

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Radio-frequency connectors –
Part 70: Sectional specification for series HD-BNC radio-frequency coaxial
connectors – Characteristic Impedance 75 Ω**

**Connecteurs pour fréquences radioélectriques –
Partie 70 : Spécification intermédiaire pour les connecteurs coaxiaux pour
fréquences radioélectriques de la série HD-BNC – Impédance caractéristique de
75 Ω**

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RADIO-FREQUENCY CONNECTORS –

Part 70: Sectional specification for series HD-BNC radio-frequency coaxial connectors – Characteristic impedance 75 Ω

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IEC 61169-70 has been prepared by subcommittee 46F: RF and microwave passive components, of IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories. It is an International Standard.

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

Draft	Report on voting
46F/657/FDIS	46F/664/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 parts of the IEC 61169 series, under the general title: *Radio-frequency connectors*, 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- withdrawn, or
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RADIO-FREQUENCY CONNECTORS –

Part 70: Sectional specification for series HD-BNC radio-frequency coaxial connectors – Characteristic impedance 75 Ω

1 Scope

This part of IEC 61169, which is a sectional specification (SS), provides information and rules for the preparation of detail specifications (DS) of HD-BNC series RF coaxial connectors together with the pro forma blank detail specification. HD-BNC series connectors with characteristic impedance of 75 Ω are used with RF cables or micro-strips in microwave, telecommunication, wireless and other fields. The operating frequency limit is up to 18 GHz.

It also prescribes mating face dimensions for general purpose connectors, gauging information and tests selected from IEC 61169-1, applicable to all detail specifications relating to series HD-BNC RF connectors.

This specification indicates the recommended performance characteristics to be considered when writing a detail specification and it covers test schedules and inspection requirements for assessment levels M and H.

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 61169-70:2024](https://standards.iteh.ai/catalog/standards/iec/12c61c16-2525-4b77-ae12-7f4ec6d5da22/iec-61169-70-2024)

IEC 61169-1:2013, *Radio frequency connectors – Part 1: Generic specification – General requirements and measuring methods*

3 Terms and definitions

No terms and definitions are listed in this document.

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

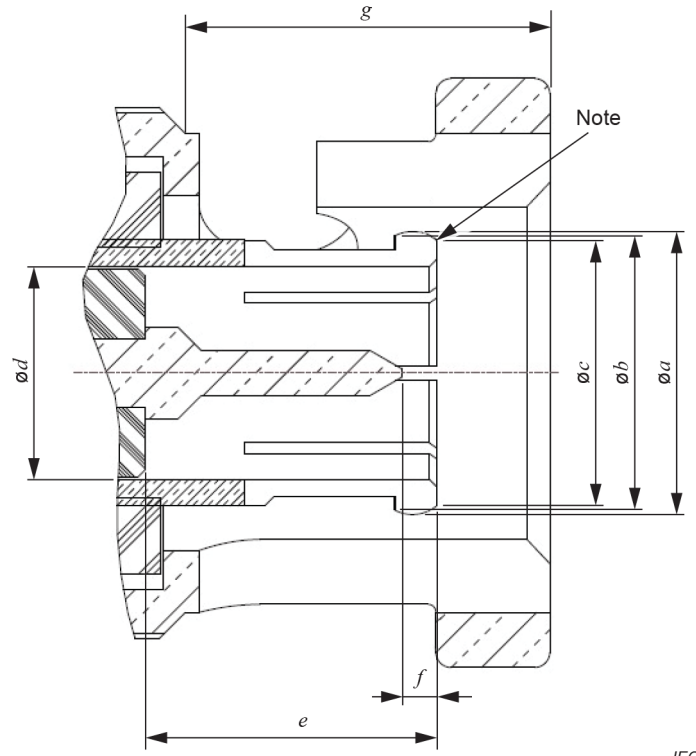
- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

