IEC 61169-24

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INTERNATIONAL STANDARD

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Radio-frequency connectors –
Part 24: Sectional specification – Radio frequency coaxial connectors with screw coupling, typically for use in 75 Ω cable networks (type F)

IEC 61169-24:2019-07 RLV(en)

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RADIO-FREQUENCY CONNECTORS –

Part 24: Sectional specification – Radio frequency coaxial connectors with screw coupling, typically for use in 75 Ω cable networks (type F)

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International Standard IEC 61169-24 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 third edition cancels and replaces the second edition published in 2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition: all drawings have been reworked and improved to allow frequency extension up to 3 GHz.

The text of this International Standard is based on the following documents:

CDV	Report on voting
46F/417/CDV	46F/436A/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document 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 document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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- withdrawn,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

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RADIO-FREQUENCY CONNECTORS –

Part 24: Sectional specification – Radio frequency coaxial connectors with screw coupling, typically for use in 75 Ω cable networks (type F)

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 with screw coupling, typically for use in 75 Ω cable networks (type F).

It describes the interface dimensions with gauging information and the mandatory tests selected from IEC 61169-1, applicable to all DS relating to type F connectors.

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

NOTE Millimetres are original dimensions. All undimensioned pictorial configurations are for reference purposes only.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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~~2013, *Radio-frequency connectors – Part 1: Generic specification – General requirements and measuring methods*
~~Amendment 1 (1996)~~
~~Amendment 2 (1997)~~

EN 60068-2-52, *Environmental testing – Test methods. Tests. Test Kb. Salt mist, cyclic (sodium chloride solution)*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Interface dimensions

4.1 Dimensions

~~Millimetres are original dimensions.~~

~~All undimensioned pictorial configurations are for reference purposes only.~~

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4.1.1 Connector “F” type female socket (indoor) physical dimensions

Figure 1 shows a connector “F” type female socket (indoor).

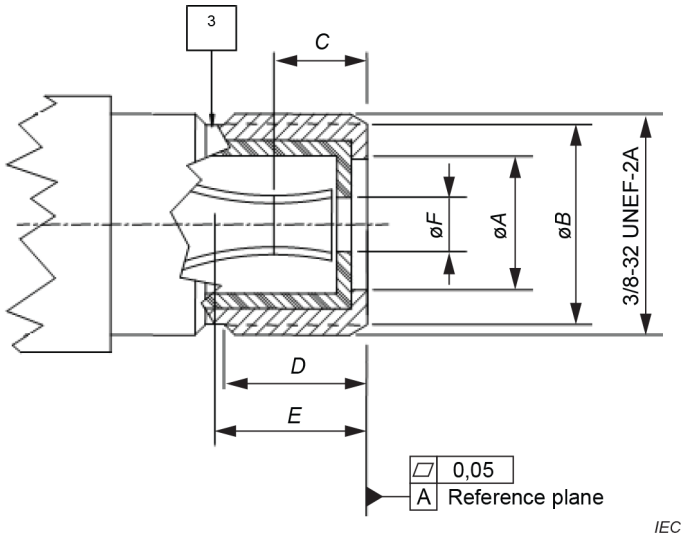

Figure 1 – Connector “F” type female socket (indoor)
(for dimensions, see Table 1)

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Table 1 – Connector “F” type female socket (indoor)

~~Description~~	~~Reference~~	~~mm~~		~~inch~~		~~Note~~
		~~Min.~~	~~Max.~~	~~Min.~~	~~Max.~~	
~~Reference plane opening inner diameter~~	~~A~~	~~3,90~~	~~7,4~~	~~0,154~~	~~0,291~~	~~2~~
~~Reference plane outer diameter~~	~~B~~	~~7,50~~	~~8,50~~	~~0,295~~	~~0,335~~	
~~Positive contact point depth~~	~~C~~	~~-~~	~~4,70~~	~~-~~	~~0,185~~	~~4~~
~~Port minimum full thread length~~	~~D~~	~~7,50~~	~~-~~	~~0,295~~	~~--~~	~~3~~
~~Minimum center contact depth~~	~~E~~	~~9,00~~	~~-~~	~~0,354~~	~~-~~	~~5~~
~~Center conductor guide inner diameter~~	~~F~~	~~1,2~~	~~1,5~~	~~0,047~~	~~0,059~~	

