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**Radio-frequency connectors –
Part 41: Sectional specification for CQA series quick lock R.F. coaxial
connectors**

**Connecteurs pour fréquences radioélectriques –
Partie 41: Spécification intermédiaire pour connecteurs coaxiaux R.F. à
verrouillage rapide, série CQA**



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RADIO-FREQUENCY CONNECTORS –

**Part 41: Sectional specification for CQA series
quick lock R.F. coaxial connectors**

FOREWORD

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International Standard IEC 61169-41 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.

This first edition cancels and replaces IEC/PAS 61169-41, published in 2009, of which it constitutes a minor revision. The only change is that the PAS has been changed into and International Standard.

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

CDV	Report on voting
46F/140/CDV	46F/164/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, published 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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INTRODUCTION

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning

- “high frequency self-lock connector” given in patent No. ZL 200610104844.6;
- “lock setup of a high frequency self-lock connector” given in patent No. ZL 200620136072.X.

IEC takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured the IEC that he/she is willing to negotiate licences free of charge with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with IEC. Information may be obtained from:

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RADIO-FREQUENCY CONNECTORS –

Part 41: Sectional specification for CQA series quick lock R.F. coaxial connectors

1 Scope

CQA series quick lock connectors with characteristic impedance 50 Ω are used in microwave, telecommunication, wireless and other fields, connecting with RF cables or micro-strips. The operating frequency limit is up to 18 GHz.

This sectional specification provides information and rules for preparation of detail specification of CQA series quick lock R.F. coaxial connectors together with the pro-forma blank detail specification.

It also prescribes mating face dimensions for general connectors - grade 2, dimensional detail of standard test connectors - grade 0, gauging information and tests selected from IEC 61169-1 applicable to all detail specifications relating to CQA series RF connectors.

This specification indicates 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.

CQA series connector with pin-centre contact can mate with SMA series connector with socket-centre contact, when mating with SMA series connector, an adjunct is required; the adjunct should meet the requirement of Annex A.

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*¹

Amendment 1 (1996)

Amendment 2 (1997)

¹ There exists a consolidated edition 1.2 (1998) that comprises IEC 61169-1:1992, its Amendment 1:1996 and its Amendment 2:1997.

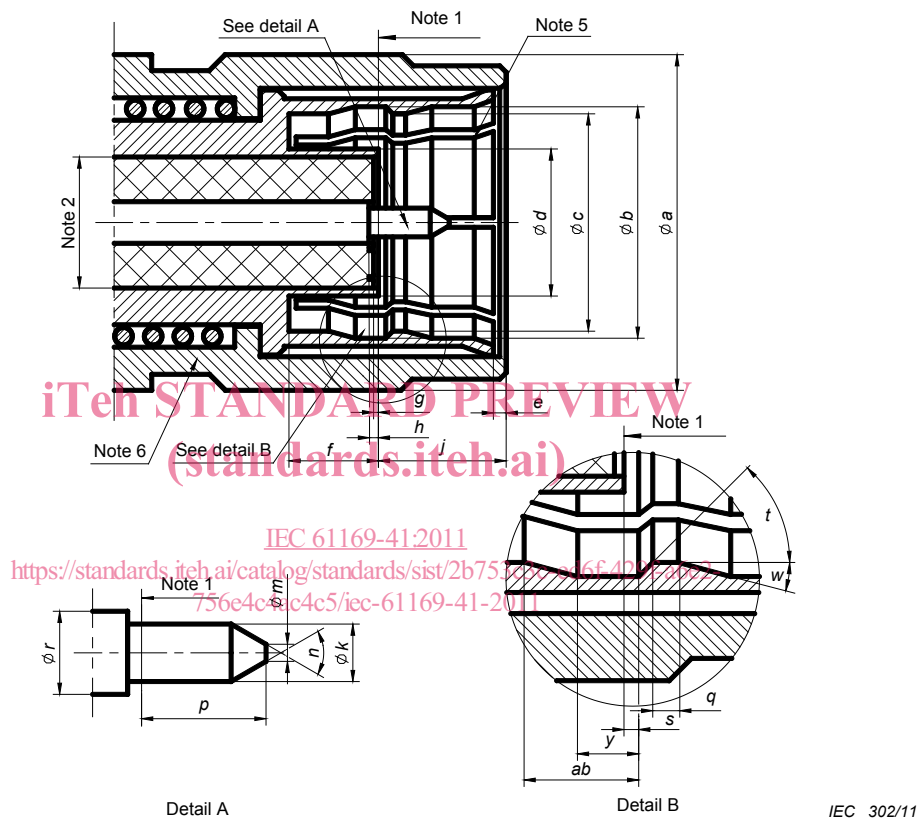
3 Mating face and gauge information

3.1 Dimensions – General connectors – Grade 2

3.1.1 Connector with pin-centre contact

Original dimensions are in millimetres.