4 Mating face and gauge information

4.1 Dimensions – General connectors – Grade 1

4.1.1 Connector with pin-centre contact

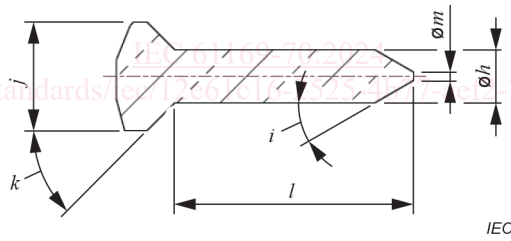
The mating face of connector with pin-centre contact is shown in Figure 1 and Figure 2, and its dimensions are given in Table 1. Metric dimensions are original dimensions. All undimensioned pictorial information is for reference only.



For dimensions, see Table 1.

NOTE Mechanical and electrical reference plane.

Figure 1 – Connector with pin-centre contact



For dimensions, see Table 1.

Figure 2 – Pin-centre contact

Table 1 – Dimensions of connector with pin-centre contact

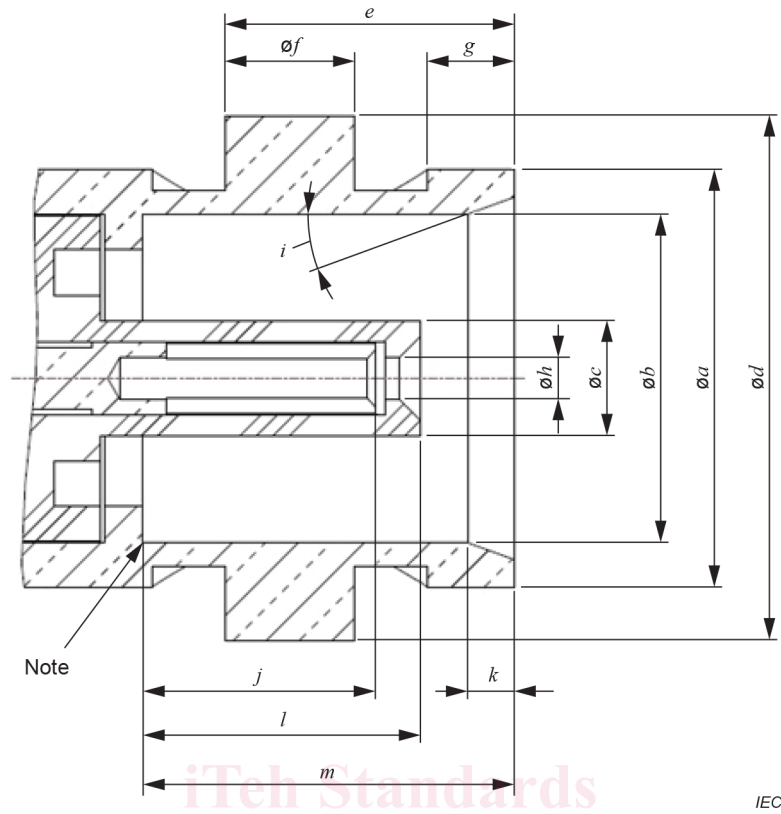
Ref.	mm		Notes
	Min	Max	
<i>a</i>	3,73		Reference – Dimension to meet gauge test per 4.2.2
<i>b</i>	3,61		Ref – Dimension to meet gauge test
<i>c</i>	3,49		Ref – Dimension to meet gauge test
<i>d</i>	2,80	2,85	Inner diameter of outer contact
<i>e</i>	3,71	--	Insulator
<i>f</i>	0,28	0,62	
<i>g</i>	4,80	4,88	
<i>h</i>	0,36	0,39	
<i>i</i>	30°		Angle
<i>j</i>	0,80		Ref
<i>k</i>	45°		Angle
<i>l</i>	2,50	--	
<i>m</i>	--	0,10	Flat

4.1.2 Connector with socket-centre contact

The mating face of connector with socket-centre contact is shown in Figure 3 and Figure 4, and its dimensions are given in Table 2. Metric dimensions are original dimensions. All undimensioned pictorial information is for reference only.