~~NOTE 1 Drawing not to scale.~~

~~NOTE 2 No protrusion of the dielectric beyond the reference plane is permitted.~~

~~NOTE 3 Thread relief not to exceed two full threads.~~

~~NOTE 4 Recommended mating male center conductor diameter: 0,025 in (0,64 mm) min. to 0,042 in. (1,07 mm) max.~~

~~NOTE 5 Center contact geometry optional.~~

Description	Reference	mm		Remarks
		Min.	Max.	
Reference plane opening inner diameter	*A*	3,90	7,4	1, 4
Reference plane outer diameter	*B*	7,50	8,50	
Positive contact point depth	*C*	-	4,70	2
Port minimum full thread length	*D*	7,50	-	3
Minimum center contact depth	*E*	9,00	-	4
Center conductor guide inner diameter	*F*	1,2	1,5	

1 No protrusion of the dielectric beyond the reference plane is permitted.

2 Recommended mating male center conductor diameter: 0,025 in (0,64 mm) min. to 0,042 in. (1,07 mm) max.

3 Thread relief not to exceed two full threads.

4 Center contact geometry optional.

4.1.2 Connector “F” type male plug (indoor) physical dimensions

Figure 2 shows a connector “F” type male plug (indoor).

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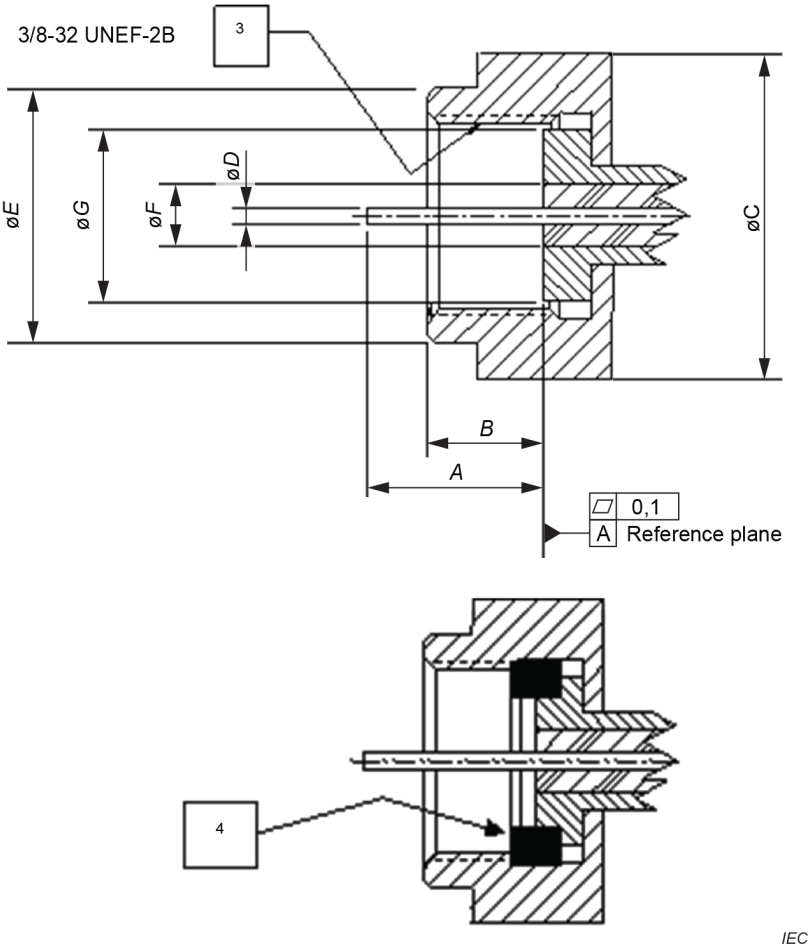

