 Metallic protection

Not applicable.

#### 4.10 Cable integral suspension strand (Messenger wire)

If applicable.

#### 4.11 Oversheath

Not applicable.

#### 4.12 Fauna proofing

Not applicable.

#### 4.13 Chemical and/or environmental proofing

If applicable.

#### 4.14 Cable identification (standards.iteh.ai)

##### 4.14.1 General

Cable identification shall be in accordance with 4.14 of EN 50117-1:2019.

##### 4.14.2 Sheath marking

Sheath marking shall be achieved as a non-degradable print with a distinctive mark every meter of cable containing the following minimum information:

- designation of the cable;
- attenuation value (in dB/100 m at 800 MHz, rounded);
- screening class;
- Euro-class;
- name of supplier.

EXAMPLE EN 50117-10-2 21 < XXX > Class A < YYY > .

The Construction Products Regulation (CPR) will define classes for the fire performance of cables. As long as fire performance classes (Euroclasses) are not defined, sheath marking with Euroclass is not required.

NOTE The CPR is applicable for cables installed in a construction. For more information about CPR, see EN 50290-4-1:2014, 4.2 and EN 50290-4-2:2014, 5.3.