

INTERNATIONAL STANDARD

**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**



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IEC 61169-38

Edition 1.0 2008-11

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

U

ICS 33.120.20

ISBN 2-8318-1008-7

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**

FOREWORD

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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 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.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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

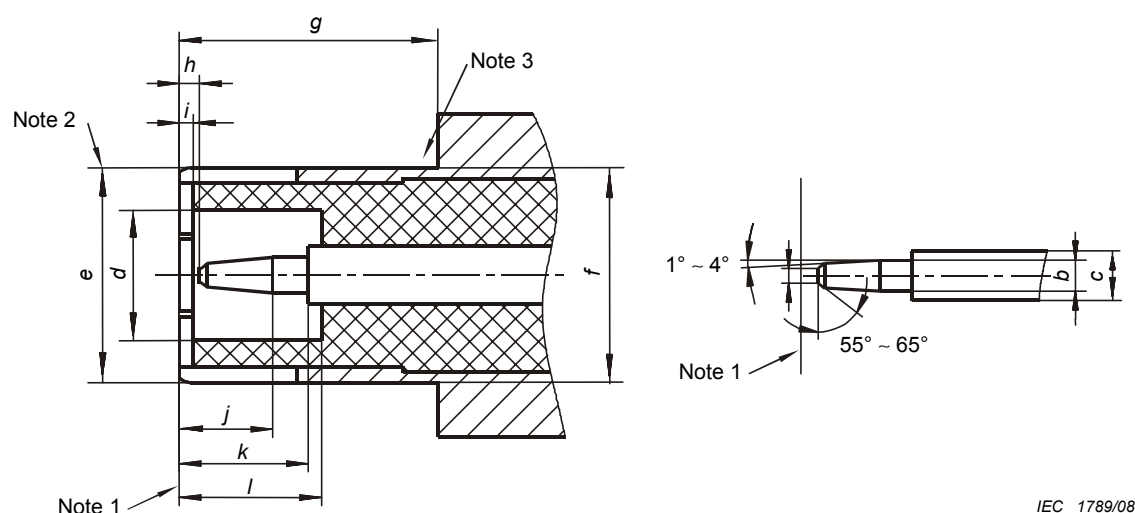
3.0 General

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)



IEC 1789/08

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

NOTE 1 Mechanical and electrical reference plane.

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

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

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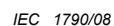


Table 2 – Dimensions of connector with socket-centre contact

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)

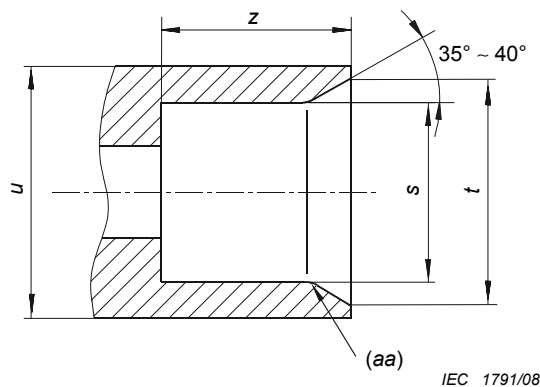


Figure 3 – Gauge for outer contact of pin connector (for dimensions, see Table 3)

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

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
Ref.	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)

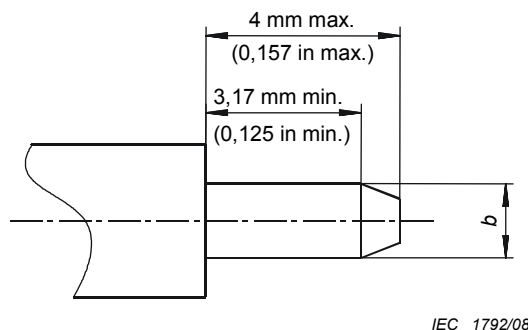


Figure 4 – Gauge pin for socket-centre contact (for dimensions, see Table 4)

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.	
<i>b</i>	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).									