Figure 2 – Connector “F” type male plug (indoor)
(for dimensions, see Table 2)

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Table 2 – Connector "F" type male plug (indoor)

Description	Reference	mm		inch		Note
		Min.	Max.	Min.	Max.	
Inner conductor length	A	6,35	8,63	0,250	0,340	
Length of nut	B	4,00	7,29	0,157	0,287	2
Maximum envelope dimension	C	-	16,61	-	0,654	
Inner conductor diameter	D	0,64	1,13	0,025	0,044	
Sealing surface diameter for seal ring	E	10,41	11,04	0,410	0,435	
Reference plane opening inner diameter	F	-	5,84	-	0,230	2
Reference plane opening outer diameter	G	7,88		0,310		

NOTE 1 Drawing not to scale.

NOTE 2 No protrusion of the dielectric beyond the reference plane is permitted.

NOTE 3 The mating of the F female socket to the reference plane is not impeded.

NOTE 4 Gasket seal optional, if used, does not avoid to meet all performance requirements.

Description	Reference	mm		Remarks
		Min.	Max.	
Inner conductor length	*A*	6,35	8,63	
Length of nut	*B*	4,00	7,29	1,2
Maximum envelope dimension	*C*	-	16,61	
Inner conductor diameter	*D*	0,64	1,13	
Sealing surface diameter for seal ring	*E*	10,41	11,04	
Reference plane opening inner diameter	*F*	-	5,84	1, 2
Reference plane opening outer diameter	*G*	7,88		

[1] No protrusion of the dielectric beyond the reference plane is permitted.

[2] The mating of the F female socket to the reference plane is not impeded.

[3] Gasket seal optional, if used, does not avoid to meet all performance requirements.

4.2 Mechanical gauges

Millimetres are original dimensions.

All undimensioned pictorial configurations are for reference purposes only.

4.2.1 Mating socket centre conductor acceptance diameter test

In order to verify that the centre female contact of the socket does not suffer from mechanical deformation when mated with the full range of indicated inner conductor diameters, a test has been devised. This test measures the force required to insert and withdraw a selection of precision test pins into and out of the "F" female socket under test.

NOTE Retention of the inner conductor should be by means of pressure exerted by the conductive centre female contact, not by means of any other non-conductive insert within the reference plane opening.

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The test apparatus should be so designed as to enable accurate alignment of the “F” female socket under test with the precision test pin. The apparatus should hold either the socket or the test pin in a fixed position, and the moving part of the apparatus should be fitted with an instrument capable of measuring the insertion and withdrawal force.

Using the test sequence shown below, the insertion and withdrawal force shall be measured and recorded in newtons.

Figure 3 shows a gauge for the centre socket conductor.

