BS EN 61169-35:2011

BSI Standards Publication

Radio-frequency connectors

Part 35: Sectional specification for 2,92 series RF connectors

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National foreword

This Draft for Development is the UK implementation of EN 61169-35:2011. It is idenitical to IEC/PAS 61169-35:2011. It supersedes DD IEC/PAS 61169-35:2009 which is withdrawn.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application can be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the international organization responsible for its conversion to an international standard. A review of this publication will be initiated not later than 3 years after its publication by the international organization so that a decision can be taken on its status. Notification of the start of the review period will be made in an announcement in the appropriate issue of Update Standards.

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into an international Standard, to extend the life of the Technical Specification or to withdraw it. Comments should be sent to the Secretary of the responsible BSI Technical Committee at British Standards House, 389 Chiswick High Road, London W4 4AL.

The UK participation in its preparation was entrusted to Technical Committee EPL/46, Cables, wires and waveguides, radio frequency connectors and accessories for communication and signalling.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Date	Text affected

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Radio-frequency connectors - Part 35: Sectional specification for 2,92 series RF connectors

(IEC 61169-35:2011)

Connecteurs pour fréquences radioélectriques - Partie 35 : Spécification intermédiaire pour les connecteurs RF série 2,92 (CEI 61169-35:2011)

Hochfrequenz-Steckverbinder - Teil 35: Rahmenspezifikation für HF-Steckverbinder der Baureihe 2,92 (IEC 61169-35:2011)

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 61169-35:2011 E

Foreword

The text of document 46F/191/FDIS, future edition 1 of IEC 61169-35, prepared by SC 46F, R.F. and microwave passive components, of IEC TC 46, Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61169-35:2011.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2012-05-15
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2014-08-15

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 61169-35:2011 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60169-23 NOTE Harmonized as EN 60169-23.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 61169-1	1992	Radio-frequency connectors -	EN 61169-1	1994
+ A1	1996	Part 1: Generic specification - General	+ A1	1996
+ A2	1997	requirements and measuring methods	+ A2	1997

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

RADIO-FREQUENCY CONNECTORS –

Part 35: Sectional specification for 2,92 series RF connectors

FOREWORD

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International Standard IEC 61169-35 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 first edition cancels and replaces IEC/PAS 61169-35, 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:

FDIS	Report on voting
46F/191/FDIS	46F/196/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 the IEC 61169 series, under the general title: *Radio-frequency connectors* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

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

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

RADIO-FREQUENCY CONNECTORS –

Part 35: Sectional specification for 2,92 series RF connectors

1 Scope

This sectional specification provides information and rules for preparation of detail specification of 2,92 series RF coaxial connectors together with the pro-forma blank detail specification.

It also prescribes mating face dimensions for high performance connectors - grade 1, dimensional detail of standard test connectors - Grade 0, gauging information and tests selected from IEC 61169-1 applicable to all detail specifications relating to 2,92 series RF coaxial 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.

The 2,92 series coaxial connectors with characteristic impedance 50 Ω , 2,92 mm inner diameter of outer conductor and screw coupling, are used for millimeter wave applications, connecting with RF cables or microstrips. The operating frequency limit is up to 40 GHz.

Mating interface standards of the 2,92 series connectors are similar to IEEE std 287-2007 (2,92 mm) and MIL-std-348A (SMK). The 2,92 connectors can be inter-mated with SMA, and 3,5 mm connectors as per following standards. SMA: IEC 61169-35, MIL-PRF-39012D and MIL-STD-348A. 3,5 mm: IEC 60169-23, IEEE std 287-2007.

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)

3 Mating face and gauge information

3.1 Dimensions – High performance connectors – Grade 1

3.1.1 Connector with pin-centre contact

Inch dimensions are original dimensions.

All undimensioned pictorial configurations are for reference purpose only.