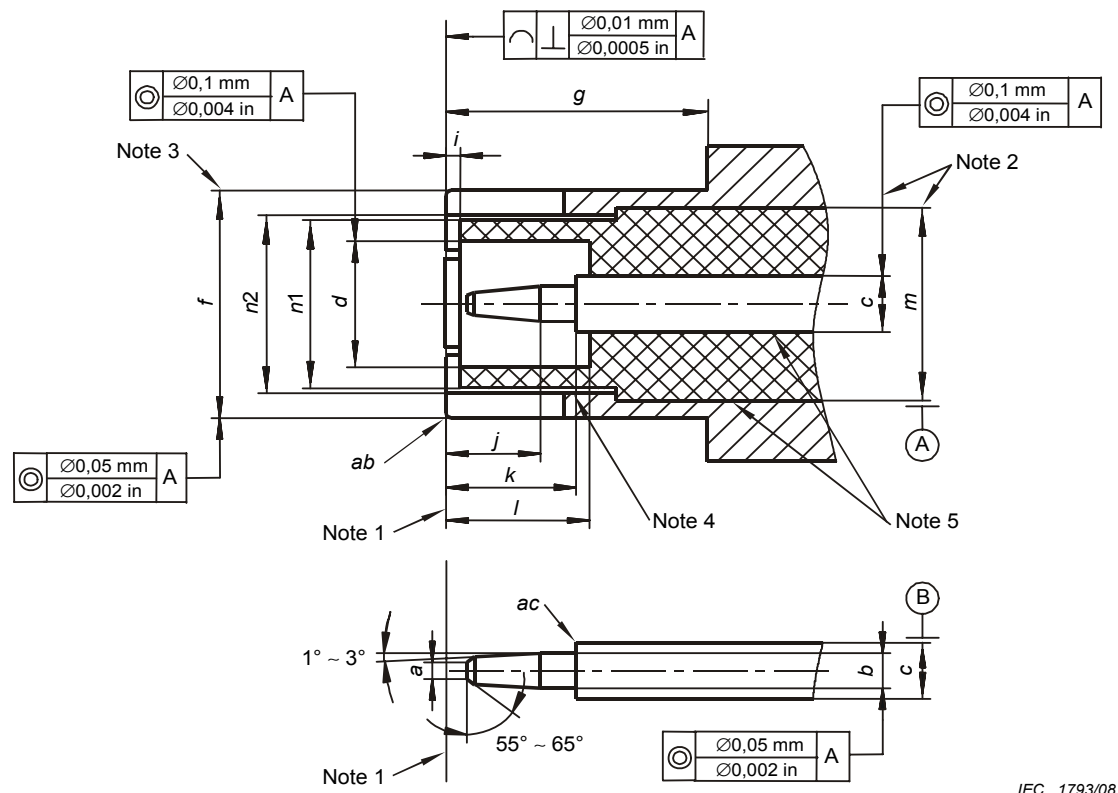
3.2.2.2 Test sequence

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)



**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
n1	6,60	6,65	0,260	0,262	Diameter
n2	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.

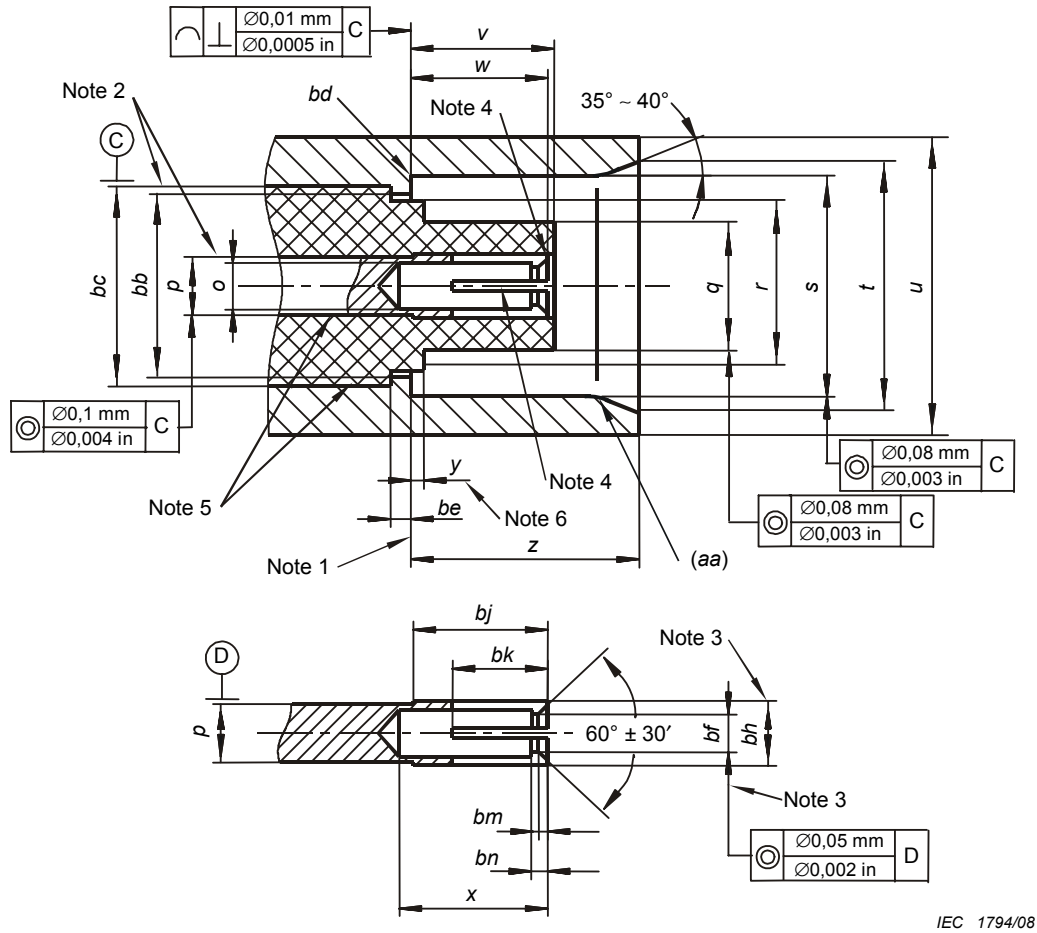
NOTE 2 These diameters are for polytetrafluorethylene (PTFE) insulation with dielectric constant 2,02. Characteristic impedance of transmission line determined by diameters *m* and *c* is $50 \Omega \pm 0,2 \Omega$.