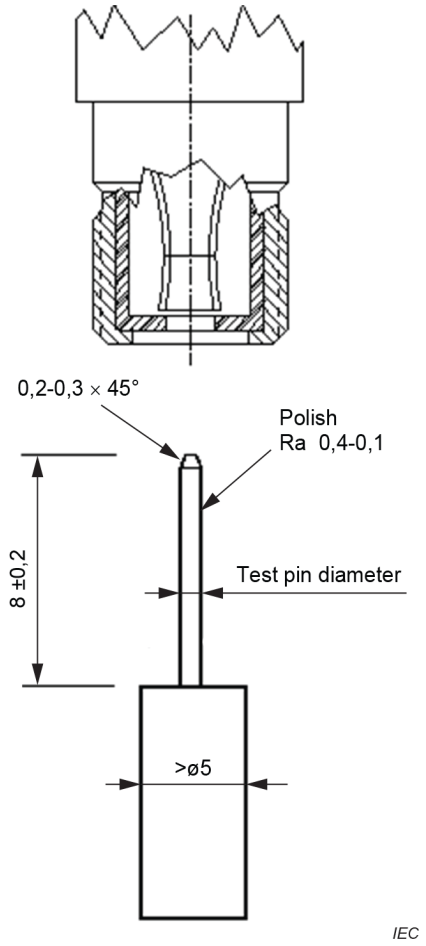

Figure 3 – Gauge for the centre socket conductor

Table 3 – Test sequence for the centre socket conductor

Test sequence	1st test	2nd test	3rd test	4th test	5th test	6th test
Test pin diameter	0,635 ± 0,005 mm	0,850 ± 0,005 mm	1,136 ± 0,005 mm	0,635 ± 0,005 mm	1,136 ± 0,005 mm	0,635± 0,005 mm

The insertion force required to insert the test pin into the socket centre female contact shall not exceed 20 N under all circumstances.

The withdrawal force required to withdraw the test pin from the socket centre female contact shall be a minimum of 0,3 N under all circumstances.

4.2.2 Mating port centre conductor acceptance electrical test

After completion of the mechanical tests described in 4.2.1, the centre conductor contact resistance, when re-mated with a male “F” plug whose centre conductor diameter is 0,635 mm, shall not exceed 10 mΩ with an applied test ampere rate of 1 A.

4.2.3 Reference plane electrical contact

The electrical contact shall be made by the mating of the reference plane face of the “F” female socket with the mating face of the “F” male plug and not by the threads alone.

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5 Quality assessment procedures

5.1 General

The following subclauses provide recommended ratings, performance and test conditions to be considered when writing a detail specification (DS). They also provide an appropriate schedule of tests with minimum levels of conformance inspection.

5.2 Ratings and characteristics

The RF connectors defined in this document are designed for use with a variety of flexible and semi-rigid coaxial cables and in microwave integrated circuits and similar uncabled applications.

Rating and characteristics are given in Table 4.

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Table 4 – Ratings and characteristics

Ratings and characteristics	IEC 61169-1:2013 Subclause	Value	Remarks ~~including any deviations~~, deviation from standard test method~~s~~
Electrical			
Nominal impedance			Shall meet the requirements of 9.2.1.1 of IEC 61169-1:2013 when terminating a Z_c = 75 Ω cable
Frequency range		5 MHz to 1 GHz 5 MHz to 2 GHz 5 MHz to 3 GHz 5 MHz to 6 GHz	See DS For most applications For some satellite applications For some head end applications For some satellite broadcasting and precision applications (Annex B)
~~Reflection factor~~	~~9.2.14.~~		
Return loss	9.2.1		
– straight styles •		Min. 30 dB up to 1 GHz Min. 25 dB up to 2 GHz Min. 20 dB up to 3 GHz Min. 15 dB up to 6 GHz	Min. 37-7,5f+0,64f^2 dB f in GHz (1 GHz ≤ f ≤ 6 GHz)
– right angle styles			See DS
– solder bucket and PCB mounting style			Under consideration
– insertion loss		0,1 dB max. up to 1 GHz 0,2 dB max. at 2 GHz 0,3 dB max. at 3 GHz 0,4 dB max. at 6 GHz	Max. –0,04+0,15f – 0,013f^2 dB f in GHz (1 GHz ≤ f ≤ 6 GHz)
Centre contact resistance	9.2.3		
– initial		≤ 5 mΩ	
– after conditioning		≤ 10 mΩ	
Outer conductor continuity	9.2.3		
– initial		≤ 2,5 mΩ	
– after conditioning		≤ 5 mΩ	
Insulation resistance	9.2.5		
– initial		> 1 GΩ	
– after conditioning		> 1 MΩ	
Proof voltage at sea level + #	9.2.6	750 V	86 kPa to 106 kPa
Screening effectiveness	9.2.~~8~~7	a_s ≥ 90 dB from 5 MHz to 3 GHz	Z_t < 3,2 mΩ at 3 GHz
Discharge test (Corona)	9.2.~~9~~8	na	
Mechanical			
~~Gauge retention~~ Insertion force (resilient contacts)	9.3.4		See 3.2 of IEC 61169-1:2013
Contact captivation – axial force – torque	9.3.5	 20 N max. na	 Captivated contacts only

