



IEC 61196-1-326

Edition 2.0 2026-04

INTERNATIONAL STANDARD

**Coaxial communication cables -
Part 1-326: Test methods - Clamps test**

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

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

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CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions.....	7
4 General conditions for the tests.....	8
5 Clamping force.....	8
5.1 Clamping force of feeder clamp.....	8
5.1.1 Object.....	8
5.1.2 Procedure.....	8
5.1.3 Requirements.....	9
5.1.4 Information to be given in the relevant specification.....	9
5.1.5 Test report.....	9
5.2 Clamping force of spacer clamp.....	10
5.2.1 Object.....	10
5.2.2 Procedure.....	10
5.2.3 Requirements.....	12
5.2.4 Information to be given in the relevant specification.....	13
5.2.5 Test report.....	13
6 Normal tensile force.....	13
6.1 Normal force of feeder clamp.....	13
6.1.1 Object.....	13
6.1.2 Procedure.....	13
6.1.3 Requirements.....	14
6.1.4 Information to be given in the relevant specification.....	14
6.1.5 Test report.....	15
6.2 Normal tensile force of spacer clamp.....	15
6.2.1 Object.....	15
6.2.2 Procedure.....	15
6.2.3 Requirements.....	16
6.2.4 Information to be given in the relevant specification.....	17
6.2.5 Test report.....	17
7 Shear force.....	17
7.1 Shear force of feeder clamp.....	17
7.1.1 Object.....	17
7.1.2 Procedure.....	17
7.1.3 Requirements.....	18
7.1.4 Information to be given in the relevant specification.....	18
7.1.5 Test report.....	19
7.2 Shear force of spacer clamps.....	19
7.2.1 Object.....	19
7.2.2 Procedure.....	19
7.2.3 Requirements.....	20
7.2.4 Information to be given in the relevant specification.....	20
7.2.5 Test report.....	21
8 Suitability test.....	21
8.1 Object.....	21

8.2	Procedure	21
8.3	Requirements	21
8.4	Information to be given in the relevant specification	22
8.5	Test report	22
9	Fastener torque test (applicable to feeder clamps)	22
9.1	Object	22
9.2	Procedure	22
9.3	Requirements	23
9.4	Information to be given in the relevant specification	23
9.5	Test report	23
10	High cycle fatigue	23
10.1	Object	23
10.2	Procedure	24
10.3	Requirements	25
10.4	Information to be given in the relevant specification	25
10.5	Test report	26
11	Climatic sequence	26
11.1	Object	26
11.2	Installation	26
11.3	Procedure	27
11.4	Requirements	27
11.5	Information to be given in the relevant specification	27
11.6	Test report	28
12	Salt mist	28
12.1	Object	28
12.2	Procedure	28
12.3	Requirements	28
12.4	Information to be given in the relevant specification	28
12.5	Test report	29
13	Solar radiation	29
13.1	Object	29
13.2	Procedure	29
13.3	Requirements	29
13.4	Information to be given in the relevant specification	29
13.5	Test report	30
14	Cold temperature installation	30
14.1	Object	30
14.2	Procedure	30
14.3	Requirements	30
14.4	Information to be given in the relevant specification	31
14.5	Test report	31
15	Fire-resistance (fireproof clamp)	31
15.1	Object	31
15.2	Procedure	31
15.3	Requirements	33
15.4	Information to be given in the relevant specification	33
15.5	Test report	33
Annex A (informative)	Typical example of cable dummy	34

Annex B (informative) Feeder clamp.....	35
Bibliography.....	40
Figure 1 – Schematic diagram of test for clamping force of feeder clamps for single and multiple cable runs	9
Figure 2 – Schematic diagram of test for clamping force of spacer clamps	12
Figure 3 – Schematic diagram of normal force of feeder clamp.....	14
Figure 4 – Schematic diagram of normal tensile force of spacer clamp.....	16
Figure 5 – Schematic diagram of shear force of feeder clamp	18
Figure 6 – Schematic diagram of shear force.....	20
Figure 7 – Schematic diagram of fastener force test.....	23
Figure 8 – Schematic diagram of test for high cycle fatigue.....	24
Figure 9 – Oscillating load.....	25
Figure 10 – Setup for horizontal cable installation.....	26
Figure 11 – Setup for vertical cable installation.....	27
Figure 12 – Schematic diagram of fire resistance test	32
Figure 13 – Standard temperature rise curve.....	32
Figure A.1 – Cable dummy	34
Figure B.1 – Schematic diagram of half-shell clamps with screw lock.....	37
Figure B.2 – Schematic diagram of spring clamps.....	38
Figure B.3 – Schematic diagram of form fit clamp	39

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**Coaxial communication cables -
Part 1-326: Test methods - Clamps test**

FOREWORD

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IEC 61196-1-326 has been prepared by subcommittee 23A: Cable management systems, of IEC technical committee 23: Electrical accessories. It is an International Standard.