NOTE 3 Before slotting. Six slots $60^\circ \pm 1^\circ$ 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	
<i>o</i>	1,52	1,63	0,060	0,064	Diameter
<i>p</i>	2,140 nom		0,084 2 nom		2/ Diameter
<i>q</i>	4,67	4,72	0,184	0,186	Diameter
<i>r</i>	6,58	6,68	0,259	0,263	Diameter
<i>s</i>	8,10	8,15	0,319	0,321	Diameter
<i>t</i>	10,00	10,15	0,394	0,400	Diameter
<i>u</i>	12,3	12,4	0,484	0,488	Diameter
<i>v</i>	5,08	5,23	0,200	0,206	
<i>w</i>	5,21	5,28	0,205	0,208	
<i>x</i>	5,21	—	0,205	—	
<i>y</i>	0,0	0,15	0,00	0,006	6
<i>z</i>	8,36	8,46	0,329	0,333	
<i>aa</i>	0,8		0,031		7/ Diameter
<i>bb</i>	6,71	6,76	0,264	0,266	Diameter
<i>bc</i>	6,99	7,01	0,275 2	0,276 0	2/ Diameter
<i>bd</i>	—	0,1	—	0,004	Radius
<i>be</i>	0,79	0,84	0,031	0,033	
<i>bf</i>	1,356	1,361	0,053 4	0,053 6	3/ Diameter
<i>bh</i>	2,16	2,18	0,084 9	0,085 9	3/ Diameter
<i>bj</i>	6,05	6,10	0,238	0,240	
<i>bk</i>	4,62	4,88	0,182	0,192	
<i>bm</i>	0,05	0,2	0,002	0,008	
<i>bn</i>	0,38	0,89	0,015	0,035	
<p>NOTE 1 Mechanical and electrical reference plane.</p> <p>NOTE 2 These diameters are for polytetrafluorethylene(PTFE) insulation with dielectric constant 2,02. Characteristic impedance of transmission line determined by diameters <i>p</i> and <i>bc</i> is $50 \Omega \pm 0,2 \Omega$.</p> <p>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 <i>y</i> with 1,356 mm (0,0534 in) min: 1,361 mm (0,0536 in) max. pin gauge inserted after slotting and closing.</p> <p>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.</p> <p>NOTE 5 Zero air gap.</p> <p>NOTE 6 Insulator is flush or protruding.</p> <p>NOTE 7 Parentheses indicate the reference size for size.</p>					

3.4 General requirements for connector mounting in modules and on panels

3.4.1 Radial misalignment

The radial misalignment between engaging connectors refers to the coaxiality error A (see Figure 7) between a connector with socket-centre contact and a connector with pin centre contact at the beginning and during the engagement.

At the beginning of the engagement, the radial misalignment of rigidly mounted connector and float-mounted connector shall no more than 0,51 mm.