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Ratings and characteristics	IEC 61169-1:2013 Subclause	Value	Remarks ~~including any deviations~~, deviation from standard test method~~s~~
Engagement and separation	9.3.6		Screw coupling connectors
Coupling torque			To overcome friction of a coupling nut
– friction		0,066 Nm max.	
– coupling		0,46 Nm to 0,69 Nm	
– proof		2,8 Nm	
Mechanical tests on cable			
– cable pulling #	9.3.8	120 N	
– cable torsion #	9.3.10	0,1 Nm	
~~Tensile~~ Strength of coupling mechanism	9.3.11	300 N	
Bending moment	9.3.12	2 Nm	Relative to reference plane
Environmental			
Vibration	9.3.3	98 m/s^2 10 Hz to 500 Hz	10 g acceleration
Climatic sequence	9.4.2	40/70/21	
Sealing	9.4.~~5~~7	1 cm^3/h max	100 kPa to 110 kPa pressure
Salt mist	9.4.~~6~~10	48 h	
Endurance			
Mechanical	9.~~57.10~~3.15	1 000 cycles	
High temperature	9.~~60~~4.5	1 000 h	
Details of symbols, abbreviations and procedures: • These values apply to basic connectors. They depend on the cable used. Relevant values are given in the DS. + Voltage values are RMS values at 50 Hz to 60 Hz, unless otherwise specified. # Cables used with these connectors may have values of lower performance than those given in this table. na Not applicable.			

5.3 Environmental characteristics for outdoor sockets (see Annex A)

When the “F” type male plug and the “F” type female socket are mated, the physical attributes shall be protected and sealed to prevent moisture ingress and as a minimum shall meet IPX8 rating.

Any “F” type (outdoor) male plug or female socket shall be resistant to corrosion and shall meet EN 60068-2-52 salt mist cyclic test.

5.4 Test schedule and inspection requirements

5.4.1 Acceptance tests

Table 5 describes the acceptance tests to be performed.

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Table 5 – Acceptance tests

	~~Test method~~ IEC 61169-1:2013 Subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test required	IL	AQL %	Period	Test required	IL	AQL %	Period
Group A1									
Visual examination	9.1.~~2~~1	a	II	1,0		a	S3	1,5	
Group B1									
Outline dimensions	9.1.~~3.1~~2	a	S4	0,4		a	S3	4,0	
Mechanical compatibility	9.1.~~3.3~~2.2	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~~ Insertion force (resilient contacts)	9.3.4	ia	II	1,0		ia	S3	1,5	
Sealing, non-hermetic	9.4.~~5.1~~7	ia	II	0,65	by	ia	S3	1,0	by
Sealing, hermetic	9.4.~~5.2~~8	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~~2	ia	S4	0,40		ia	S3	4,0	
Insulation resistance	9.2.5	a	S4	0,40		a	S3	4,0	
Details of symbols, abbreviations and procedures: IL inspection level AQL acceptable quality level a suggested as applicable ia test suggested (if technically applicable)									

5.4.2 Periodic tests

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

Table 6 describes the periodic tests to be performed.

