

INTERNATIONAL STANDARD

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**Radio-frequency connectors –
Part 48: Sectional specification for series BMP R.F. coaxial connectors**

**Connecteurs pour fréquences radioélectriques –
Partie 48: Spécification intermédiaire relative aux connecteurs coaxiaux R.F.
série BMP**

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série BMP**

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RADIO-FREQUENCY CONNECTORS –

**Part 48: Sectional specification for series
BMP R.F. coaxial connectors**

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International Standard IEC 61169-48 has been prepared by subcommittee 46F: R.F. and microwave passive components, 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:

CDV	Report on voting
46F/253/CDV	46F/291/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.

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 stability 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- withdrawn,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 48: Sectional specification for series BMP R.F. coaxial connectors

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 series BMP RF coaxial connectors with blind mating, typically for use in 50 Ω board to board connection. They may also be used with RF cables or micro-strips in microwave, telecommunication, wireless and other fields. Their operating frequency limit is up to 6 GHz.

It describes the interface dimensions with gauging information, electrical and mechanical performance including the mandatory tests selected from IEC 61169-1:2013 applicable to all DS relating to type BMP connectors.

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

NOTE Metric dimension are original dimensions.

All undimensioned pictorial configurations are for reference purpose only.

2 Normative references standards.iteh.ai

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

IEC 60068-1, *Environmental testing – Part 1: General and guidance*

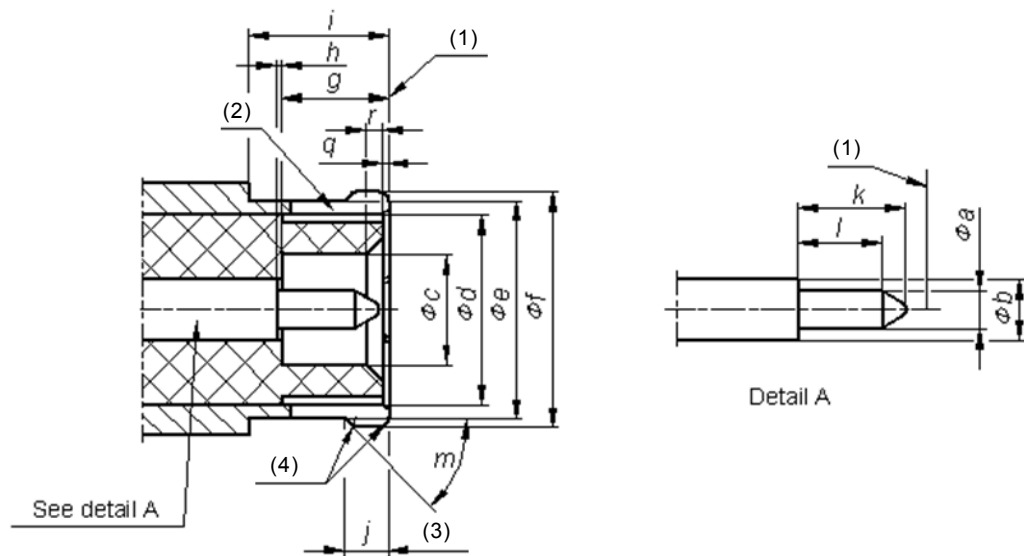
IEC 62037 (all parts), *Passive RF and microwave devices, intermodulation level measurement*

3 Mating face and gauge information

3.1 Dimensions – General connectors – Grade 2

3.1.1 Connector with pin-centre contact – Full detent and smooth bore

The mating face of connector with pin-centre contact is shown in Figure 1 and its dimensions are shown in Table 1.



IEC

- (1) Mechanical and electrical reference plane.
 (2) The slots shall meet mechanical and electrical requirements.
 (3) The shape and size of outer conductor shall meet the electrical and mechanical performance requirements.
 (4) $R_{0,2}$ recommended for fillet.