All undimensioned pictorial configurations are for reference purpose only.



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

Table 1 – Dimensions of connector with pin-centre contact

Ref.	mm		Notes
	Min.	Max.	
<i>a</i>	—	10,5	
<i>b</i>	7,25	—	
<i>c</i>	6,8 nominal		4
<i>d</i>	4,53	4,59	
<i>e</i>	0,25	0,75	
<i>f</i>	3,15	—	3
<i>g</i>	0,00	0,18	
<i>h</i>	0,00	0,25	
<i>j</i>	—	4,02	
<i>k</i>	0,90	0,94	
<i>m</i>	—	0,38	
<i>n</i>	56°	64°	Angle
<i>p</i>	—	2,54	
<i>q</i>	—	0,50	
<i>r</i>	1,27 nominal		
<i>s</i>	0,47	0,60	
<i>t</i>	45° nominal		Angle
<i>w</i>	20°	IEC 61169-41:2011	Angle
<i>y</i>	0,60		
<i>ab</i>	2,00	—	

NOTE 1 Mechanical and electrical reference plane.

NOTE 2 Diameters are chosen upon the assumption that the PTFE dielectric has a dielectric constant of 2,02 to give an impedance of 50 Ω.

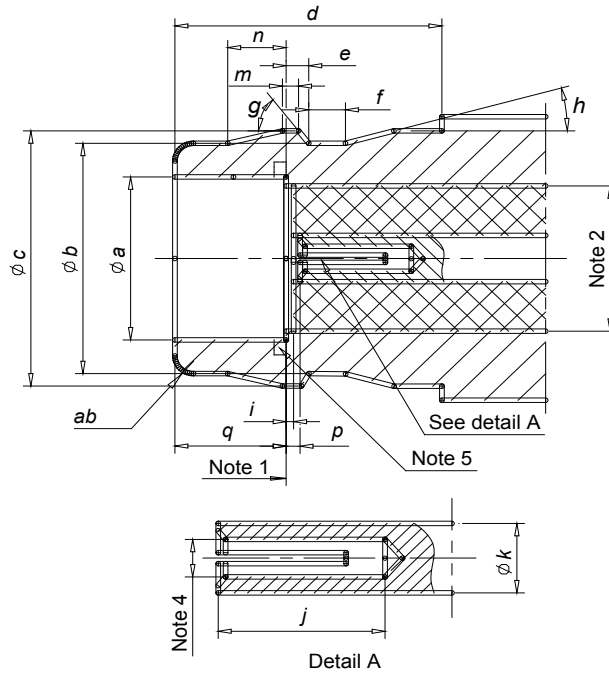
NOTE 3 Dimension *f* should be such that the reference planes coincide and the connectors meet the required electrical and environmental performance

NOTE 4 Should meet mechanical requirements.

NOTE 5 Design for slotting optional, and should meet electrical and mechanical performance requirements.

NOTE 6 Outer lock sleeve has a distance 1,0 mm min. of movement from right to left.

3.1.2 Connector with socket-centre contact



IEC 303/11

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

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Table 2 – Dimensions of connector with socket-centre contact

Ref.	mm		Notes
	Min.	Max.	
<i>a</i>	4,60	-	
<i>b</i>	6,70	6,90	
<i>c</i>	7,15	7,24	
<i>d</i>	7,50	-	
<i>e</i>	0,32	0,45	
<i>f</i>	0,55	-	
<i>g</i>	60° nominal		Angle, 3
<i>h</i>	-	20°	Angle
<i>i</i>	0	0,18	
<i>j</i>	2,82	-	
<i>k</i>	1,27 nominal		
<i>p</i>	0	0,25	
<i>m</i>	0,25	0,50	
<i>n</i>	1,70	2,00	
<i>q</i>	3,00	3,15	
<i>ab</i>	0,30	0,60	Radius

NOTE 1 Mechanical and electrical reference plane.

NOTE 2 Diameters are chosen upon the assumption that the PTFE dielectric has a dielectric constant of 2,02 to give an impedance of 50 Ω.