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

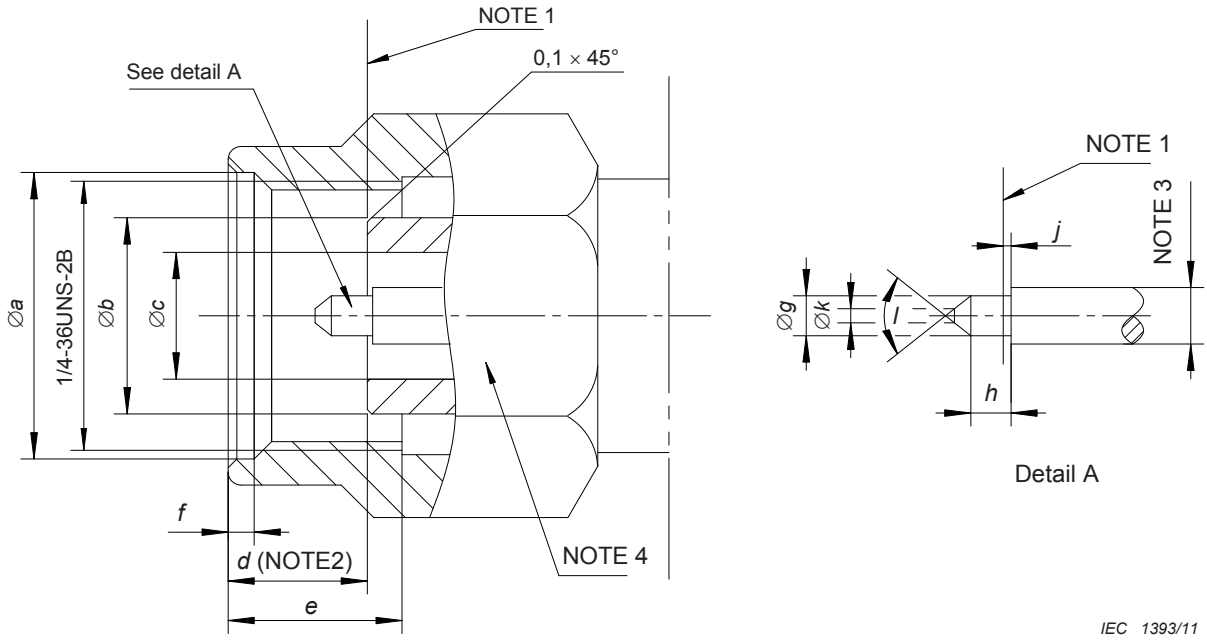

Figure 1 – Connector with pin-centre contact (for dimensions and notes, see Table 1)

Table 1 – Dimensions of connector with pin-centre contact

Ref.	mm		in	
	Min.	Max.	Min.	Max.
a	6,48	6,73	0,255	0,256
b	4,521	4,592	0,1780	0,1808
c	2,90	2,95	0,114	0,116
d	2,36	3,56	0,0929	0,1401
e	3,43	4,01	0,1351	0,1579
f	0,38	1,14	0,015	0,045
g	0,906	0,922	0,0357	0,0363
h	1,02	1,12	0,040	0,044
j	0,02	0,13	0,0008	0,0051
k	0,20	0,30	0,008	0,012
l	56°	64°	56°	64°

NOTE 1 Mechanical and electrical reference plane.

NOTE 2 Nut fully forward.

NOTE 3 Diameter is chosen to obtain a normal impedance of 50 Ω.

NOTE 4 Hexagon, width across two sides is 7,85 mm to 8,00 mm (0,309 in to 0,315 in), length of the plane is 3,18 mm (0,125 in) min.

