

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Radio-frequency connectors –
Part 8: Sectional specification – RF coaxial connectors with inner diameter of
outer conductor 6,5 mm (0,256 in) with bayonet lock – Characteristic impedance
50 Ω (type BNC)**

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**Connecteurs pour fréquences radioélectriques –
Partie 8: Spécification intermédiaire – Connecteurs coaxiaux pour fréquences
radioélectriques avec diamètre intérieur du conducteur extérieur de 6,5 mm
(0,256 in) à verrouillage à baïonnette – Impédance caractéristique 50 Ω (type
BNC)**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

RADIO-FREQUENCY CONNECTORS –

Part 8: Sectional specification – RF coaxial connectors with inner diameter of outer conductor 6,5 mm (0,256 in) with bayonet lock – Characteristic impedance 50 Ω (type BNC)

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International Standard IEC 61169-8 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.

This first edition of IEC 61169-8 cancels and replaces IEC 60169-8 published in 1978 as well as its Amendment 1 (1996) and Amendment 2 (1997). This edition constitutes a technical revision.

This first edition of IEC 61169-8 differs from IEC 60169-8 primarily in that it contains a new Clause 7: Quality assessment procedures and a new Clause 8: Instructions for preparation of detail specifications. Furthermore this IEC 61169-8 refers to IEC 61169-1 whereas IEC 60169-8 referred to IEC 60169-1.

This bilingual version (2014-01) corresponds to the monolingual English version, published in 2007-02.

The text of this standard is based on the following documents:

FDIS	Report on voting
46F/57/FDIS	46F/67/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.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61169 series, published under the general title *Radio frequency connectors*, can be found on the IEC website.

The QC number that appears on the front cover of this publication is the specification number in the IEC Quality Assessment System for Electronic Components (IECQ).

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
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RADIO-FREQUENCY CONNECTORS –

Part 8: Sectional specification – RF coaxial connectors with inner diameter of outer conductor 6,5 mm (0,256 in) with bayonet lock – Characteristic impedance 50 Ω (type BNC)

1 Scope

This part of IEC 61169, which is a sectional specification (SS), provides information and rules for the preparation of detail specifications (DS) for RF coaxial connectors which may preferably be used with RF cables 60096 IEC 50-3 of IEC 60096-2. These connector patterns are for low power, quick connect/disconnect applications using a bayonet type coupling mechanism and are commonly known as type "BNC".

It describes the interface dimensions for general purpose connectors, dimensional details for standard test connectors together with gauging information and the mandatory tests selected from IEC 61169-1, applicable to all DS relating to type BNC connectors.

This specification indicates the recommended performance characteristics to be considered when writing a DS and covers test schedules and inspection requirements.

2 Normative references (standards.iteh.ai)

The following referenced documents are indispensable for the application 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 60068-1:1988, *Environmental testing – Part 1: General and guidance*
Amendment 1 (1992)

IEC 60096-2, *Radio-frequency cables – Part 2: Relevant cable specifications*

IEC 61169-1:1992, *Radio-frequency connectors – Part 1: Generic specification – General requirements and measuring methods*

3 IEC type designation

Connectors of this standard shall be designated by:

- a) the reference to this standard, 61169-8 IEC;
- b) a serial number (see Clause 6);
- c) a letter corresponding to the climatic category (see 7.2).

Example:

61169-8-IEC-1A denotes a free pin connector belonging to climatic category 40/85/21 to be used with an RF coaxial cable 60096 IEC 50-3-1/3/4.

NOTE The type designation used in this standard is provisional. A final type designation is under consideration.