Figure 1 – Connector with pin-centre contact
 (standards.iteh.ai)

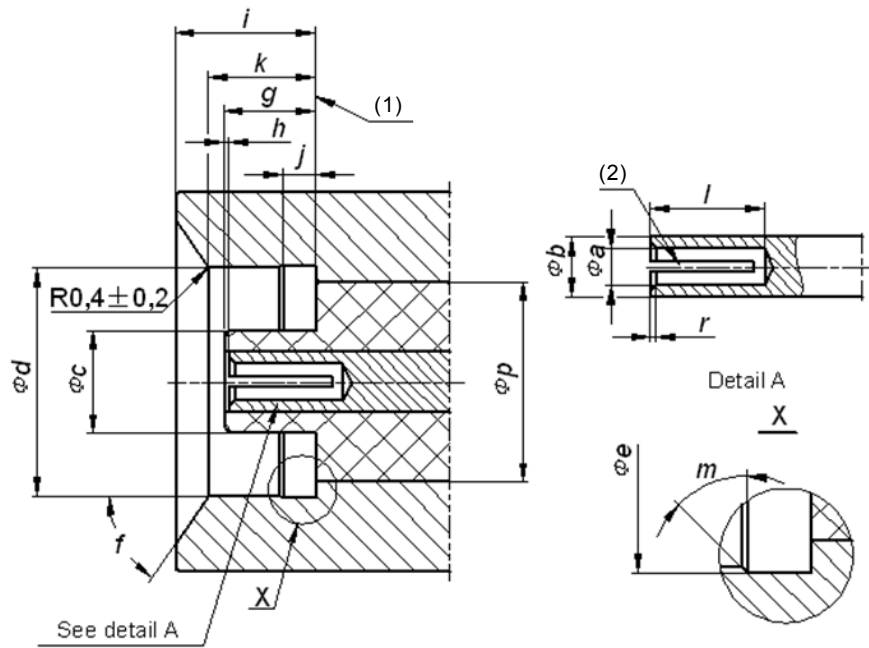
Table 1 – Dimensions of connector with pin-centre contact

Ref.	IEC 61169-48:2014		Additional notes
	Min.	Max.	
a	0,68	0,71	
b	1,05	1,10	
c	2,30	2,50	
d ^a	–	–	
e	4,14	4,18	
f	4,52	4,57	Full detent
	4,23	4,28	Smooth bore
g	1,77	2,02	
h	0,00	0,25	
i	2,62	–	
j	0,42	0,52	Full detent
	1,00	1,20	Smooth bore
k	1,65	1,80	
l	1,18	1,28	
m	45° ± 2°		Angle
q	0,00	0,15	
r	0,3 ± 0,1 × 45°		Chamfer

^a The diameter is chosen upon the assumption that the PTFE dielectric has a dielectric constant of 2,02 to give an impedance of 50 Ω.

3.1.2 Connector with socket-centre contact

The mating face of connector with socket-centre contact is shown in Figure 2 and its dimensions are shown in Table 2.



- (1) Mechanical and electrical reference plane.
- (2) Slotted and closed to meet electrical and mechanical requirements.

Figure 2 – Connector with socket-centre contact

Table 2 – Dimensions of connector with socket-centre contact

Ref.	mm		Additional notes
	Min.	Max.	
a ^a			
b	1,05	1,10	
c	1,85	1,95	
d	4,17	4,21	
e	4,39	4,44	
f	55° ± 2°		
g	1,63	1,83	
h	0,00	0,15	
i	2,10	–	
j	0,60	0,72	
k	1,80	1,90	
l	2,10	2,30	
m	45° ± 2°		Angle
p ^b	–	–	
r	0,15 ± 0,05 × 45°		Chamfer

^a Dimensions are chosen to meet mechanical performance requirements, when mating with Φ0,68 mm~Φ0,71 mm pin.

^b The diameter is chosen upon the assumption that the PTFE dielectric has a dielectric constant of 2,02 to give an impedance of 50 Ω.

3.2 Gauges

3.2.1 Gauge pin for socket-centre contact

The gauge pin for socket-centre contact is shown in Figure 3 and its dimensions are shown in Table 3.

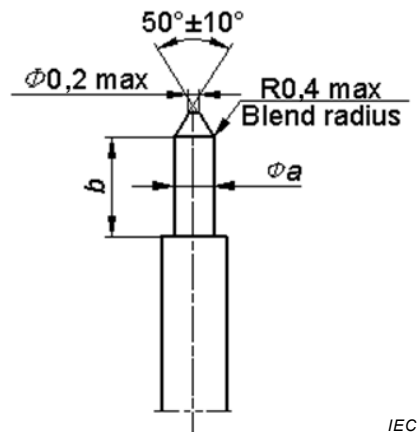


Figure 3 – Gauge pin for socket-centre contact

Table 3 – Dimensions of gauge pin for socket-centre contact

Ref.	Gauge A Maximum material for sizing purposes		Gauge B Minimum material for measurement of retention force Mass of gauge: 28 g + 2 g	
	mm		mm	
	Min.	Max.	Min.	Max.
<i>a</i>	0,710	0,715	0,675	0,680
<i>b</i>	0,95	1,20	1,30	1,60
Material: steel, polished. Surface roughness: $R_a = 0,4 \mu\text{m}$ maximum on the cylindrical surface of length <i>b</i> .				