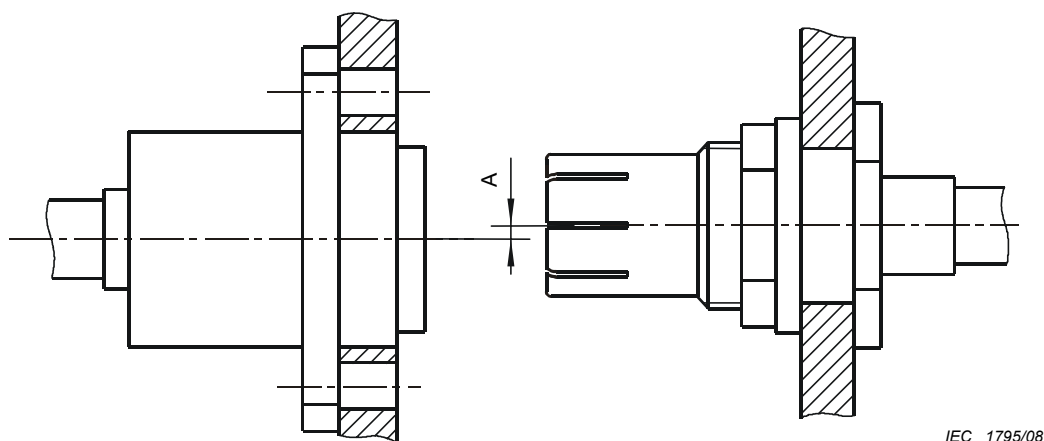


Figure 7 – The sketch map of connector radial misalignment

3.4.2 Axial misalignment

For rigidly mounted connector and float-mounted connector, the float mounting allows a total of 1,52 mm (0,060 in) axial travel. The mounting arrangements should, however, ensure a minimum length of travel of 0,26 mm (0,010 in) [0,76 mm (0,030 in) preferred] to ensure that full length of engagement is maintained under operational conditions (see Figure 8).

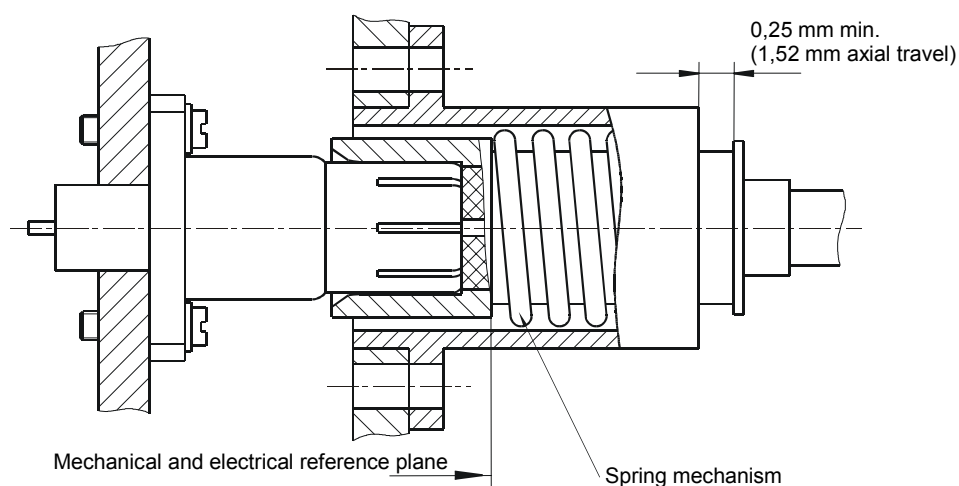


Figure 8 – The sketch map of rigidly mounted and float-mounted connector

4 Quality assessment procedure

4.1 General

The following clauses provide recommended rating, performance and test conditions to be considered when writing a detail specification. They also provide an appropriate schedule of tests with minimum levels of conformance inspection sampling, together with the proforma blank detail specification (BDS) and instructions for the preparation of a detail specification.

4.2 Rating and characteristics (see Clause 6 of IEC 61169-1/QC220000)

The values indicated in Table 7 are recommended for series TMA connectors and are given for the writer of the detail specification. They are applicable for the condition when the connectors are fully mated.

Certain tests are listed without any recommended values being given. These tests will usually not be required. When these tests are required, appropriate values shall be entered in the detail specification at the discretion of the specification writer.