This second edition cancels and replaces the first edition published in 2022. This edition constitutes a technical revision.

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

- a) Addition of Clause 4 to Clause 15.

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

Draft	Report on voting
23A/1112/FDIS	23A/1114/RVD

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 the 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 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
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1 Scope

This part of IEC 61196 specifies the test methods of clamps for laying coaxial communication cable, including mechanical test methods and environmental test methods.

This document applies to clamps for laying coaxial communication cables, including feeder and radiating cables. For requirements not covered in IEC 61914, clamps for other types of cables can also refer to this document.

This document includes the following test methods:

- a) mechanical test methods:
 - 1) clamping force (Clause 5);
 - 2) normal tensile force (Clause 6);
 - 3) shear force (Clause 7);
 - 4) suitability test (Clause 8);
 - 5) fastener torque test (applicable to feeder clamps) (Clause 9);
 - 6) high cycle fatigue (Clause 10).
- b) environmental test methods:
 - 1) climatic sequence (Clause 11);
 - 2) salt mist (Clause 12);
 - 3) solar radiation (applicable to outdoor clamps) (Clause 13);
 - 4) cold temperature installation (Clause 14);
 - 5) fire-resistance (fireproof clamp) (Clause 15).

This document does not apply to cable cleats, which are covered by IEC 61914.

NOTE Cable cleats complying with IEC 61914 can be additionally tested in accordance with this document, where relevant.

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 60068-2-1, *Environmental testing - Part 2-1: Tests - Test A: Cold*

IEC 60068-2-2, *Environmental testing - Part 2-2: Tests - Test B: Dry heat*

IEC 60068-2-5, *Environmental testing - Part 2-5: Tests - Test S: Simulated solar radiation at ground level and guidance for solar radiation testing and weathering*

IEC 60068-2-30, *Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

IEC 61196-1-112, *Coaxial communication cables - Part 1-112: Electrical test methods - Test for return loss and voltage standing wave ratio*

IEC 61196-4, *Coaxial communication cables - Part 4: Sectional specification for radiating cables*

IEC 61196-11, *Coaxial communication cables - Part 11: Sectional specification for semi-rigid cables with polyethylene (PE) dielectric*

ISO 834-1:2025, *Fire-resistance tests - Elements of building construction - Part 1: General requirements*

ISO 9227, *Corrosion tests in artificial atmospheres – Salt spray tests*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61196-4, IEC 61196-11 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

feeder clamp

device for clamping and fixing coaxial communication cables (feeder cable) which comply with IEC 61196-11 (see Annex B)

3.1.1

clip

part of clamp which can hold a cable

Note 1 to entry: One clamp can have more than one clip.

3.2

spacer clamp

mechanical device to install a radiating cable at a certain distance from the base or steel rope

3.2.1

suspended clamp

spacer clamp to install a radiating cable on suspension steel ropes

3.2.2

cantilever clamp

spacer clamp to install a radiating cable at a certain distance from the base

3.3

fireproof clamp

clamp with a fireproof device which can prevent the cable falling down when a fire accident happens

3.4

fireproof device

device which can prevent the cable falling down when a fire accident happens

3.5

DUT

device under test

particular item that is being tested or measured or observed

Note 1 to entry: In this document, the DUT refers to the clamp under test.

3.6**shear force** F_s

force that is parallel to the fixing base of the DUT

Note 1 to entry: See F_s in Annex B.**3.7****normal force** F_n

force that is perpendicular to the fixing base of the DUT

Note 1 to entry: See F_n in Annex B.**4 General conditions for the tests**

Clamps (DUT) shall be tested according to the following general conditions:

- a) unless otherwise specified, the tests shall be carried out in standard atmospheric conditions as follows:
 - 1) temperature: (23 ± 2) °C;
 - 2) relative humidity: (45 to 55) %;
 - 3) air pressure: (86 to 106) kPa;
- b) unless otherwise specified, tests shall be carried out with clamps assembled and installed as in normal use according to the manufacturer's or responsible vendor's instructions;
- c) tests of non-metallic clamps or composite clamps shall not be commenced earlier than 168 h after manufacture;
- d) when toxic or hazardous processes are used, precautions should be taken to safeguard the person performing the test;
- e) the total applied load for each of the load tests shall have a tolerance of 0 % to + 3 %;
- f) all lengths and distances for test arrangements shall not exceed a tolerance of ± 5 %.

