IEC 61169-38

Edition 1.0 2008-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Radio-frequency connectors –
Part 38: Sectional specification – Radio frequency coaxial connectors model, slide-in (rack and panel applications) – Characteristic impedance 50 Ω (type TMA) – 50 Ω applications

Connecteurs pour fréquences radioélectriques –
Partie 38: Spécification intermédiaire – Connecteurs coaxiaux pour fréquences radioélectriques, de type glissant (applications en panneau et fond de panier) – Impédance caractéristique 50 Ω (type TMA) – Applications à 50 Ω

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International Standard IEC 61169-38 has been prepared by subcommittee 46F: RF and microwave passive components, of IEC technical committee 46: Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories.

This bilingual version (2014-01) corresponds to the monolingual English version, published in 2008-11.

This standard cancels and replaces IEC/PAS 61169-38 published in 2007.

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

CDV	Report on voting
46F/75/CDV	46F/90/RVC

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, under the general title: *Radio-frequency connectors*, can be found on the IEC website.

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

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- withdrawn,
- replaced by a revised edition, or
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RADIO-FREQUENCY CONNECTORS –

Part 38: Sectional specification – Radio frequency coaxial connectors model, slide-in (rack and panel applications) – Characteristic impedance 50 Ω (type TMA) – 50 Ω applications

1 Scope

This part of 61169, which is a sectional specification, provides information and rules for the preparation of detail specifications for series TMA r.f. connectors together with the pro forma blank detail specification.

Series TMA connectors have a characteristic impedance of 50 Ω and are normally used with R.F cables or with microstrip in microwave fields that has a blind-entry and middle low-power. The connectors are usable up to a frequency of at least 6 GHz.

This specification also prescribes mating face dimensions for general purpose connectors, dimensional details of standard test connectors grade 0, gauging information and tests selected from QC 220000 (IEC 61169-1), applicable to all detail specifications relating to series TMA 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 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 61169-1:1992, *Radio-frequency connectors – Part 1: Generic specification – General requirements and measuring methods*

IEC QC 001005, *Register of firms, products and services approved under the IECQ system, including ISO 9000*

3 Mating face and gauge information

3.0 General

Metric dimensions are original dimensions.

All undimensioned pictorial configurations are for reference purposes only.

3.1 Dimensions – General connectors – Grade 2

3.1.1 Connector with pin centre contact (see Figure 1)

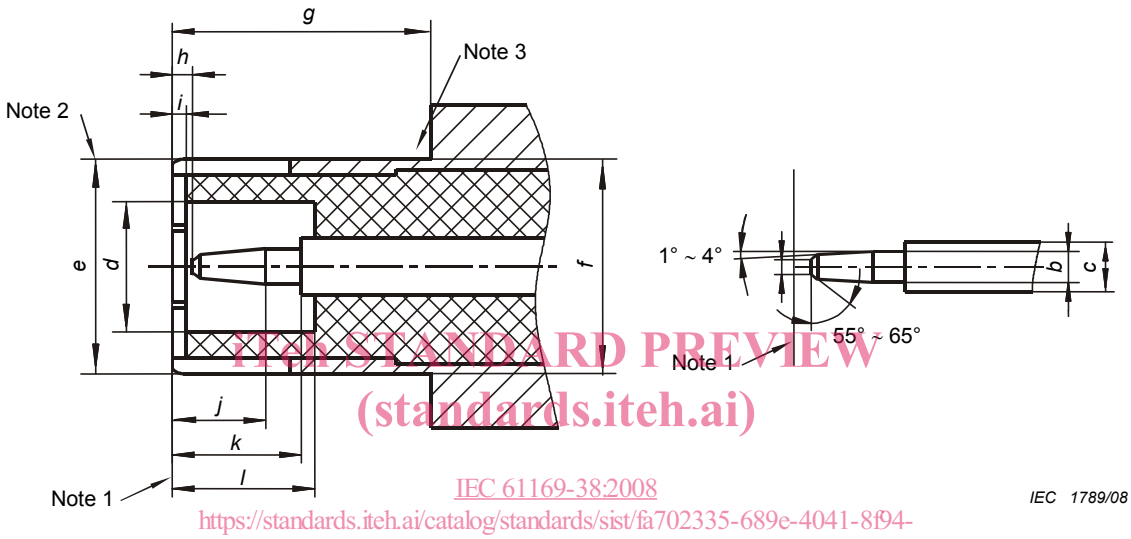


Figure 1 – Connector with pin-centre contact (for dimensions, see Table 1)

