IEC 61169-4

Edition 1.0 2008-04

INTERNATIONAL STANDARD

Radio-frequency connectors –
Part 4: RF coaxial connectors with inner diameter of outer conductor 16 mm (0,63 in) with screw lock – Characteristic impedance 50 Ω (type 7-16)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

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International Standard IEC 61169-4 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 61169-4 published in 2006. This first edition constitutes a technical revision.

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

FDIS	Report on voting
46F/60/FDIS	46F/71/RVD

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 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 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- withdrawn,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 4: RF coaxial connectors with inner diameter of outer conductor 16 mm (0,63 in) with screw lock – Characteristic impedance 50 Ω (type 7-16)

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 type 7-16 R.F. coaxial connectors with screw lock.

The connectors are normally used with 50 Ω flexible and semi-rigid r.f. cables for middle power applications in an operating frequency range up to 7,5 GHz.

It describes the interface dimensions for general purpose grade 2 connectors, dimensional details for standard test connectors, grade 0, together with gauging information and the mandatory tests selected from QC 22000 (IEC 61169-1), applicable to all DS relating to type 7-16 connectors.

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

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

IEC 62037, *RF connectors, connector cable assemblies, and cables - Intermodulation level measurement*

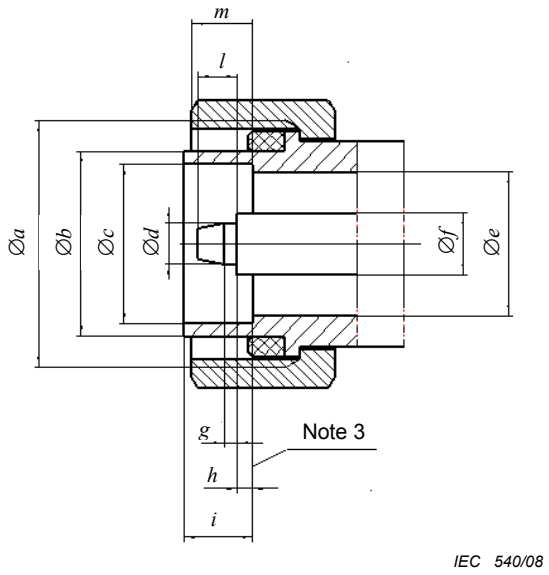
3 Mating face and gauge information

Metric dimension are original dimensions.

All undimensioned pictorial configurations are for reference purpose only.

3.1 Dimensions – General connectors – Grade 2

3.1.1 Connector with pin centre contact



NOTE For dimensions see Table 1.

Figure 1 – Connector with pin centre contact

Table 1 – Connector with pin centre contact

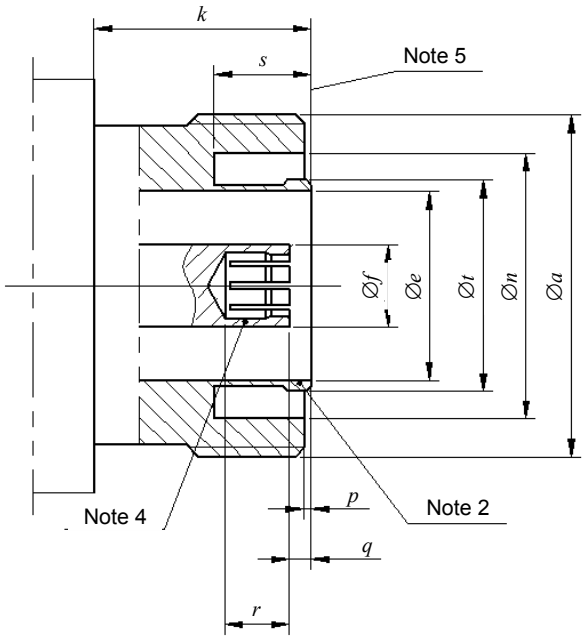
Reference	Millimetres		Inches		Notes
	Minimum	Maximum	Minimum	Maximum	
a	M29×1,5		M29×1,5		2
b	20,6	21,4	0,811	0,843	
c	18,03	18,21	0,7098	0,7169	
d	4,96	5,04	0,1953	0,1984	
e	15,85	16,25	0,6240	0,6398	
f	7 (nominal)		0,276 (nominal)		1
g	1,4	1,6	0,0551	0,0630	
h	1,47	1,77	0,0579	0,0697	
i	7,00	8,00	0,276	0,315	
l	-	4,5	-	0,177	
m	7,00	9,00	0,276	0,354	

NOTE 1 The tolerance on this dimension is determined by the tolerance of characteristic impedance.