Table 7 – Rating and characteristics

Ratings and characteristics	Test method IEC 61169-1 (QC 220000) subclause	Value	Remarks, deviations from standard test method
Electrical			
Nominal impedance		50 Ω	
Frequency range			
Grade 2 connectors		Up to 6 GHz	Or upper frequency limit of cable
Reflection factor ^a	9.2.1		
Grade 2 connectors			
– straight styles		$\leq 0,13$	
– right-angle styles		$\leq 0,15$	
– component mounting styles		See detail specification	
– solder bucket and PCB mounting styles			
Center contact resistance ^b	9.2.3		
– initial		$\leq 1,5 \text{ m}\Omega$	
– change due to conditioning		$\leq 2 \text{ m}\Omega$	
Outer conductor continuity ^b	9.2.3		
– initial		$\leq 2 \text{ m}\Omega$	
– after conditioning		$\leq 3 \text{ m}\Omega$	

Table 7 (continued)

Ratings and characteristics	Test method IEC 61169-1 (QC 220000) subclause	Value	Remarks, deviations from standard test method
Mechanical			
Center contact captivation	9.3.5		
– axial force		15 N	Maximum displacement 0,25 mm in each direction
– torque		na	
Engagement and separation	9.3.6		
– engagement force		≤ 20 N	
– separation force		≥ 2,25 N	
Gauge retention force (resilient contacts)	9.3.4		
– center		≥ 0,57 N	
– outer		≥ 2,25 N	
Technical tests on cable fixing		See detail specification	
– cable rotation (nutation)	9.3.7.2		
– cable pulling	9.3.8		
– cable bending	9.3.9		
– cable torsion	9.3.10		
Tensile strength of coupling mechanism	9.3.11	na	
Bending moment	9.3.12	na	
Vibration	9.3.3	150 m/s ² 10 Hz – 2 000 Hz	Acceleration: 15 gn
Shock	9.3.14	750 m/s ² 11 ms saw tooth	Acceleration: 75 gn
Insulation resistance ^b	9.2.5		
– initial		≥ 5 GΩ	
– after conditioning		≥ 200 MΩ	
proof voltage at sea-level ^{cd}	9.2.6		
– cables 96IEC 50-4		1 000 V	
– cables 96IEC 50-3		1 000 V	
– cables 96IEC 50-2		750 V	
proof voltage at 4,4 kPa ^{cd}			4,4 kPa approximately equivalent to 20 km (70 000 ft) altitude
– cables 96IEC 50-4		180 V	
– cables 96IEC 50-3		180 V	
– cables 96IEC 50-2		150 V	

Table 7 (continued)

Ratings and characteristics	Test method IEC 61169-1 (QC 220000) subclause	Value	Remarks, deviations from standard test method
Environmental test voltage at sea-level ^{cd}			
– cables 96IEC 50-4		400 V	
– cables 96IEC 50-3		400 V	
– cables 96IEC 50-2		350 V	
Environmental test voltage at 4,4 kPa ^{cd}			4,4 kPa approximately equivalent to 20 km (70 000 ft) altitude
– cables 96IEC 50-4		90 V	
– cables 96IEC 50-2		90 V	
– cables 96IEC 50-3		85 V	
Screening effectiveness ^f (straight cable connectors only)	9.2.8	60 dB, 3 GHz	$Z_t \leq 100 \text{ m}\Omega$
Discharge test at sea-level (corona effect) – cables 96IEC 50-3	9.2.9	≥ 500	Extinction voltage
Environmental			
Climatic category ^e	9.4.1	55/155/21	
Sealing, non-hermetic	9.4.5.1	1 cm ³ /h 100 kPa ~ 110 kPa differential	
Sealing, hermetic	9.4.5.2	5 pa cm ³ /s 100 kPa – 110 kPa differential	
Salt mist	9.4.6	48 h spraying	
Endurance			
Mechanical	9.5	500 operations	
High temperature ^e	9.6	1 000 h at 155 °C	
NOTE na = not applicable.			
<p>a These values apply to the basic connector. In practice, these may be influenced by the cable used and reference always be made to the actual values given in the detail specification.</p> <p>b Values for a single pair of connectors.</p> <p>c Voltages are r.m.s. values of a.c. at 40 Hz to 65 Hz, unless otherwise stated.</p> <p>d Some cables usable with these connectors have ratings lower than the values given here.</p> <p>e For certain connectors, the upper temperature limit is restricted by the cable characteristics. Reference should be made to the relevant cable specification. When semi-rigid cables are used, the upper temperature is limited to 115 °C maximum.</p> <p>f When interfaces are fully mated.</p>			