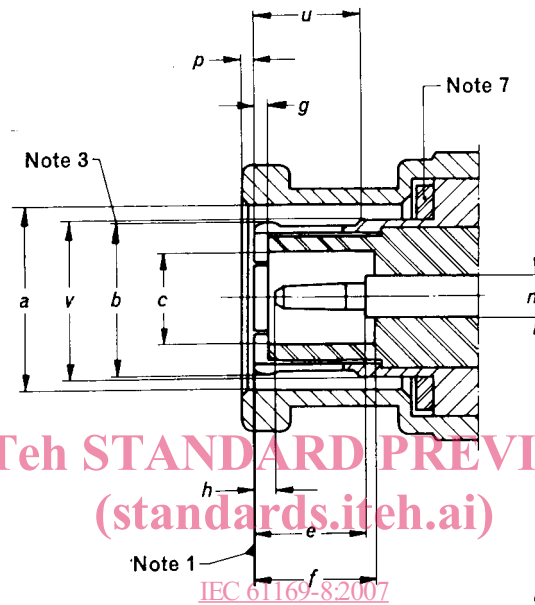
4 Interface dimensions

4.1 Dimensions – General purpose connectors

The original dimensions are in inches.

All undimensioned pictorial configurations are for reference purposes only.

4.1.1 Pin connector



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Figure 1 – Connector with pin-centre contact (for dimensions, see Table 1)

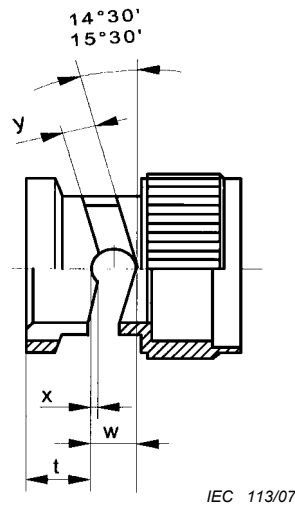


Figure 2 – Details of bayonet lock



Figures 3 and 4 – Details of alternative coupling grooves

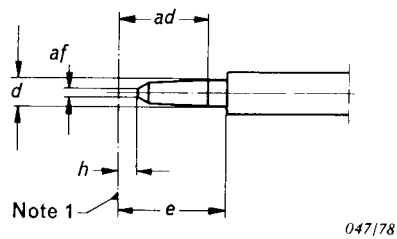


Figure 5 – Details of pin-centre contact

Table 1 – Dimensions for connector with pin-centre contact

Reference	mm		inch		Note
	Min.	Max.	Min.	Max.	
a	9,78	9,91	0,385	0,390	9/diam.
b	–	–	–	–	3/9/diam.
c	4,83	–	0,190	–	9/diam.
d	1,32	1,37	0,052	0,054	9/diam.
e	5,33	–	0,210	–	
f	5,28	–	0,208	–	
g	0,15	–	0,006	–	
h	0,08	1,02	0,003	0,040	
m	2,140 nom.		0,0842 nom.		diam.
p	1,44 nom.		0,057 nom		10
u	5,38	–	0,212	–	
v	–	8,18	–	0,322	9/diam.
z	2,31	2,46	0,091	0,097	6
aa	11,76	–	0,463	–	6
ab	10,14 nom.		0,399 nom.		6
ac	1,14	–	0,045	–	6/rad.
ad	1,96	3,05	0,077	0,120	
af	–	0,64	–	0,025	diam.
t	4,47	4,67	0,180	0,184	
w	3,15	–	0,124	–	
x	0,46	0,56	0,018	0,022	
y	2,31	2,46	0,091	0,097	

NOTE 1 Mechanical and electrical reference plane.

NOTE 3 Slotted and flared to meet gauge test according to 5.1.1.

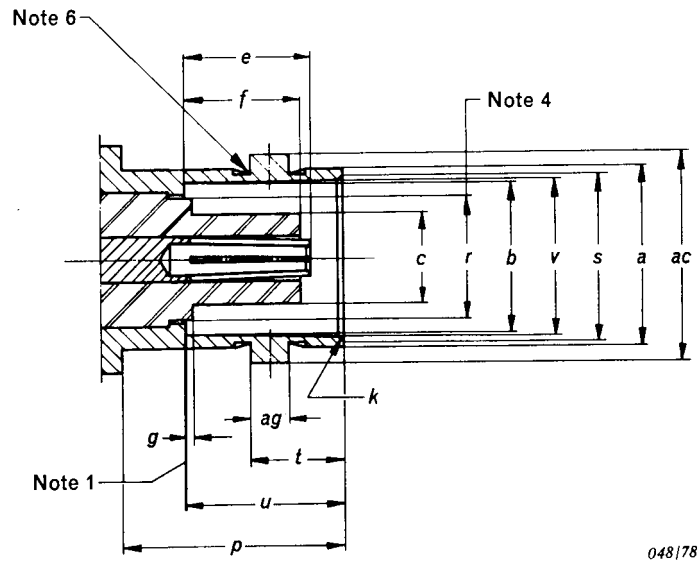
NOTE 6 It is permitted to use either Figure 3 or Figure 4.