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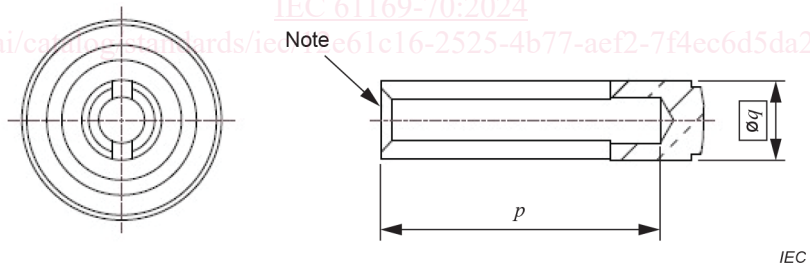
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For dimensions, see Table 2.

NOTE Mechanical and electrical reference plane.

Figure 3 – Connector with socket-centre contact



For dimensions, see Table 2.

NOTE Socket contact configuration to meet electrical and mechanical requirements.

Figure 4 – Socket- centre contact

Table 2 – Dimensions of connector with socket-centre contact

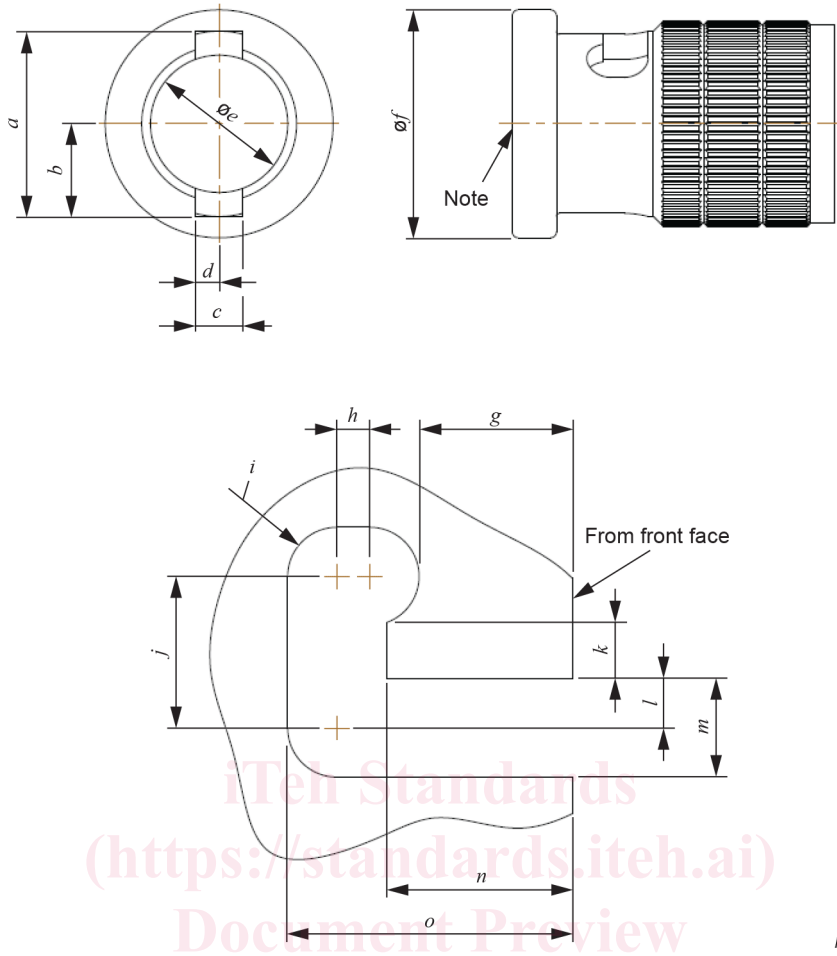
Ref.	mm		Notes
	Min	Max	
<i>a</i>	4,52	4,58	
<i>b</i>	3,56	3,62	
<i>c</i>	--	1,75	
<i>d</i>	5,66	5,76	
<i>e</i>	3,10	3,20	
<i>f</i>	1,35	1,45	
<i>g</i>	1,25	--	
<i>h</i>	0,42	--	
<i>i</i>	20°		Angle
<i>j</i>	2,45	2,65	Contact
<i>k</i>	0,45	0,55	
<i>l</i>	--	3,48	
<i>m</i>	4,03	4,09	
<i>p</i>	2,86	--	
<i>q</i>	0,80		

4.1.3 Coupling nut details

The details of the coupling nut for the pin-centre contact connector are shown in Figure 5, and its dimensions are given in Table 3. Metric dimensions are original dimensions. All undimensioned pictorial information is for reference only.