Table 1 – Dimensions of connector with pin-centre contact

Ref.	mm		in		Notes
	min.	max.	min.	max.	
a	—	0,64	—	0,025	Diameter
b	1,32	1,37	0,052	0,054	Diameter
c	2,06	2,21	0,081	0,087	Diameter
d	4,83	—	0,190	—	Diameter
e	—	—	—	—	2/ Diameter
f	8,00	8,05	0,315	0,317	Diameter
g	8,60	—	0,339	—	
h	0,08	1,02	0,003	0,040	
i	0,15	—	0,006	—	
j	1,96	3,05	0,078	—	
k	5,33	5,84	0,210	0,230	
l	5,28	5,79	0,208	0,228	

NOTE 1 Mechanical and electrical reference plane.

NOTE 2 Slotted and flared to meet electrical and mechanical requirements.

NOTE 3 Design and location of the sealing feature is optional but ensures the environmental performance requirements are met.

3.1.2 Connectors with socket-centre contact (see Figure 2)

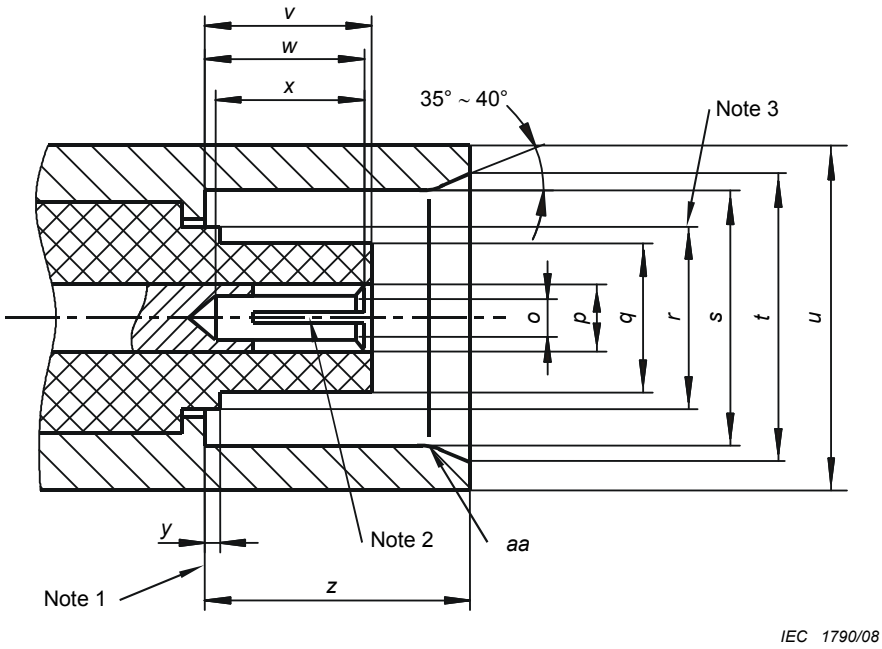


Figure 2 – Connector with socket-centre contact (for dimensions, see Table 2)

Table 2 – Dimensions of connector with socket-centre contact

Ref.	mm		in		Notes
	min.	max.	min.	max.	
o	—	—	—	—	2/ Diameter
p	2,06	2,21	0,081	0,087	Diameter
q	—	4,72	—	0,186	Diameter
r	—	6,50	—	0,256	3/ Diameter
s	8,10	8,15	0,319	0,321	Diameter
t	10,00	10,15	0,394	0,400	Diameter
u	12,3	12,4	0,484	0,488	Diameter
v	4,78	5,28	0,188	0,208	
w	4,72	5,23	0,186	0,206	
x	4,95	—	0,195	—	
y	—	0,15	—	0,006	
z	8,31	8,51	0,327	0,335	
aa	—	—	—	—	4

NOTE 1 Mechanical and electrical reference plane.

NOTE 2 Slotted and closed to meet electrical and mechanical requirements.

NOTE 3 Applies only when dielectric extends beyond reference plane.