4.3 Test schedule and inspection requirements

4.3.1 Acceptance tests (see Table 8)

Table 8 – Acceptance tests

	Test method IEC 61169-1 Subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test required	IL	AQL %	Period	Test required	IL	AQL %	Period
<i>Group A1</i>									
Visual examination	9.1.2	a	II	1,0		a	S3	1,5	
<i>Group B1</i>									
Outline dimensions	9.1.3.1	a	S4	0,4		a	S3	4,0	
Mechanical compatibility	9.1.3.3	a	II	1,0		a	S3	1,5	
Engagement and separation	9.3.6	a	S4	0,40	Lot	a	S3	1,5	Lot
Gauge retention (resilient contact)	9.3.4	ia	II	1,0		ia	S3	1,5	
Sealing, non-hermetic	9.4.5.1	ia	II	0,65	by	ia	S3	1,0	by
Sealing, hermetic	9.4.5.2	ia	II	0,015		ia	S3	0,025	
Voltage proof	9.2.6	a	S4	0,40	lot	a	II	4,0	lot
Solderability piece parts	9.3.2.1.1	ia	S4	0,40		ia	S3	4,0	
Insulation resistance	9.2.5	a	S4	0,40		a	S3	4,0	
NOTE a = suggested as applicable ia = test suggested (if technically applicable) IL = inspection level AQL = acceptable quality level									

4.3.2 Periodic tests (see Table 9)

There are no group C tests for levels H and M.

Table 9 – Periodic tests

	Test method IEC 61169-1 subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test required	Number of specimens	Permitted failures per group#	Period	Test required	Number of specimens	Permitted failures per group#	Period
<i>Group D1 (d)</i>			6	1	3 years		3	1	3 years
Solderability connector assemblies	9.3.2.1.1	ia				ia			
Resistance to soldering heat	9.3.2.1.2	ia				ia			
Mechanical tests on cable fixing									
- cable rotation (nutation)	9.3.7.2	ia				ia			
- cable pulling	9.3.8	ia				ia			
- cable bending	9.3.9	ia				ia			
- cable torsion	9.3.10	ia				ia			
<i>Group D2 (d)</i>			6	1	3 years		3	1	3 years
Contact resistance, outer conductor and screen continuity centre conductor continuity	9.2.3	a				a			
Vibration	9.3.3	a							
Damp heat, steady state	9.4.3	a				a			
<i>Group D3 (d)</i>			1*	1	3 years		1*	1	3 years
Dimensions piece-parts and materials	9.1.3.2	a				a			
<i>Group D4 (d)</i>			6	1	3 years		3	1	3 years
Mechanical endurance	9.5	a				a			
High temperature endurance	9.6	a				a			
Sulphur dioxide	9.4.8	na				na			
<i>Group D5 (d)</i>			6	1	3 years		3	1	3 years
Reflection factor	9.2.1	a				a			
Screening effectiveness	9.2.8	a				a			
Water immersion	9.2.7	ia				ia			
<i>Group D6 (d)</i>			6	1	3 years		3	1	3 years
Contact cavitation	9.3.5	a				a			
Rapid change of temperature	9.4.4	na				na			

Table 9 (continued)

	Test method IEC 61169-1 subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test required	Number of specimens	Permitted failures per group#	Period	Test required	Number of specimens	Permitted failures per group#	Period
Climatic sequence	9.4.2	a				a			
Group D7 (d) Resistance to solvents and contaminating fluids	9.7	ia	1§		3 years	ia	1§		3 years
Details of symbols, abbreviations and procedures: a = suggested as applicable ia = test suggested (if technically applicable) na = not applicable IL = inspection level AQL = acceptable quality level * = one set of piece-parts each style and variant, unless using common piece parts # = for qualification approval (QA), a total of two failures only permitted for level H and 1 failure only for level M from groups D1 to D7 § = Group D7 – number of pairs for each solvent (d) = destructive tests – specimens shall not be returned to stock									

4.4 Procedures

4.4.1 Quality conformance inspection

This shall consist of test groups A1 and B1 on a lot-by-lot basis.

4.4.2 Qualification approval and its maintenance

This shall consist of three consecutive lots passing test groups A1 and B1 followed by selection of specimens from the lots as appropriate. These specimens shall successfully pass the specified periodic D tests.

5 Instructions for preparation of detail specifications

5.1 General

Detail specifications (DS) writers shall use the appropriate BDS pro-forma. The following pages comprise the pro-forma BDS dedicated for use with type BNC connectors. As such, it will already have entered on it information relating to

- the basic specification number applicable to all the detail specifications covering connector styles of the type covered by the sectional specification;
- the connector series designation.

The specification writer should enter the details relating to the connector style/variant(s) to be covered as indicated. The numbers in brackets on the BDS pro-forma correspond to the following indications which shall be given.