NOTE 2 M29×1,5 indicates metric screw thread with nominal diameter 29 mm (1,141 in) and pitch 1,5 mm (0,059 in).

NOTE 3 Mechanical and electrical reference plane (see Figure 1).

3.1.2 Connector with socket centre contact



NOTE For dimensions see Table 2.

Figure 2 – Connector with socket centre contact

Table 2 – Connector with socket centre contact

Reference	Millimetres		Inches		Note
	Minimum	Maximum	Minimum	Maximum	
a	M29×1,5		M29×1,5		3
e	15,85	16,25	0,6240	0,6398	
f	7(nominal)		0,276(nominal)		1
k	10	-	0,394	-	
n	22,1	22,9	0,870	0,902	
p	0,5	0,7	0,0197	0,0276	
q	1,77	2,07	0,0697	0,0815	
r	5	-	0,197	-	
s	8,1	-	0,319	-	
t	17,84	18,02	0,7024	0,7094	2

NOTE 1 The tolerances on this dimensions is determined by the tolerance of characteristic impedance.

NOTE 2 Standard is a non-slotted outer contact. If a slotted outer contact is required, the slotting should be bent outwards to 18,5 mm (0,728 in) maximum. The slotted sleeve should meet the gauge retention force (see Figure 2).

NOTE 3 M29×1,5 indicates metric screw thread with nominal diameter 29 mm (1,141 in) and pitch 1,5 mm (0,59 in).

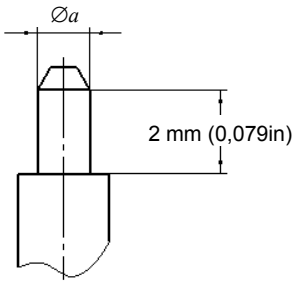
NOTE 4 Slot design optional. Contact to be closed to meet the gauge retention force (see Figure 2).

NOTE 5 Mechanical and electrical reference plane (see Figure 2).

3.2 Gauges for general purpose connectors – Grade 2

3.2.1 Gauges for connector with socket centre contact

3.2.1.1 Centre contact



IEC 542/08

Figure 3 – Gauge pin for socket centre contact

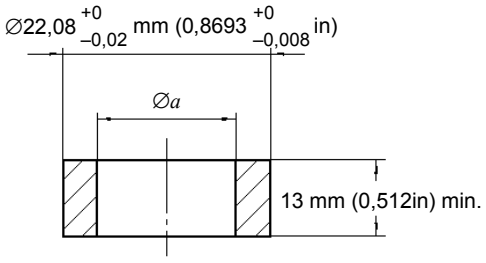
Test procedure

a) A steel test pin (Figure 3) with a diameter a of $5{,}1^{+0}_{-0{,}01}$ mm ($0{,}2008^{+0}_{-0{,}0004}$ in) and a 0,4 µm (16 µin) maximum finish shall be inserted once into the centre contact a minimum distance of 2 mm (0,079 in).

b) A second steel test pin (Figure 3) with a diameter a of $4{,}96^{+0}_{-0{,}01}$ mm ($0{,}1953^{+0}_{-0{,}0004}$ in) and a 0,4 µm (16 µin) maximum finish shall have a minimum retention force of 6 N after insertion into the centre contact.

It is recommended that this gauge should have a mass of 600 g.