NOTE 4 Radius

3.2 Gauges

3.2.1 Connectors with pin-centre contact

3.2.1.1 Gauge for outer contact of pin connector (see Figure 3)

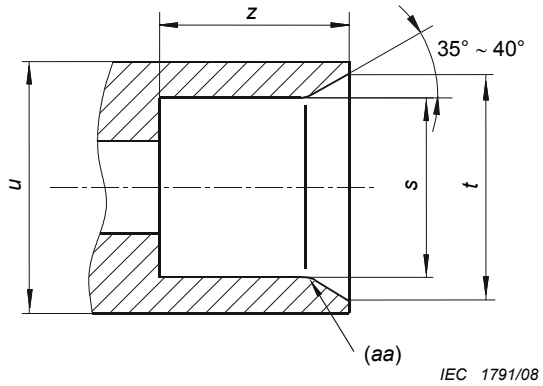


Figure 3 – Gauge for outer contact of pin connector (for dimensions, see Table 3)

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

Ref.	Gauge A (for sizing purposes)				Gauge B (for measurement of gauge retention force for outer conductor) Mass of gauge(weight): 225 g ± 5 g				Notes
	mm		in		mm		in		
	min.	max.	min.	max.	min.	max.	min.	max.	
s	8,08	8,10	0,318	0,319	8,15	8,18	0,321	0,322	Diameter
t	10,00	10,15	0,394	0,400	10,00	10,15	0,394	0,400	Diameter
u	12,4	—	0,488	—	12,4	—	0,488	—	Diameter
z	8,41	8,46	0,331	0,333	8,36	8,41	0,329	0,331	Diameter
aa	0,8		0,031		0,8		0,031		2/ Radius
NOTE 1 Material: steel, polished, surface roughness: Ra ≤ 0,4 µm (16 µin).									
NOTE 2 Parentheses indicate the reference size for size.									

3.2.1.2 Test sequence

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

After this, 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.

3.2.2 Connectors with socket-centre contact

3.2.2.1 Gauge pin for socket-centre contact (see Figure 4)

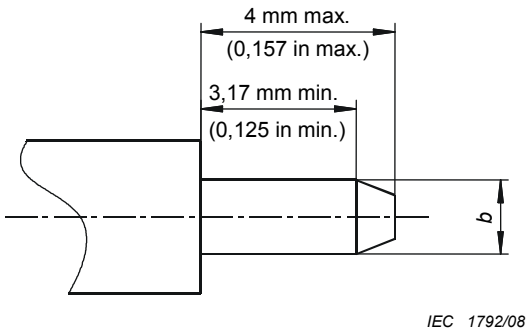


Figure 4 – Gauge pin for socket-centre contact (for dimensions, see Table 4)

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

Gauge C (for sizing purpose)					Gauge D (for measurement of gauge retention force for inner conductor) Mass (weight) of gauge: 57 g ± 1 g				Note
Ref.	mm		in		mm		in		
	min.	max.	min.	max.	min.	max.	min.	max.	
b	1,372	1,377	0,054 0	0,0542	1,308	1,321	0,0515	0,052 0	Diameter
Material: steel, polished , surface roughness: Ra ≤ 0,4 µm (16 µin).									