5 Clamping force**5.1 Clamping force of feeder clamp****5.1.1 Object**

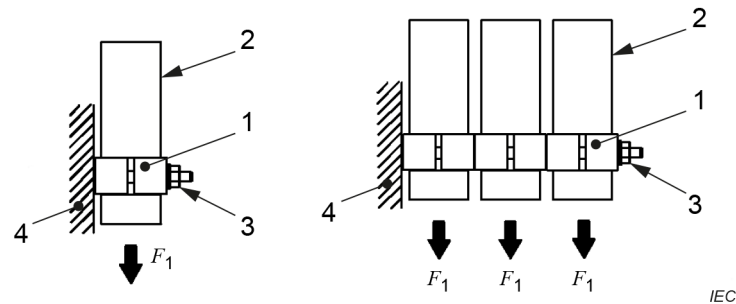
This test is to determine the ability of the feeder clamp to hold the specified clamping force.

5.1.2 Procedure

Test procedure is as follows:

- a) Install a feeder clamp (DUT) on a suitable base material as specified for a vertical cable installation.
- b) Install one piece of feeder cable with a length of approximately 200 mm in each clip of the clamp. Depending on the cable diameter and flexibility another length can be selected. The cable piece(s) shall be in a straight condition. A highly flexible type of cable shall require an additional support to keep it straight. The additional support shall only be in loose mechanical contact to the cable.

The cable piece(s) shall have the specified minimum outer diameter which the feeder clamp can hold. Acceptable tolerances of cable diameter: diameter smaller than 30 mm: + 2 %, diameter of 30 mm and larger: +1 %. Mark the initial clamp position on the cable pieces' jacket.



Key

- 1 clips
- 2 cables
- 3 fixing
- 4 base (cement concrete blocks conforming to the designation, metal construction, etc.)

Figure 1 – Schematic diagram of test for clamping force of feeder clamps for single and multiple cable runs

- c) Apply a specified force F_1 for 1 min to each cable as shown in Figure 1.
- d) Remove all the force F_1 and measure the displacement of each cable piece and DUT.
- e) After the test, the components shall be examined for compliance with the requirements according to 5.1.3.

NOTE The measured displacement is always dependent on the specific cable and its surface condition. The result is therefore only valid for one type of manufacturer and can vary between different manufacturers.

5.1.3 Requirements

After the test, the displacement of the feeder cable piece(s) shall not be more than 5 % of the cable's diameter if not specified otherwise.

5.1.4 Information to be given in the relevant specification

The following information shall be given in the relevant specification:

- a) F_1 value for clamping force;
- b) maximum allowed displacement of the cable and clamp;
- c) any deviation from the standard procedure.

5.1.5 Test report

The test report should at least include the following information:

- a) information summary:
 - 1) test procedure and method;
 - 2) type of clamp and cable tested;
 - 3) the clamping force F_1 applied;
 - 4) name of the test equipment used, validity of the measurement;
- b) results after the test:
 - 1) the actual displacement of the cable and clamp;
 - 2) the appearance of the feeder clamp.

5.2 Clamping force of spacer clamp

5.2.1 Object

This test is to determine the ability of the spacer clamp to hold the specified clamping force.

5.2.2 Procedure

Test procedure is as follows:

- a) Select a radiating cable with a length of about 200 mm. Its outer diameter should be the minimum cable outer diameter that the clamp can hold. Acceptable tolerances of cable diameter: diameter smaller than 30mm: + 2 %, diameter of 30 mm and larger: +1 %. Install a spacer clamp under test (DUT) into the test device in the normal manner and install the radiating cable into DUT in a normal installation manner, as shown in Figure 2.
 - b) For suspended clamp:
 - 1) apply a specified force F_1 for 1 min to the integrated messenger wire of the radiating cable as shown in Figure 2a) or the radiating cable as shown in Figure 2b). Remove the force F_1 and measure the remaining displacement between the suspended clamp and the radiating cable;
 - 2) apply the specified force F_2 to the steel rope. Remove the force F_2 and measure the remaining displacement between the suspended clamp and steel rope.
 - c) For cantilever clamp:
 - 1) for cantilever clamp for self-supporting radiating cable: Apply the specified force F_1 for 1 min to the integrated messenger wire of the radiating cable as shown in Figure 2c). Remove the force F_1 and measure the remaining displacement between cantilever clamp and steel rope;
 - 2) for cantilever clamp for non-self-supporting radiating cable: Apply a specified force F_1 for 1 min to the radiating cable as shown in Figure 2d). Remove the force F_1 and measure the remaining displacement between cantilever clamp and the radiating cable.
- NOTE The measured displacement is always dependent on the specific cable and its surface condition. The result is therefore only valid for one type of manufacturer and can vary between different manufacturers.
- d) After the test, the components of the DUT shall be examined for compliance with the requirements according to 5.2.3.