3.2.2 Test procedure

The gauge A shall be inserted into the socket-centre contact three times with a minimum depth of 0,95 mm. This is a sizing operation and should only be carried out when the socket-centre contact is removed from the connector.

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

3.2.3 Gauge for outer contact of connector with pin-centre contact

3.2.3.1 Gauge A for sizing test

The gauge A for sizing test is shown in Figure 4 and its dimensions are shown in Table 4.

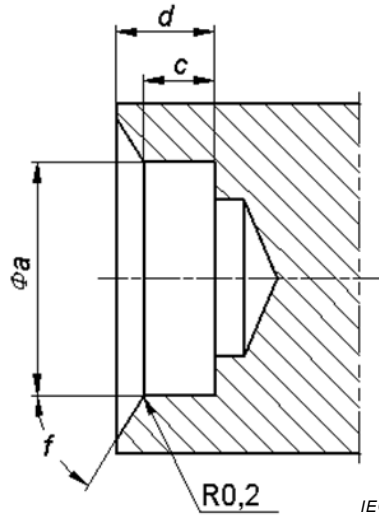


Figure 4 – Gauge A for sizing test

Table 4 – Gauge A for sizing test

Ref.	Gauge A Maximum material for sizing purposes	
	IEC 61169-48:2014	mm
<i>a</i>	4,15	4,17
<i>c</i>	1,40	1,50
<i>d</i>	2,50	2,70
<i>f</i>	55° ± 2°	
Material: steel, polished. Surface roughness: Ra=0,4 μm maximum on the cylindrical surface of <i>a</i> and taper surface angle <i>f</i> .		

3.2.3.2 Test procedure

The gauge A shall be inserted into the outer contact three times. This is a sizing operation.

3.2.3.3 Gauge B for retention test for pin connectors – Full detent

3.2.3.3.1 Dimensions for gauge B

Gauge B for retention test for pin connectors – full detent is shown in Figure 5 and its dimensions are shown in Table 5.

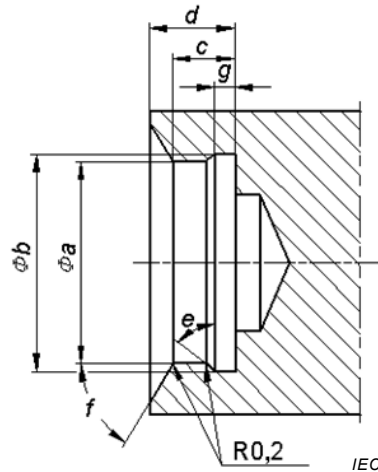


Figure 5 – Gauge B for retention test for pin connectors – Full detent

Table 5 – Gauge B for retention test for pin connectors – Full detent

Ref.	Gauge B Minimum material for measurement of retention force Mass of gauge: 2 000 g + 100 g	
	IEC 61169-48:2014 mm	
	Min.	Max.
a	4,18	4,21
b	4,39	4,44
c	1,80	1,90
d	2,50	2,70
e	$45^\circ \pm 1^\circ$	
f	$55^\circ \pm 2^\circ$	
g	0,60	0,72

Material: steel, polished. Surface roughness: $R_a = 0,4 \mu\text{m}$ maximum on the cylindrical surface of length a, b and taper surface angle e, f .

3.2.3.3.2 Test procedure

The gauge B shall be inserted into outer contact. The engagement force shall not exceed 63 N, the contact shall retain the mass of the gauge in a vertical downward position.

3.2.3.4 Gauge C for retention test for pin connectors – Smooth bore

3.2.3.4.1 Dimension of the gauge

Gauge C for retention test for pin connectors – smooth bore is shown in Figure 6 and its dimensions are shown in Table 6.