3.2.1.2 Outer contact



IEC 543/08

Figure 4 – Gauge ring for socket outer contact

a) For non-slotted outer contacts, a steel test ring (Figure 4) with inner diameter a of $18{,}03^{0}_{-0.01}$ mm ($0{,}7098^{0}_{-0.0004}$ in) and a 0,4 µm(16 µin) maximum finish shall be pushed over the outer contact of connector. The force required to push this test ring on to the connector a minimum distance of 8 mm(0,315 in) shall not exceed 40 N.

b) For slotted outer contacts, a steel test ring (Figure 4) with inner diameter a of $18{,}23^{+0{,}02}_{0}$ mm($0{,}7177^{+0{,}0008}_{0}$ in) and a 0,4 µm (16 µin)max finish shall be placed over the outer contact of the connector. The test ring shall uniformly meet the outer contact when pushed no more than 3 mm (0,12in) over this contact.

The retention force for the gauge ring shall be 15 N min.

3.3 Dimensions – standard test connectors – Grade 0

In order to carry out the reflection coefficient measurement according to 9.2.1 of IEC 61169-1, the measure equipment should be provided with the standard test connector. The standard test connector with the tolerances specified in 3.3.1and 3.3.2 guarantee an accuracy of characteristic impendance of ±0,75 Ω.

3.3.1 Standard test connector with pin centre contact

The dimensions of the standard test connector with pin centre contact shall be as specified in 3.1.1, but with the tolerance given in Table 3:

Table 3 – Tolerance for the standard connector with pin centre contact.

Dimension	Millimetres		Inches	
	Minimum	Maximum	Minimum	Maximum
d	4,99	5,00	0,196 46	0,196 85
e	16,05	16,07	0,631 89	0,632 68
f	6,971	6,981	0,274 45	0,274 84
h	1,73	1,75	0,068 11	0,068 90

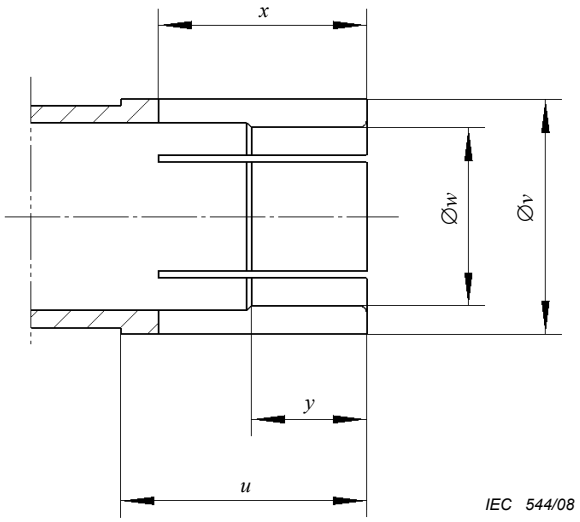
3.3.2 Standard test connector with socket centre contact

The dimensions of the standard test connector with socket centre contact shall be as specified in 3.1.2, but with the tolerance given in Table 4:

Table 4 – Tolerance for the standard connector with socket centre contact

Dimension	Millimetres		Inches	
	Minimum	Maximum	Minimum	Maximum
e	16,05	16,07	0,63189	0,63268
f	6,971	6,981	0,27445	0,27484
q	1,79	1,81	0,07047	0,07126

Additionally, dimensions of the slotted centre contact (Figure 5) shall be as follows:



NOTE For dimensions see Table 5.

Figure 5 – Slotted centre contact

Table 5 – Slotted centre contact

Dimension	Millimetres		Inches		Note
	Minimum	Maximum	Minimum	Maximum	
u	7,2	7,4	0,2835	0,2913	
v	6,997	7,003	0,275473	0,275709	1
w	To fulfil requirements of dimension v				
x	6,9	7,1	0,2717	0,2795	2
y	1,2		0,0472		
NOTE 1 When pin gauge Ø 4,99 mm (0,19646 in) min. Ø 5,00 mm (0,19685 in) max. is inserted to 2 mm depth.					
NOTE 2 Six slots spaced 60° apart 0,3 mm (0,0118 in) wide.					

4 Quality assessment procedures

4.1 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

4.2 Ratings and characteristics

The values indicated below are recommended for type 7-16 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 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.