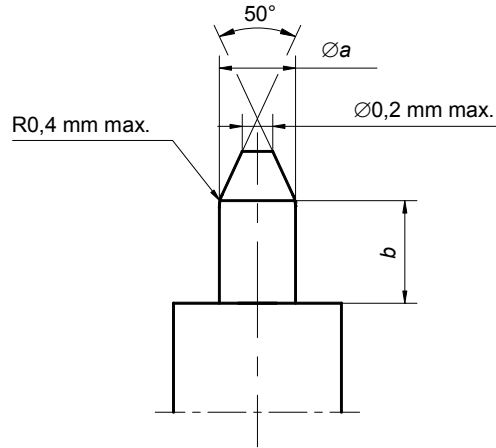
NOTE 3 Should meet mechanical requirements.

NOTE 4 Design for slotting optional, and should meet electrical and mechanical requirements, when mating with Ø 0,90 mm to Ø 0,94 mm gauge pin.

NOTE 5 Design for root cut to be allowed, no chamfer to be allowed.

3.2 Gauges

3.2.1 Gauge pins for socket-centre contact



IEC 304/11

**Figure 3 – Gauge pins for socket-centre contact
(for dimensions and notes, see Table 3)**

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

Ref.	Gauge A		Gauge B	
	Maximum material for sizing purposes		Minimum material for measurement of retention force	
	mm		mm	
	Min.	Max.	Min.	Max.
a	0,940	0,945	0,895	0,900
b	1,27	1,91	1,27	1,91

Mass of gauge: 29 g ± 1 g

Material: steel, polished, surface roughness: Ra=0,4 µm maximum.

3.2.2 Test procedure

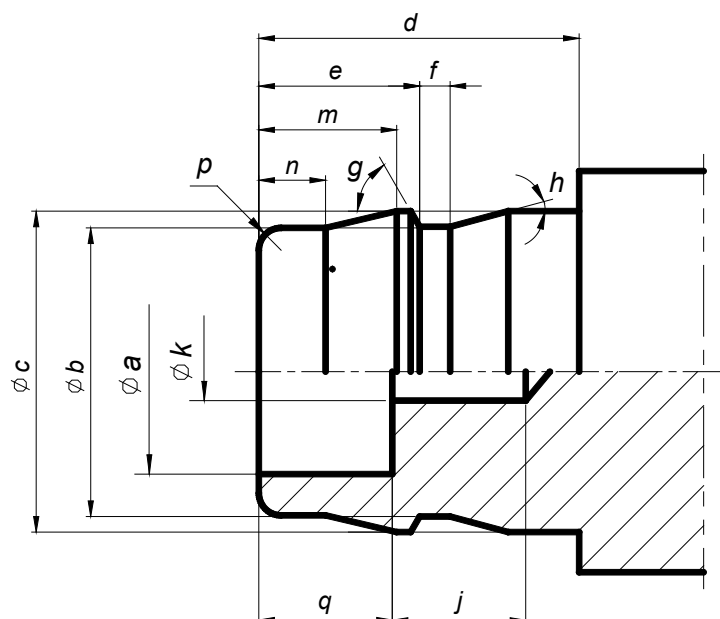
The gauge A shall be inserted into the socket-centre contact three times with a minimum depth of 1,27 mm. This is a sizing operation and should only be carried out when the socket-centre contact is removed from the connector.

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. The test should also be carried out on connector when the socket-centre contact is not removed.

Additional test:

At the conclusion of the tests and if prescribed in the DS, the force necessary to insert gauge A shall be measured. When the additional test is required, the force required shall not exceed 13,3 N.

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



IEC 305/11

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Figure 4 – Gauge pins for outer contact
(for dimensions and notes, see Table 4)

Table 4 – Gauge pins for outer contact

Ref.	Gauge A		Gauge B	
	Maximum material for sizing purposes		Minimum material for measurement of retention force	
	mm		mm	
	Min.	Max.	Min.	Max.
a	4,60	-	4,60	-
b	6,70	6,75	6,85	6,90
c	7,24	7,245	7,145	7,15
d	7,50	-	7,50	-
e	3,48	3,485	3,295	3,30
f	0,55	0,70	0,55	0,70
g	63°	63,5°	56,5°	57°
h	-	20°	-	20°
j	3,50	-	3,50	-
k	1,40	-	1,40	-
m	3,05	3,15	3,05	3,15
n	1,55	1,6	1,40	1,45
p	0,45	0,55	0,45	0,55
q	3,16	-	3,15	-

Material: steel, polished, surface roughness: Ra = 0,4 μm maximum