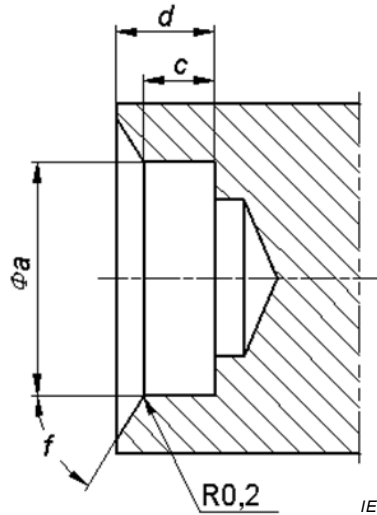


Figure 6 – Gauge C for retention test for pin connectors – Smooth bore

Table 6 – Gauge C for retention test for pin connectors – Smooth bore

Ref.	Gauge C Minimum material for measurement of retention force IEC 61169-48:2014 Mass of gauge: 200 g + 10 g	
	Min.	Max.
<i>a</i>	4,15	4,17
<i>c</i>	1,40	1,50
<i>d</i>	2,50	2,70
<i>f</i>	55° ± 2°	
Material: steel, polished. Surface roughness: Ra=0,4 μm maximum on the cylindrical surface of <i>a</i> and taper surface angle <i>f</i> .		

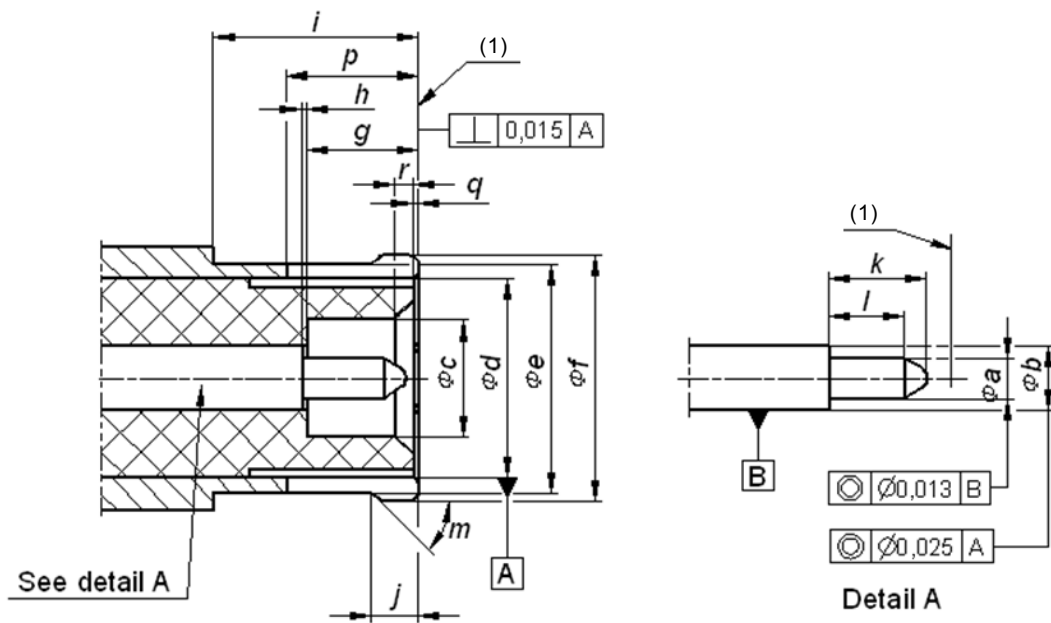
3.2.3.4.2 Test procedure

The gauge C shall be inserted into outer contact. The engagement force shall not exceed 15 N, the contact shall retain the mass of the gauge in a vertical downward position.

3.3 Dimensions – Standard test connectors – Grade 0

3.3.1 Connector with pin-centre contact

The mating face of standard test connector with pin-centre contact is shown in Figure 7 and its dimensions are shown in Table 7.



IEC

(1) Mechanical and electrical reference plane.

Figure 7 – Connector with pin-centre contact

Table 7 – Dimensions of connector with pin-centre contact

Ref.	mm		Additional notes
	Min.	Max.	
a	0,690	0,710	
b	1,07	1,10	
c	2,35	2,45	
d ^a	–	–	
e	4,14	4,17	
f	4,44	4,48	
g	1,77	1,83	
h	0,00	0,15	
i	2,62	–	
j	0,63	0,68	
k	1,65	1,80	
l	1,18	1,24	
m	45° ± 2°		Angle
p	2,25	2,30	
q	0,00	0,15	
r	0,3 ± 0,1 × 45°		Chamfer

^a The diameter is chosen upon the assumption that the PTFE dielectric has a dielectric constant of 2,02 to give an impedance of 50 Ω ± 0,5 Ω.

3.3.2 Connector with socket-centre contact

The mating face of standard test connector with socket-centre contact is shown in Figure 8 and its dimensions are shown in Table 8.