

INTERNATIONAL STANDARD



**Coaxial communication cables –
Part 4-1: Blank detail specification for radiating cables**

STANDARD PREVIEW
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IEC 61196-4-1:2022

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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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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COAXIAL COMMUNICATION CABLES –

Part 4-1: Blank detail specification for radiating cables

FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 61196-4-1:2016. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 61196-4-1 has been prepared by subcommittee 46A: Coaxial cables, of IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories. It is an International Standard.

This second edition cancels and replaces the first edition published in 2016. This edition constitutes a technical revision.

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

- a) rewrote "1 Scope" to be consistent with other blank detail specifications of coaxial cables;
- b) added detail construction requirements of inner and outer conductor in "[7] Cable construction";
- c) added "Storage temperature range", "Installation temperature range" and "Stop frequency band" in "[8] Engineering information (reference only)";
- d) added "8.2.11 Link loss", "8.4.9 Adhesion of dielectric", "8.4.10 Shrinkage for insulations", "8.4.11 Maximum pulling force of cable";
- e) added different detail requirements or typical values in 8.2.4, 8.2.6 to 8.2.8, 8.3.1 to 8.3.4, 8.4.1, 8.4.3 to 8.4.8;
- f) deleted "7.4.4 Ovality of outer conductor".

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

Draft	Report on voting
46A/1584/FDIS	46A/1599/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/standardsdev/publications.

This part of IEC 61196 is to be read in conjunction with IEC 61196-1:2005 and IEC 61196-4:—1.

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.

¹ Under preparation. Stage at the time of publication: IEC 61196-4/FDIS:2022.

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,
- replaced by a revised edition, or
- amended.

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COAXIAL COMMUNICATION CABLES –

Part 4-1: Blank detail specification for radiating cables

1 Scope

This part of IEC 61196, ~~which is a blank detail specification,~~ applies to radiating coaxial communication cables. These cables are intended for use in wireless communication system in long, narrow, semi-closed and indoor environment, such as tunnels, railways, highways, subways, elevators and other installations ~~in which conventional radio transmission is not satisfactory or even impossible.~~

It determines the layout and style for detail specifications. Detail specifications, based on the blank detail specification, ~~may~~ can be prepared by a national organization, a manufacturer, or a user.

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

[IEC 61196-4-1:2022](#)

<https://standards.iteh.ai/catalog/standards/sist/0a17c864-4dbd-448e-84f6-60ffe5c47693/iec-61196-1-124>², *Coaxial communication cables – Part 1-124: Electrical test methods – Test for coupling loss of radiating cable*

IEC 61196-4:~~2015~~³, *Coaxial communication cables – Part 4 Sectional specification for radiating cables*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Guidance for the preparation of detail specifications

The detail specification shall be written in accordance with the layout of the blank detail specification, which forms part of this document.

² Under preparation. Stage at the time of publication: IEC/FDIS 61196-1-124:2022.

³ Under preparation. Stage at the time of publication: IEC/FDIS 61196-4:2022.

When a characteristic does not apply, then NA (for not applicable) ~~should be~~ is entered in the appropriate space.

NOTE 1 When a characteristic applies but a specific value is not considered necessary, then NS (for not specified) is entered.

The numbers shown in square brackets in this and the following pages correspond to the following items of required information, which should be entered in the space provided.

- [1] Name and address of the organization that has prepared the document
- [2] IEC document number and date of issue
- [3] Address of the organization from which the document is available
- [4] Related documents
- [5] Any other references to the cable, national reference, trade name, etc.
- [6] Complete description of the cable
- [7] Cable construction
- [8] Engineering information
- [9] Parameter or characteristic
- [10] Reference to the relevant subclause of the sectional specification IEC 61196-4
- [11] Minimum requirements of the sectional specification IEC 61196-4
- [12] Remarks

5 Blank detail specification

Title	
[1] Prepared by: Date:	[2] Document No.: IEC 61196-4-1:2022 Issue: Date:
[3] Available from:	[4] Generic specification IEC 61196-1 Sectional specification IEC 61196-4
[5] Additional references: IEC 61196-1-1XX, IEC 61196-1-2XX, IEC 61196-1-3XX	
[6] Cable description: a) Cable variant b) Material of inner conductor c) Material of dielectric d) Outer conductor e) Material of sheath (if any)	
[7] Cable construction a) Inner conductor Material Diameter (mm) nominal Tolerance (mm): ±...	