NOTE 7 Sealing gasket to meet required electrical and environmental performance.

NOTE 9 Diameters shall be gauged to ensure that on mmC each feature is on or can take up a common axis.

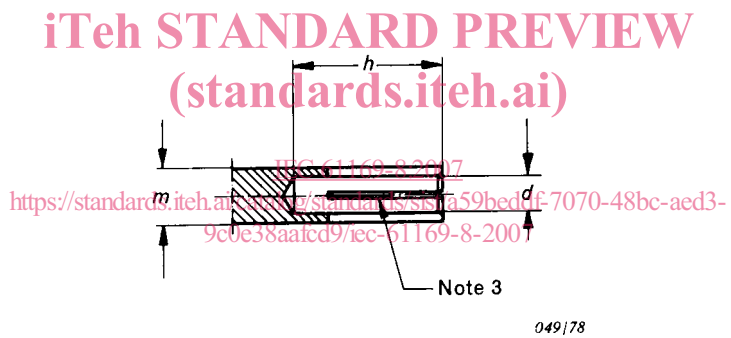
NOTE 10 This dimension shows the position when the bayonet sleeve is locked.

4.1.2 Socket connector



048/78

Figure 6 – Connector with socket-centre contact (for dimensions, see Table 2)



049/78

Figure 7 – Details of socket-centre contact

Table 2 – Dimensions for connector with socket-centre contact

Reference	mm		inch		Note
	Min.	Max.	Min.	Max.	
a	9,60	9,70	0,378	0,382	9/diam.
b	8,10	8,15	0,319	0,321	9/diam.
c	–	4,72	–	0,186	9/diam.
d	–	–	–	–	3/9/diam.
e	4,55	5,23	0,179	0,206	
f	–	5,28	–	0,208	
g	–	0,15	–	0,006	
h	4,95	–	0,195	–	
k	–	–	–	–	8
m	2,140 nom.		0,0842 nom.		diam.
p	10,52	–	0,414	–	
r	–	6,50	–	0,256	4/diam.
s	8,79	9,04	0,346	0,356	diam.
t	5,18	5,28	0,204	0,208	
u	8,31	8,51	0,327	0,335	
v	8,31	8,46	0,327	0,333	9/diam.
ac	10,97	11,07	0,432	0,436	9
ag	1,91	2,05	0,075	0,081	diam.

NOTE 1 Mechanical and electrical reference plane.

NOTE 3 Slotted and closed to meet requirements of 5.1.2.

NOTE 4 Applies only when dielectric extends beyond reference plane.

NOTE 6 A concave depression between studs is permissible.

NOTE 8 Chamfer or radius.

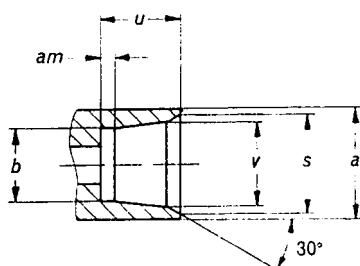
NOTE 9 Diameters shall be gauged to ensure that on mmC each feature is on or can take up a common axis.