3.1.2 Connector with socket-centre contact

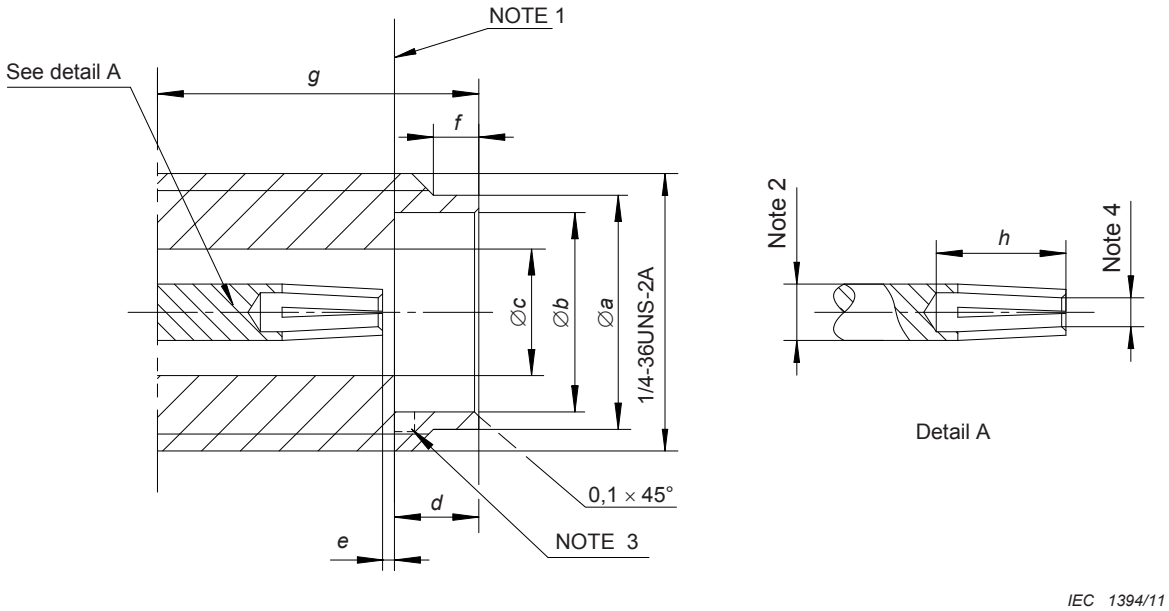

Figure 2 – Connector with socket-centre contact (for dimensions and notes, see Table 2)

Table 2 – Dimensions of connector with socket-centre contact

Ref.	mm		in	
	Min.	Max.	Min.	Max.
a	5,28	5,46	0,208	0,215
b	4,60	4,65	0,181	0,183
c	2,90	2,95	0,114	0,116
d	1,88	1,98	0,074	0,078
e	0,02	0,13	0,0008	0,0051
f	0,38	1,14	0,015	0,045
g	5,54	—	0,218	—
h	2,65	—	0,104	—

NOTE 1 Mechanical and electrical reference plane.

NOTE 2 Diameter is chosen to obtain a normal impedance of 50 Ω.

NOTE 3 Design for root cut to be allowed. Chamfer not to be allowed.

NOTE 4 Design of centre contact is optional, but should meet electrical and mechanical performance requirements when mating with Ø 0,906 mm to Ø 0,922 mm (Ø 0,0357 in ~ Ø 0,0363 in) gauge pin.

3.2 Gauges

3.2.1 Gauge pins for socket-centre contact

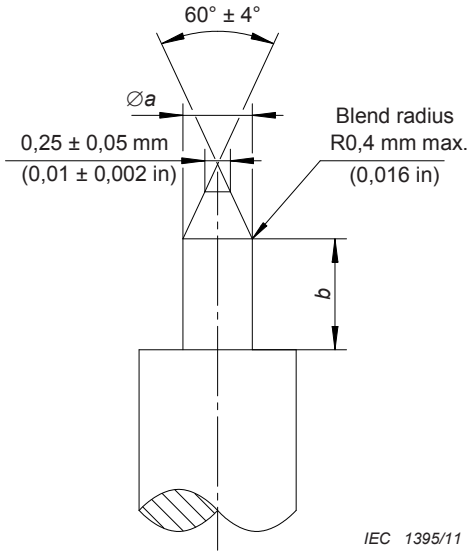

Figure 3 – Gauge pins for socket-centre contact
(for dimensions and notes, see Table 3)

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

Gauge A Maximum material for sizing purposes					Gauge B Minimum material for measurement of retention force Mass of gauge: 40 g ± 1 g			
Ref.	mm		in		mm		in	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
a	0,9360	0,9385	0,0369	0,0370	0,917	0,9195	0,0361	0,0362
b	0,76	1,14	0,0299	0,0449	1,27	1,90	0,0500	0,0748
Material: steel, polished, surface roughness: Ra=0,4 μm (16 μin) maximum.								