The connectors have a maximum working voltage of 4 k V at sea level (350 V at 44 mbar/ 20 000 m altitude). Connection to the cable may be made either by crimping or soldering, depending upon design.

NOTE 2 All voltages specified in this standard are r.m.s. values of a.c. voltages. All test voltages are a.c. voltages of 50 Hz to 60 Hz.

NOTE 3 For details of symbols, abbreviations and procedures, see 7.3.2.

Table 6 – Preferred climatic categories (see IEC 60068-1):

Category	Designation letter*	Temperature range	Damp heat, steady state
40/85/21	A	–40 °C to +85 °C	21 days
55/155/56	B	–55 °C to +155 °C	56 days
* To be included in the IEC type designation (see Clause 3).			

Table 7 – Ratings and characteristics

Ratings and characteristics	IEC 61169-1 subclause	Value	Remarks including any deviations from standard test methods
Electrical			
Nominal impedance		50 Ω	
Frequency range – Grade 2 connectors		Up to 7,5 GHz	
Reflection factor	9.2.1		
– straight styles [1]		≤ 0,1	
– right angle styles		As specified in the DS	
– component mounting styles		As specified in the DS	
– solder bucket and PCB mounting styles		As specified in the DS	
Centre contact resistance	9.2.3		
– initial		≤ 0,4 mΩ	
– after conditioning		≤ 0,8 mΩ	
Outer conductor continuity [1]	9.2.3		
– initial		≤ 1,5 mΩ	
– after conditioning		≤ 1,9 mΩ	
Insulation resistance [1]	9.2.5		
– initial		≥ 10 GΩ	
– after conditioning		≥ 100 MΩ	
Proof voltage at sea level [2, 3]	9.2.6	3000 V	
Proof voltage at 4,4 kPa [2, 3]	9.2.6	350 V	4,4 kPa approximately equivalent to 20 km
Screening effectiveness (straight cabled connectors only)	9.2.8	110 dB at 1 GHz	Z_t ≤ 0,02 mΩ applied torque 25 Nm
Discharge test (corona) – at sea level (cable 60096 IEC 50-3)	9.2.9	≥ 2 800 V	Extinction voltage
Intermodulation level	IEC 62037	Over -155 dBc	Test power 20 W
Mechanical			
Centre contact captivation – axial force – torque	9.3.5	 200 N, 1 min Na	Maximum displacement 0,25 mm each direction
Engagement and separation force and torque, – axial force – torque	9.3.6	 ≤ 28 N < 30 Nm.	
Gauge retention force (resilient contacts) – centre – outer	9.3.4	 >10 N <20 N >15 N < 45 N	Only for slotted contacts
Mechanical tests on cable fixing cable pulling, force minimum	9.3.7	500 N climatic category A 500 N climatic category B	
Cable bending	9.3.9	300 N climatic category A 150 N climatic category B	Bending number 10 Bending angle 90°
Cable torsion	9.3.10	5 Nm climatic category A 2,5 Nm climatic category B	
Tensile strength of coupling mechanism	9.3.11	445 N	

Ratings and characteristics	IEC 61169-1 subclause	Value	Remarks including any deviations from standard test methods
Bending moment (and sharing force)	9.3.12		See DS
Vibration	9.3.3	100 m/s^2 10 Hz – 500 Hz	10 g_n acceleration
Bump	9.3.13	–	
Shock	9.3.14	500 m/s^2 ½ sin 6 ms	50 g_n acceleration
Environmental			
Climatic category [4]		A: 40/155/21 B:55/155/56	
Sealing – non-hermetic	9.4.5.1	1 cm^3/h max. 100 kPa – 110 kPa differential	
Sealing – hermetic	9.4.5.2	1 Pa cm^3/s (10^{-5} bar cm^3/s) 100 kPa – 110 kPa differential	
Salt mist	9.4.6	Duration of spraying: 48 h	
Endurance			
Mechanical	9.5	500 operations	
High temperature [4]	9.6	1 000 h at 155 °C	

NOTES

[1)] These values apply to basic connectors. They depend on the cable used. Relevant values are given in the DS.

[2)] Voltage values are r.m.s. values at 50 Hz to 60 Hz, unless otherwise specified.