[IEC 61169-70:2024](https://standards.iteh.ai)

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For dimensions, see Table 3.

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[NOTE: Front face.](https://standards.itih.ai/catalog/standards/iec/12e61c16-2525-4b77-ae2-7f4ec6d5da22/iec-61169-70-2024)

Figure 5 – Coupling nut details

Table 3 – Dimensions of coupling nut

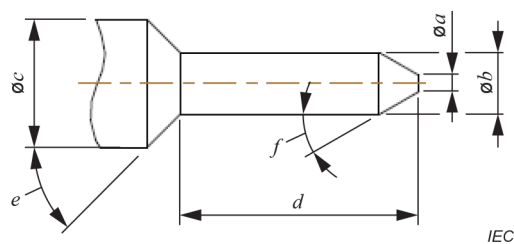
Ref.	mm		Notes
	Min	Max	
<i>a</i>	6,30	6,35	
<i>b</i>	3,10	3,20	
<i>c</i>	1,62		Typical
<i>d</i>	0,81		Typical
<i>e</i>	4,62	4,72	
<i>f</i>	7,65	7,85	
<i>g</i>	2,48	2,58	
<i>h</i>	0,55		Reference
<i>i</i>	R 0,76	R 0,86	Typical
<i>j</i>	45°		Reference Typical
<i>k</i>	0,92		Reference
<i>l</i>	0,77	0,87	
<i>m</i>	1,58	1,68	
<i>n</i>	3,02	3,12	
<i>o</i>	4,65	4,75	

4.2 Gauges

4.2.1 Gauge pin for socket-centre contact

4.2.1.1 Gauge pin dimensions

The gauge pin for socket contacts is shown in Figure 6, and its dimensions are given in Table 4. Metric dimensions are original dimensions. All undimensioned pictorial information is for reference only.



For dimensions, see Table 4.

Figure 6 – Gauge pin for socket-centre contact

Table 4 – Dimensions of gauge pin for socket-centre contact

Gauge A			Gauge B	
(for sizing purposes)			(for measurement of retention force for inner conductor) Mass of gauge: (14±2) g	
Ref.	mm		mm	
	Min	Max	Min	Max
<i>a</i>	--	0,10	--	0,10
<i>b</i>	0,390	0,395	0,360	0,365
<i>c</i>	As needed		As needed	
<i>d</i>	--	2,00	--	2,00
<i>e</i>	45		45	
<i>f</i>	30		30	

Material: steel, polished.
Surface roughness: $R_a = 0,4 \mu\text{m}$ max.

4.2.1.2 Test procedure

The gauge A shall be inserted once into the socket-centre contact. This is a sizing operation.

After this, the gauge B shall be inserted into socket-centre contact. The contact shall support the mass of the gauge in a vertical downward attitude.

4.2.1.3 Additional test

Following the sizing operation, and if prescribed in the detail specification (DS), the force necessary to insert gauge A fully into the socket centre contact shall be measured. When this test is required, the maximum permitted insertion force shall then be specified and shall not exceed 6,67 N.

NOTE Gauge A is used for qualification approval tests only. The minimum diameter of gauge A corresponds to the maximum diameter of a plug pin contact.

4.2.2 Gauge for outer contact of plug

4.2.2.1 Gauge ring dimensions

The gauge ring for outer contacts is shown in Figure 7, and its dimensions are given in Table 5. Metric dimensions are original dimensions. All undimensioned pictorial information is for reference only.