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Table 6 – Periodic tests

	~~Test method~~ IEC 61169-1:2013 subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test requir-ed	Number of speci-mens	Permit-ted failures per group	Period	Test required	Number of speci-mens	Permitted failures per group	Period
Group D1 (d)			6	1	3 years		3	1	3 years
Solderability connector assemblies	9.3.2.~~1.1~~2	ia				ia			
Resistance to soldering heat	9.3.2.~~1.2~~3	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			
Group D2 (d)			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			
Group D3 (d)			1*	1	3 years		1*	1	3 years
Dimensions piece-parts and materials	9.1.~~3.~~2	a				a			
Group D4 (d)			6	1	3 years		3	1	3 years
Mechanical endurance	9.~~5~~3.15	a				a			
High temperature endurance	9.~~6~~4.5	a				a			
Sulphur dioxide	9.4.~~8~~12	na				na			
Group D5 (d)			6	1	3 years		3	1	3 years
Reflection factor	9.2.1	a				a			
Screening effectiveness	9.2.~~8~~7	a				a			
Water immersion	9.~~2.7~~4.9	ia				ia			
Group D6 (d)			6	1	3 years		3	1	3 years
Contact captivation	9.3.5	a				a			
~~Rapid~~ Change of temperature	9.4.4	na				na			
Climatic sequence	9.4.2	a				a			
Group D7 (d)			1§		3 years		1#		3 years
Resistance to solvents and contaminating fluids	9.~~7~~4.11	ia				ia			

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	~~Test method~~ IEC 61169-1:2013 subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test requir-ed	Number of speci-mens	Permit-ted failures per group	Period	Test required	Number of speci-mens	Permitted failures per group	Period
Details of symbols, abbreviations and procedures: a suggested as applicable ia test suggested (if technically applicable) na not applicable * 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.									

5.5 Procedures

5.5.1 Quality conformance inspection

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

5.5.2 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.

6 Instructions for preparation of detail specifications

6.1 General

Detail specifications (DS) writers shall use the appropriate BDS pro-forma. The following pages comprise the pro-forma BDS dedicated for use with 75 Ω type F connectors. As such, it will already have entered on it information relating to

a) the basic specification number applicable to all the detail specifications covering connector styles of the type covered by the sectional specification;

b) 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.~~

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6.2 Identification of the component

(1) 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.

(2) Enter details of assessment level and the climatic category.

(3) 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.

(4) Any maximum panel thickness limitations for fixed connectors shall be stated.

(5) 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.

6.3 Performance

(6) Performance data listing the most important characteristics of the connector, taking into account the recommended values in 45.2 of this specification. Deviations from the minimum requirements shall be clearly indicated. Non-applicable parameters shall be marked ‘na’.

6.4 Marking, ordering information and related matters

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

6.5 Selection of tests, test conditions and severities

(8) ‘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 5.4~~.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.~~

6.6 Blank detail specification pro-forma for type F connector

The following pages contain the complete BDS pro-forma.

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(1)	Page 1 of 10 QC 222401
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH **GENERIC SPECIFICATION QC 220000** **SECTIONAL SPECIFICATION QC 222400** **NATIONAL REFERENCE**	(4) ISSUE ....
(5) Detail specification for **radio frequency coaxial connector of assessed quality**	type **F**
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 75 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.

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(1)	Page 1 of (2)
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH **GENERIC SPECIFICATION** **SECTIONAL SPECIFICATION** **NATIONAL REFERENCE**	(3) (4) ....
(5) Detail specification for **radio frequency coaxial connector of assessed quality**	Type **F**
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 75 Ω Climatic category..../.../.../
(7) Outline and maximum dimensions	Panel piercing and mounting details

(8) Variants

Variant No.	Description of variant	IEC 61196			
01.....		.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....
	.....				

Information about manufacturers who have components qualified under the IECQ Conformity Assessment System is available through the IECQ on-line certificate system.