[3)] Cables used with these connectors may have values of lower performance than those given in this table.

[4)] For certain connectors the upper temperature limit is restricted by the cable characteristics. Reference should be made to the relevant cable specification.

4.3 Test schedule and inspection requirements

4.3.1 Acceptance tests

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
Group A1 Visual examination	9.1.2	a	II	1,0		a	S3	1,5	
Group B1 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	

4.3.2 Periodic tests

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
Group D1 (d)			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	na				na			
- 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	a				a			
High temperature endurance	9.6	a				a			
Sulphur dioxide	9.4.8	na				na			

	Test method IEC 61169-1 subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test requi-red	Number of speci-mens	Permit-ted failures per group#	Period	Test required	Number of speci-mens	Permitted failures per group#	Period
Group D5 (d)			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			
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	ia				ia			

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 should 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

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.

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 7-16 connector

The following pages contain the complete BDS pro-forma.

<table>
<tr><td>(1)</td><td>Page 1 of …..

QC 222XXX</td></tr>
<tr><td>ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH
GENERIC SPECIFICATION QC 220000
SECTIONAL SPECIFICATION QC 222400
NATIONAL REFERENCE</td><td>(4) ISSUE

.....

.....</td></tr>
<tr><td colspan="2">(5) Detail specification for
Radio frequency coaxial connector of assessed quality Type 7-16</td></tr>
<tr><td>Style:.....</td><td>Special features and markings</td></tr>
<tr><td colspan="2">Method of cable/wire+ attachment centre conductor – solder/crimp+
outer conductor – solder/clamp/crimp +
+ delete as appropriate</td></tr>
<tr><td>(6) Assessment level.....</td><td>Characteristic impedance … Ω</td><td>Climatic category..../.../.../</td></tr>
<tr><td>(7) Outline and maximum dimensions</td><td>Panel piercing and mounting details</td></tr>
<tr><td colspan="2">(8) Variants

Variant No. Description of variant 60096 IEC

01..... ....
....
....
....
....
....
....
....
....</td></tr>
<tr><td colspan="2">Information about manufacturers who have components qualified to this detail specification is available in the current QC 001005 Qualified Product List.</td></tr>
</table>

(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
Electrical				
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 ≤..... mΩ
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
Mechanical				
Soldering - bit size		9.3.2.1.1	.....	
Gauge retention resilient contacts - inner contact - outer contact		9.3.4.3	.....N .....N	
Centre contact captivation - axial force - permitted displacement each direction - torque		9.3.5	.....N .....mm .....Nm	
Engagement and separation - axial force		9.3.6		
Strength of coupling mechanism		9.3.11	.....N	
Effectiveness of cable fixing against				
- cable rotation	01.....	9.3.7	Rotations	
- cable pulling	01.....	9.3.8	.....N	
- cable bending	01.....	9.3.9	Cycles	Length of cable mass ....
- cable torsion	01.....	9.3.10	.....Nm	
Bending moment		9.3.12	.....Nm	Relative to reference plane
Bumps total		9.3.13	.....m/s^2 .....to..... Hz	(.....g_n acceleration)
Vibration		9.3.3	.....m/s^2 .....to..... Hz	(.....g_n acceleration)
Shock		9.3.14	.....m/s^2 .....Shape .....ms	(.....g_n acceleration)
ADDITIONAL MECHANICAL CHARACTERISTICS				

Ratings and characteristics	IEC 61169-1 (QC 220000) subclause	Value	Remarks including any deviations from standard test methods
Environmental			
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			
ENDURANCE			
Mechanical	9.5	.....operations	
High temperature	9.6	.....h at.....°C	
ADDITIONAL ENDURANCE CHARACTERISTICS			
CHEMICAL CONTAMINATION			
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 impedance .... Ω.....
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

NOTE Relevant information on a basic style should be entered as variant 01.

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

3, rue de Varembé
P.O. Box 131
CH-1211 Geneva 20
Switzerland

Tel: + 41 22 919 02 11
Fax: + 41 22 919 03 00
info@iec.ch
www.iec.ch