

# INTERNATIONAL STANDARD

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





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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## COAXIAL COMMUNICATION CABLES –

## Part 4-1: Blank detail specification for radiating cables

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International Standard IEC 61196-4-1 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/1279/FDIS	46A/1290/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.

It is intended to be read in conjunction with IEC 61196-1:2005 and IEC 61196-4:2015.

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 website 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- withdrawn,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.

## 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, 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 specification. Detail specifications, based on the blank detail specification, may be prepared by a national organization a manufacturer, or a user.

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

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

#### 3 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 standard.

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

When a characteristic applies but a specific value is not considered necessary, then ns (for not specified).

The numbers shown in 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

#### 4 Blank detail specification

Title	
<p>[1] <b>Prepared by:</b></p>	<p>[2] <b>Document No.:</b> <b>Issue:</b> <b>Date:</b></p>
<p>[3] <b>Available from:</b></p>	<p>[4] <b>Generic specification</b>    IEC 61196-1 <b>Sectional specification</b>    IEC 61196-4</p>
<p>[5] <b>Additional references:</b></p>	
<p>[6] <b>Cable description:</b>                      a) Cable variant                      b) Material of inner conductor                      c) Material of dielectric                      d) Outer conductor                      e) Material of sheath (if any)</p>	
<p>[7] <b>Cable construction</b>                      a) <b>Inner conductor</b>                          Material                          Diameter (mm) nominal                          Tolerance (mm): ±...                      b) <b>Dielectric</b>                          Material                          Diameter (mm) nominal                          Tolerance (mm): ±...                      c) <b>Outer conductor</b>                          Material                          Diameter (mm) nominal                          Tolerance (mm): ±...                      d) <b>Sheath (if any)</b>                          Material                          Minimum thickness (mm)                          Diameter (mm)                          Tolerance (mm): ± ...</p>	
<p>[8] <b>Engineering information (reference only)</b>                      a) Operating temperature range                      b) Operating frequency                      c) Nominal characteristic impedance                      d) Maximum continue working voltage                      e) Minimum bending radius (static state)                      f) Minimum bending radius (dynamic state)                      g) Nominal weight                      h) Power rating                      i) Cut-off frequency</p>	

[9] Parameter or characteristic	[10] IEC 61196-4:2015 Subclause	[11] Value	[12] Remarks
<b>Electrical characteristics</b>	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) <sup>a</sup>	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	$\alpha_{c50} < \dots \text{ dB @ } \dots \text{ MHz}$ $\alpha_{c95} < \dots \text{ dB @ } \dots \text{ MHz}$	If necessary, refer to a table or graph at the end of the detail specification
<b>Environmental characteristics</b>	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	
<b>Mechanical characteristics</b>	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, $\varphi$ : 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	
<sup>a</sup> Mark na, if not applicable.			



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