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(9) Performance (including limiting conditions of use)

Ratings and characteristics		IEC 61169-1 ~~(QC 220000)~~ :2013 Subclause	Value	Remarks including any deviations from standard test methods
Electrical				
Nominal impedance			75 Ω	
Frequency range			0 GHz to 3 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 to 106 kPa
+ Proof voltage at 4,4 kPa	01.....		.....V .....V .....V V	.....kPa (if not 4,4 kPa)
+ Environment test voltage at sea level	01.....		.....V .....V .....V V	86 kPa to 106 kPa
Environment test voltage at 4,4 kPa	01.....		.....V .....V .....V V	.....kPa (if not 4,4 kPa)
Screening effectiveness	01.....	9.2.~~8~~7	≥ dB at....GHz	Z_t≤.....Ω
ADDITIONAL ELECTRICAL CHARACTERISTICS				
+ Voltage values are RMS values at 50 Hz to 60 Hz, unless otherwise specified.				

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Ratings and characteristics		IEC 61169-1 ~~(QC 220000)~~ :2013 Subclause	Value	Remarks including any deviations from standard test methods
Mechanical				
Soldering - bit size		9.3.2~~.1.1~~	....	
~~Gauge retention~~ Insertion force (resilient contacts) - inner contact - outer contact		9.3.4	....	
Centre contact captivation - axial force - permitted displacement each direction		9.3.5	.....N .....mm	
Engagement and separation - axial force		9.3.6	.....N (eng) .....N (sep)	
Effectiveness of cable fixing against				
- cable rotation	01.....	9.3.7~~.2~~	Rotations	
- cable pulling	01.....	9.3.8	.....N	
- cable bending	01.....	9.3.9	.....cycles	Length of cable and mass ....
- cable torsion	01.....	9.3.10	.....Nm	
Bending moment		9.3.12	.....Nm	Relative to reference plane
Vibration		9.3.3	.....m/s^2 .....to....Hz	(.....g_n acceleration)
ADDITIONAL MECHANICAL CHARACTERISTICS				

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Ratings and characteristics	IEC 61169-1 ~~(QC 220000)~~ :2013 Subclause	Value	Remarks including any deviations from standard test methods
Environmental			
Climatic category		...../...../.....	
Sealing non-hermetically sealed connectors	9.4.~~5.1~~7	.....cm^3/h	100 kPa to 110 kPa pressure differential
Sealing hermetically sealed connectors	9.4.~~5.2~~8	10^{-5} $bar/cm^3/h$	100 kPa to 110 kPa pressure differential
Water immersion	9.~~2.7~~4.9		
ADDITIONAL ENVIRONMENTAL CHARACTERISTICS			
ENDURANCE			
Mechanical	9.~~5~~3.15	.....operations	
High temperature	9.~~6~~4.5	.....h at.....°C	
ADDITIONAL ENDURANCE CHARACTERISTICS			
CHEMICAL CONTAMINATION			
Resistance to solvents and contaminating fluids to be used	9.~~7~~4.11	....	
Applicable fluids			
Sulphur dioxide	9.4.~~8~~12	... .days	

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(10) Supplementary information

– **Marking of the component: in accordance with 11.1 of IEC 61169-1 ~~(QC 220000)~~:2013 in the following order of preference:** 1) Manufacturer code: ..... 2) Manufacturing date code: year/week 3) Component identification: Variant No./ designation Identification ....
– **Marking and contents of package: in accordance with 11.2 of IEC 61169-1:2013** 1) Information prescribed in 11.1 of IEC 61169-1:2013 detailed above 2) Nominal characteristic impedance .....75 Ω..... 3) Assessment level code letter ..... 4) Any additional marking required .....
– **Ordering information** 1) Number of the detail specification ~~IECQC 222401~~/ variant code. 2) Assessment level code letter ..... 3) Body finish (if more than one listed) ..... 4) Any additional information or special requirements .....
~~NOTE~~ – Related documents (if not included in IEC 61169-1:2013 or sectional specification): ....
– Structural similarity in accordance with 10.2.2 of IEC 61169-1:2013
Relevant information on a basic style should be entered as variant 01.

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