5.2 Identification of the detail specification

- (1) The name of the National Standards Organization (NSO) under whose authority the DS is published and, if applicable, the organization from whom the DS is available.
- (2) The relevant mark of conformity and the number allotted to the DS by the relevant national or international organization authorizing the DS.
- (3) The number and issue number of the IEC/IECQ generic or sectional specification as relevant; also national reference if different.
- (4) If different from the IEC/IECQ number, any national number of the DS, date of issue and any further information required by the national system, together with any amendment numbers.

5.3 Identification of the component

- (5) Enter the following details:

Style: The style designation of the connector including type of fixing and sealing, if applicable.

Attachment: By deletion of the inapplicable options of cable/wire: given for centre and outer conductors.

Special features and markings: as applicable.
- (6) Enter details of assessment level and the climatic category.
- (7) A reproduction of the outline drawing and details of the panel piercing, if applicable. It shall provide the maximum envelope dimensions, also the position of the reference plane and, in the case of a fixed connector, the position of the mounting plane(s) relative to the front face of the connector.
Any maximum panel thickness limitations for fixed connectors shall be stated.
- (8) Particulars of all variants covered by the DS. As appropriate, the information shall include:
 - cable types (or sizes) applicable to each variant;
 - alternative plated or protective finishes;
 - details of alternative mounting flanges having either tapped or plain mounting holes;
 - details of alternative solder spills or solder buckets including, when applicable, those for use with microwave integrated circuit (MIC) components.

5.4 Performance

- (9) Performance data listing the most important characteristics of the connector taking into account the recommended values of 4.2 in this specification. Deviations from the minimum requirements shall be clearly indicated. Non-applicable parameters shall be marked "na".

5.5 Marking, ordering information and related matters

- (10) Insert marking and ordering information as appropriate, together with details of related documents and any invoked structural similarity.

5.6 Selection of tests, test conditions and severities

- (11) “na” shall be used to indicate non-applicable tests. All tests marked “a” by the detail specification writer shall be mandatory.


When using the normal procedure with a dedicated BDS, the letter “a” – for applicable – shall be entered in the “Test required” column against each of the tests indicated as being mandatory in the test schedule as in 4.3 of this specification. Any additional tests required at the discretion of the specification writer shall also be indicated by an “a”.

The specification writer shall also indicate, when necessary, details of deviations from the standard test methods and test conditions, including any relevant deviations given in the test schedule of the sectional specification.

The qualification approval and conformance inspection shall be such that the national supervising inspectorate (NSI) shall be satisfied that they are appropriate and in line with those for other connectors within the system providing a reasonably comparable service.

5.7 Blank detail specification pro-forma for type TMA connector

The following pages contain the complete BDS pro-forma.

(1)	Page 1 of			
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH GENERIC SPECIFICATION QC 220000 SECTIONAL SPECIFICATION QC 222XXX NATIONAL REFERENCE		(4) ISSUE 		
(5) Detail specification for Radio frequency coaxial connector of assessed quality			type TMA	
Style:.....		Special features and markings		
Method of cable/wire+ attachment		centre conductor – solder/crimp+ outer conductor – solder/clamp/crimp + + delete as appropriate		
(6) Assessment level.....	Characteristic impedance 50 Ω	Climatic category...../...../...../		
(7) Outline and maximum dimensions		Panel piercing and mounting details		
(8) Variants				
Variant No.	Description of variant	60096 IEC		
01.....	.....	.....	.....	.....
.....
.....
.....
.....
.....
.....
.....
Information about manufacturers who have components qualified to this detail specification is available in the current QC 001005 qualified product list.				

(9) Performance (including limiting conditions of use)

Ratings and characteristics		IEC 61169-1 (QC 220000) Subclause	Value	Remarks including any deviations from standard test methods
<i>Electrical</i>				
Nominal impedance			....Ω	
Frequency range			....GHz	Measurement frequency range
Reflection factor		9.2.1		
	Variant No. Designation 01..... .....		..... .....	..... .....
Centre contact resistance		9.2.3	≤mΩ ≤mΩ	Initial After conditioning
Centre conductor continuity	01.....	9.2.3	.....mΩ.....mΩ.....mΩ.....mΩ	Resistance change due to conditioning
Outer contact continuity		9.2.3	≤mΩ ≤mΩ	Initial After conditioning
Insulation resistance		9.2.5	≥GΩ ≥GΩ	Initial After conditioning
+ Proof voltage at sea level	01.....	9.2.6	.....kV.....kV.....kV.....kV	86 kPa - 106 kPa
+ Proof voltage at 4,4 kPa	01.....	9.2.6	.....V.....V.....V.....V	.....kPa (if not 4,4 kPa)
Screening effectiveness	01.....	9.2.8	....dB at....GHz	$Z_t \leq \dots \text{m}\Omega$
Discharge test (corona) at sea level	01.....	9.2.9	≥ V ≥ V ≥ V ≥ V	Extinction voltage
ADDITIONAL ELECTRICAL CHARACTERISTICS				
+ Voltage values are r.m.s. values at 50 Hz - 60 Hz, unless otherwise specified.				