Title	
<p>Construction:</p> <p>For corrugated inner conductor:</p> <ul style="list-style-type: none"> – Peak diameter and tolerance (mm): – Root diameter and tolerance (mm): – Pitch and tolerance (mm): <p>For smooth inner conductor:</p> <ul style="list-style-type: none"> – Diameter and thickness and tolerance (mm): <p>For others:</p> <ul style="list-style-type: none"> – Diameter and tolerance (mm): <p>b) Dielectric</p> <p>Material</p> <p>Diameter (mm) nominal</p> <p>Tolerance (mm): ±...</p> <p>c) Outer conductor</p> <p>Material</p> <p>Diameter (mm) nominal</p> <p>Tolerance (mm): ±...</p> <p>Construction:</p> <p>For corrugated outer conductor:</p> <ul style="list-style-type: none"> – Peak diameter and tolerance (mm): – Root diameter and tolerance (mm): – Pitch and tolerance (mm): <p>For smooth tube outer conductor:</p> <p>Diameter and thickness and tolerance (mm):</p> <p>d) Sheath (if any)</p> <p>Material</p> <p>Minimum thickness (mm)</p> <p>Diameter (mm)</p> <p>Tolerance (mm): ± ...</p>	<p style="text-align: center; color: red; opacity: 0.5;">STANDARD PREVIEW Standards.iteh.ai</p> <p style="text-align: center; color: red; opacity: 0.5;">IEC 61196-4-1:2022 https://standards.iteh.ai/catalog/standards/sls/9a17c864-4dbd-448e-84f6-60ffe5c47693/iec-61196-4-1-2022</p>
<p>[8] Engineering information (reference only)</p> <ul style="list-style-type: none"> a) Operating temperature range b) Storage temperature range c) Installation temperature range d) Operating frequency e) Cut-off frequency f) Stop frequency band g) Nominal characteristic impedance d) Maximum continue working voltage h) Minimum bending radius (static state) i) Minimum bending radius (dynamic state) j) Nominal weight k) Average and peak power rating 	

[9] — Parameter or characteristic	[10] — IEC 61196-4:2015 Subclause	[11] — Value	[12] — Remarks
Electrical characteristics	7.1		
Continuity	7.2.1		
Inner and outer conductor direct current resistance	7.2.2	Inner conductor ≤ ... Ω/km @ 20 °C Outer conductor ≤ ... Ω/km @ 20 °C	
Capacitance	7.2.3	Frequency: ≤ ... pF/m	
Withstand voltage of dielectric	7.2.4	... kV rms or ... DC	40 Hz ~ 60 Hz
Withstand voltage of sheath (or spark voltage) — ^a	7.2.5	... kV rms	40 Hz ~ 60 Hz
Insulation resistance	7.2.6	≥ ... MΩ · km	≥ 5 000 MΩ · km according to IEC 61196-4
Mean characteristic impedance	7.2.7	(... ± ...) Ω	200 MHz
Return loss	7.2.8	at ... MHz ≥ ... dB	
Attenuation constant	7.2.9	at ... MHz ≤ ... dB/100 m @ 20 °C	If necessary, refer to a table or graph at the end of the detail specification
Coupling loss	7.2.10	$\alpha_{650} < \dots$ dB @ ... MHz $\alpha_{695} < \dots$ dB @ ... MHz	If necessary, refer to a table or graph at the end of the detail specification
Environmental characteristics	7.3		
Ageing	7.3.1	Value in accordance with the detail specification	
Cold bend performance	7.3.2	Value in accordance with the detail specification	
Climatic sequence — method 1	7.3.3	Value in accordance with the detail specification	
Environmental stress cracking	7.3.4	Value in accordance with the detail specification	
Mechanical characteristics	7.4		
Visual examination	7.4.1	Pass	
Dimensional examination	7.4.2	Value in accordance with the detail specification	
Ovality of inner conductor	7.4.3	≤ ... %	
Ovality of outer conductor	7.4.4	≤ ... %	
Ovality of dielectric	7.4.5	≤ ... %	
Eccentricity of dielectric	7.4.6	≤ ... %	
Eccentricity of sheath	7.4.7	≤ ... %	

[9] — Parameter or characteristic	[10] — IEC 61196-4:2015 Subclause	[11] — Value	[12] — Remarks
Cable bending under tension	7.4.8	1) — length of the cable: 2) — length bent under tension: 3) — radius, R , of rollers / cylinders / mandrels: 4) — distance, Y : 5) — bending angle, ϕ : 6) — moving speed: 7) — tensile load:	
Crush resistance of cable	7.4.9	Load: $\geq \dots N$ Impedance irregularity: $\leq 1\%$	
Fire performance requirement	7.5	In accordance with the requirements of national or regional authorities, when required	
Flame propagation	7.5.1	In accordance with the requirements of national or regional authorities, when required	
Halogen acid gas emission	7.5.2	In accordance with the requirements of national or regional authorities, when required	
Toxic gas emission	7.5.3	In accordance with the requirements of national or regional authorities, when required	
Smoke density	7.5.4	In accordance with the requirements of national or regional authorities, when required	
^a — Mark na, if not applicable.			