5 Mechanical gauges and standard test connectors

5.1 Mechanical gauges

5.1.1 Connectors with pin centre contact

5.1.1.1 Gauge for outer contact of pin connector



050/78

Figure 8 – Gauge for outer contact of pin connector

Table 3 – Dimensions for gauges for outer contact of pin connector

Gauge A (for sizing purposes)					Gauge B (for measurement of gauge retention force for outer conductor) Mass (weight) of gauge: 225 ± 5 g			
Reference	mm		inch		mm		inch	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
<i>a</i> φ	9,63	9,68	0,379	0,381	9,63	9,68	0,379	0,381
<i>b</i> φ	8,08	8,10	0,318	0,319	8,15	8,18	0,321	0,322
<i>u</i>	8,41	8,46	0,331	0,333	8,36	8,41	0,329	0,331
<i>v</i> φ	8,31	8,36	0,327	0,329	8,41	8,46	0,331	0,333
<i>s</i> φ	8,79 nom.		0,346 nom.		8,79 nom.		0,346 nom.	
<i>am</i>	4 nom.		0,157 nom.		4 nom.		0,157 nom.	

Material: steel, polished; surface roughness: Ra = 0,4 μm (16 μin) maximum.

5.1.1.2 Test sequence

Gauge A shall be placed over the outer electrical contact of the connector once. This is a sizing operation and should be carried out when the insulator is removed from the connector.

After this the gauge B shall be placed over the outer contact in a vertical position. The gauge shall be retained.

This test can also be carried out on connectors when the insulator is not removed.

5.1.2 Connectors with socket-centre contact

5.1.2.1 Gauge pin for socket-centre contact

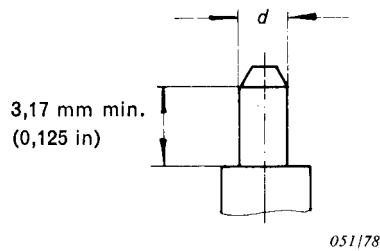


Figure 9 – Gauge pin for socket-centre contact

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

Gauge C (for sizing purposes)					Gauge D (for measurement of gauge retention force for inner conductor) Mass (weight) of gauge: 57 ± 1 g			
Reference	mm		inch		mm		inch	
	min.	max.	min.	max.	min.	max.	min.	max.
<i>d</i> φ	1,372	1,377	0,0540	0,0542	1,308	1,321	0,0515	0,0520

Material: steel, polished: surface roughness: Ra = 0,4 μm (16 μin) max.

5.1.2.2 Test sequence

A test pin gauge C shall be inserted into the centre contact a minimum distance of 3,17 mm (0,125 in) once. This is a sizing operation and should be carried out when the insulator is removed from the connector.

After this the gauge D shall be inserted in the vertical position. The gauge shall be retained.

This test can also be carried out on connectors when the insulator is not removed.

5.1.3 Gauge for outer contacts, coupling mechanism and mating face dimensions

A steel standard mating part shall be constructed as shown in Figure 10 for the connector and shall have a $0,4 \mu\text{m}$ ($16 \mu\text{in}$) maximum finish. The longitudinal force required to engage or disengage a pin connector shall not exceed 20 N.

The torque required to engage or disengage the bayonet lock of the pin connector shall not exceed 0,25 Nm.

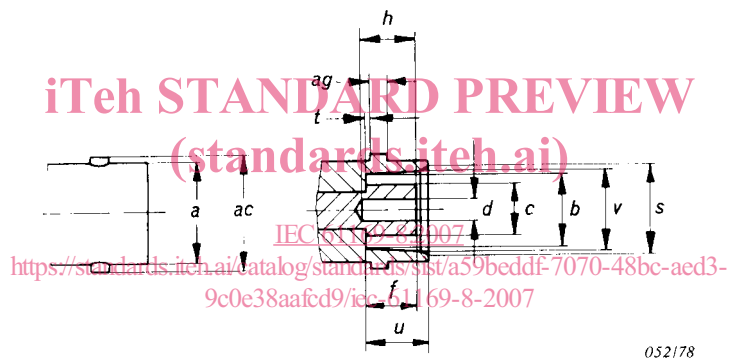


Figure 10 – Dimensions of gauge for performance test (see Table 5)