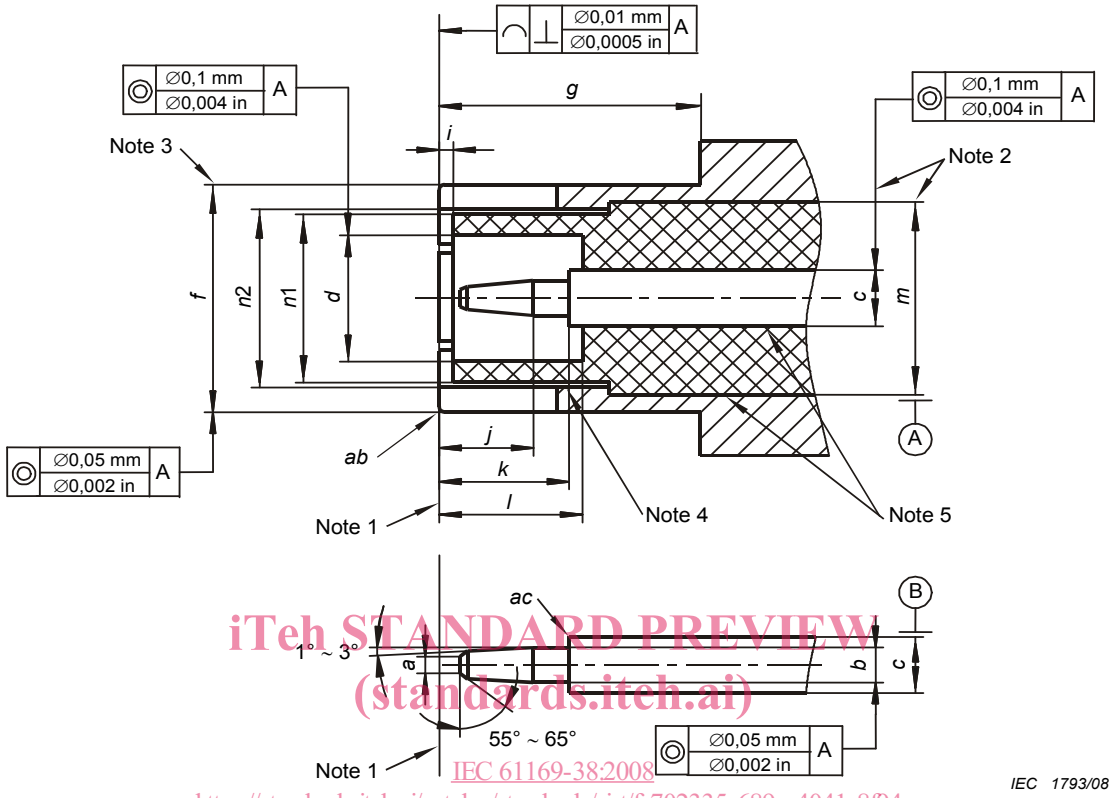
3.2.2.2 Test sequence

Test pin gauge C shall be inserted into the centre contact three times with a minimum distance of 3,17 mm (0,125 in). This is a sizing operation and should only be carried out when the socket-centre contact is removed from the connector.

After this, gauge D shall be inserted and held in the vertical position. The gauge shall be retained. This test can also be carried out on connectors when the socket-centre contact is not removed.

3.3 Dimensions – standard test connectors – Grade 0

3.3.1 Connector with pin-centre contact (see Figure 5)



IEC 1793/08

Figure 5 – Standard test connector with pin-centre contact (for dimensions, see Table 5)

Table 5 – Dimensions of standard test connector with pin-centre contact

Ref.	mm		in		Notes
	min.	max.	min.	max.	
a	—	0,64	—	0,025	Diameter
b	1,35	1,37	0,053 0	0,054 1	Diameter
c	2,140 nom.		0,084 2 nom.		2/ Diameter
d	4,88	4,93	0,192	0,194	Diameter
f	8,06	8,09	0,317 5	0,318 5	3/ Diameter
g	8,60	—	0,339	—	
i	0,15	0,30	0,006	0,012	
j	3,66	3,98	0,144	0,157	
k	5,31	5,38	0,209	0,212	
l	5,38	5,54	0,212	0,218	
m	6,99	7,01	0,275 2	0,276 0	2/ Diameter
*n*1	6,60	6,65	0,260	0,262	Diameter
*n*2	6,72	6,74	0,264 5	0,265 5	Diameter
ab	0,1	0,3	0,004	0,012	Radius
ac	—	0,13	—	0,005	Radius

NOTE 1 Mechanical and electrical reference plane.

NOTE 2 These diameters are for polytetrafluorethylene (PTFE) insulation with dielectric constant 2,02. Characteristic impedance of transmission line determined by diameters *m* and *c* is 50 Ω ± 0,2 Ω.

NOTE 3 Before slotting. Six slots 60 ° ± 1° apart, 0,36 mm to 0,41 mm (0,014 in to 0,016 in) wide, 5,84 mm to 6,10 mm (0,230 in to 0,240 in) deep. After slotting and flaring, the inner diameter of outer contact should be 6,718 mm to 6,744 mm (0,264 5 in to 0,265 5 in) when inserted into ring gauge with inner diameter 8,125 mm to 8,131 mm (0,3199 in to 0,320,1 in).

NOTE 4 If concentric, 0,05 mm (0,002 in) nominal radial air gap when inserted into ring gauge with inner diameter 8,125 mm to 8,131 mm (0,319 9 in to 0,320 1 in).

NOTE 5 Zero air gap.