Ratings and characteristics	IEC 61169-1 (QC 220000) Subclause	Value	Remarks including any deviations from standard test methods
<p><i>Mechanical</i></p> <p>Soldering - bit size</p> <p>Gauge retention resilient contacts - inner contact - outer contact</p> <p>Centre contact captivation - axial force - permitted displacement in each direction - torque</p> <p>Engagement and separation - engagement force - separation force</p> <p>Strength of coupling mechanism</p> <p>Effectiveness of cable fixing against</p> <p>- cable rotation 01.....</p> <p>- cable pulling 01.....</p> <p>- cable bending 01.....</p> <p>- cable torsion 01.....</p> <p>Bending moment</p> <p>Bumps total</p> <p>Vibration</p> <p>Shock</p> <p>ADDITIONAL MECHANICAL CHARACTERISTICS</p>	<p>9.3.2.1.1</p> <p>9.3.4 and 9.3.5</p> <p>9.3.5</p> <p>9.3.6</p> <p>9.3.11</p> <p>9.3.7</p> <p>9.3.8</p> <p>9.3.9</p> <p>9.3.10</p> <p>9.3.12</p> <p>9.3.13</p> <p>9.3.3</p> <p>9.3.14</p>	<p>.....</p> <p>.....N.....N</p> <p>.....N.....mm.....Nm</p> <p>.....N.....N</p> <p>.....N</p> <p>Rotations</p> <p>.....N</p> <p>.....Cycles</p> <p>.....Nm</p> <p>.....Nm</p> <p>.....m/s².....to..... Hz</p> <p>.....m/s².....to..... Hz</p> <p>.....m/s².....shape.....ms</p>	<p>For gauging details, see 3.2.1 and 3.2.2</p> <p>Bend radius and number of revolutions</p> <p>Point of application and duration</p> <p>Length of cable mass</p> <p>Duration of applied torque</p> <p>Relative to reference plane (.....g_n acceleration)</p> <p>(.....g_n acceleration)</p> <p>(.....g_n acceleration)</p>

Ratings and characteristics	IEC 61169-1 (QC 220000) Subclause	Value	Remarks including any deviations from standard test methods
<i>Environmental</i>			
Climatic category	/...../.....	
Sealing non-hermetically sealed connectors	9.4.5.1	.....cm ³ /h	100 kPa to 110 kPa pressure differential
Sealing hermetically sealed connectors	9.4.5.2	10 ⁻⁵ bar/cm ³ /h	100 kPa to 110 kPa pressure differential
Water immersion	9.2.7		
Salt mist	9.4.6	..... h	Duration of spraying
ADDITIONAL ENVIRONMENTAL CHARACTERISTICS			
<i>ENDURANCE</i>			
Mechanical	9.5	.....operations	
High temperature	9.6	.....h at.....°C	
ADDITIONAL ENDURANCE CHARACTERISTICS			
<i>CHEMICAL CONTAMINATION</i>			
Resistance to solvents and contaminating fluids to be used	9.7	..... ..... ..... ..... ..... .....
Applicable fluids			
Sulphur dioxide	9.4.8	..... days	

(10) Supplementary information

- Marking of the component: in accordance with 11.1 of IEC 61169-1 (QC 220000) in the following order of preference:

- 1) Manufacturer code:
- 2) Manufacturing date code: year/week
- 3) Component identification: Variant No./ Identification
Designation
.....
.....
.....
.....
.....
.....
.....

- Marking and contents of package: in accordance with 11.2 of IEC 61169-1

- 1) Information prescribed in 11.1 of IEC 61169-1 detailed above
- 2) Nominal characteristic impedanceΩ.....
- 3) Assessment level code letter
- 4) Any additional marking required

Ordering information

- 1) Number of the detail specification IECQC 222XXX...../Variant code..
- 2) Assessment level code letter
- 3) Body finish (if more than one listed)
- 4) Any additional information or special requirements

- Related documents (if not included in IEC 61169-1 or sectional specification):

.....
.....

- Structural similarity in accordance with 10.2.2 of IEC 61169-1

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