3.3.2 Connector with socket-centre contact (see Figure 6)

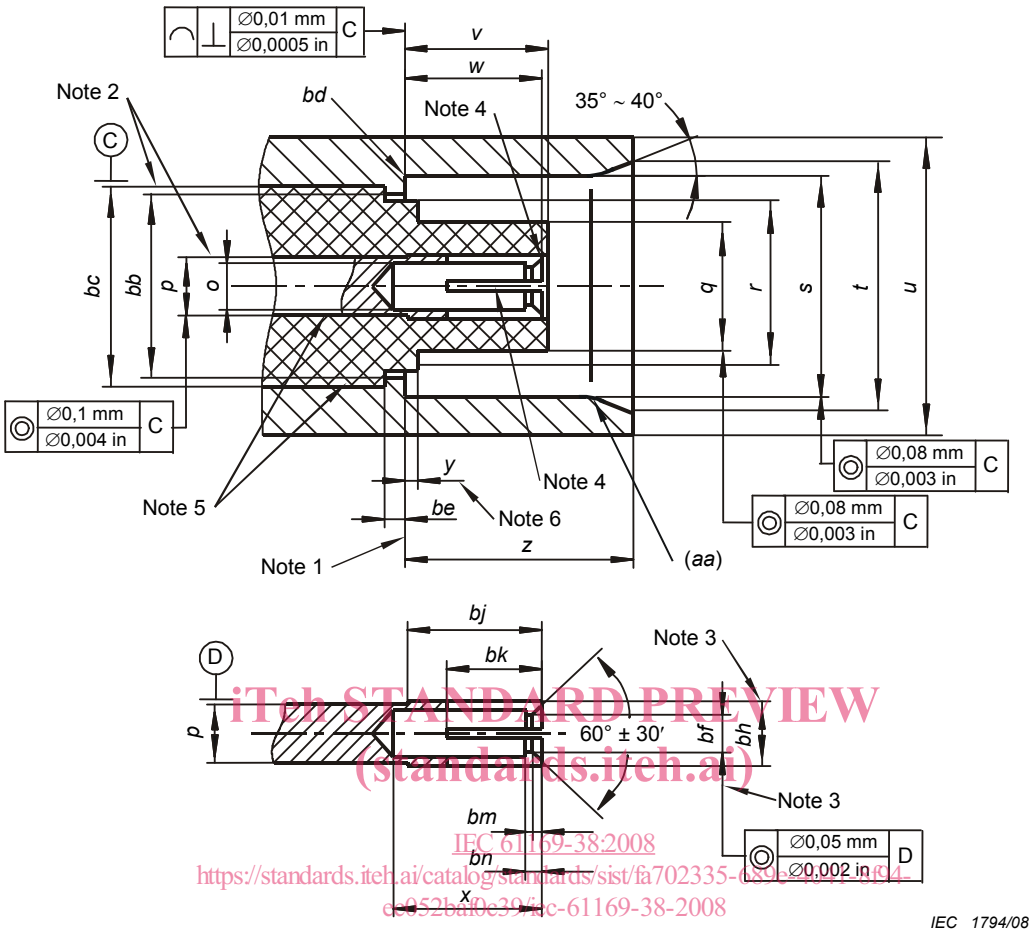


Figure 6 – Standard test connector with socket-centre contact (for dimensions, see Table 6)

Table 6 – Dimensions of standard test connector with socket-centre contact

Ref.	mm		in		Notes
	min	max	min	max	
o	1,52	1,63	0,060	0,064	Diameter
p	2,140 nom		0,084 2 nom		2/ Diameter
q	4,67	4,72	0,184	0,186	Diameter
r	6,58	6,68	0,259	0,263	Diameter
s	8,10	8,15	0,319	0,321	Diameter
t	10,00	10,15	0,394	0,400	Diameter
u	12,3	12,4	0,484	0,488	Diameter
v	5,08	5,23	0,200	0,206	
w	5,21	5,28	0,205	0,208	
x	5,21	—	0,205	—	
y	0,0	0,15	0,00	0,006	6
z	8,36	8,46	0,329	0,333	
aa	0,8		0,031		7/ Diameter
bb	6,71	6,76	0,264	0,266	Diameter
bc	6,99	7,01	0,275 2	0,276 0	2/ Diameter
bd	—	0,1	—	0,004	Radius
be	0,79	0,84	0,031	0,033	
bf	1,356	1,361	0,053 4	0,053 6	3/ Diameter
bh	2,16	2,18	0,084 9	0,085 9	3/ Diameter
bj	6,05	6,10	0,238	0,240	
bk	4,62	4,88	0,182	0,192	
bm	0,05	0,2	0,002	0,008	
bn	0,38	0,89	0,015	0,035	

NOTE 1 Mechanical and electrical reference plane.

NOTE 2 These diameters are for polyterafluorethylene(PTFE) insulation with dielectric constant 2,02. Characteristic impedance of transmission line determined by diameters *p* and *bc* is 50 Ω ± 0,2 Ω.

NOTE 3 Four slots 0,18 mm to 0,23 mm (0,007 in to 0,009 in) wide ; 90°30' to 89°30' apart. Diameter *y* with 1,356 mm (0,0534 in) min: 1,361 mm (0,0536 in) max. pin gauge inserted after slotting and closing.

NOTE 4 If concentric 0,02 mm (0,0008 in) radial air gap when mated with 1,359 mm (0,053 5 in) diameter pin.

NOTE 5 Zero air gap.

NOTE 6 Insulator is flush or protruding.

NOTE 7 Parentheses indicate the reference size for size.