3.2.2 Test procedure

The gauge A shall be inserted into the socket-centre contact one time with a minimum depth of 0,76 mm (0,0299 in). This is a sizing operation and should only be carried out when the socket-centre contact is removed from the connector.

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

3.3 Dimensions – standard test connectors – Grade 0

3.3.1 Connector with pin-centre contact

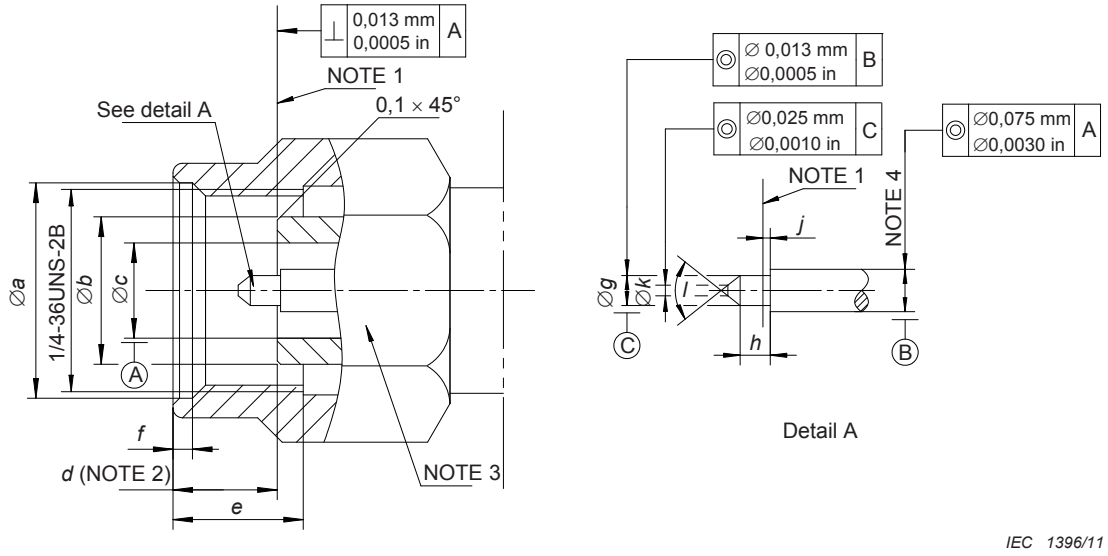

Figure 4 – Connector with pin-centre contact (for dimensions and notes, see Table 4)

Table 4 – Dimensions of connector with pin-centre contact

Ref.	mm		in	
	Min.	Max.	Min.	Max.
a	6,38	6,73	0,251	0,256
b	4,547	4,577	0,179	0,1802
c	2,91	2,93	0,1145	0,1153
d	2,36	3,56	0,0929	0,1401
e	3,43	4,01	0,1351	0,1579
f	0,38	1,14	0,015	0,045
g	0,906	0,922	0,0357	0,0363
h	1,02	1,12	0,040	0,044
j	0,02	0,076	0,0008	0,003
k	0,20	0,30	0,008	0,012
l	56°	64°	56°	64°

NOTE 1 Mechanical and electrical reference plane, surface roughness: Ra = 0,4 μm (16 μin) maximum.

NOTE 2 Nut fully forward.

NOTE 3 Hexagon, width across two sides is 7,85 mm to 8,00 mm (0,309 in to 0,315 in), length of the plane is 3,18 mm (0,125 in) min.

NOTE 4 Diameter is chosen to obtain a normal impedance of 50 Ω ± 0,5 Ω.

3.3.2 Connector with socket-centre contact

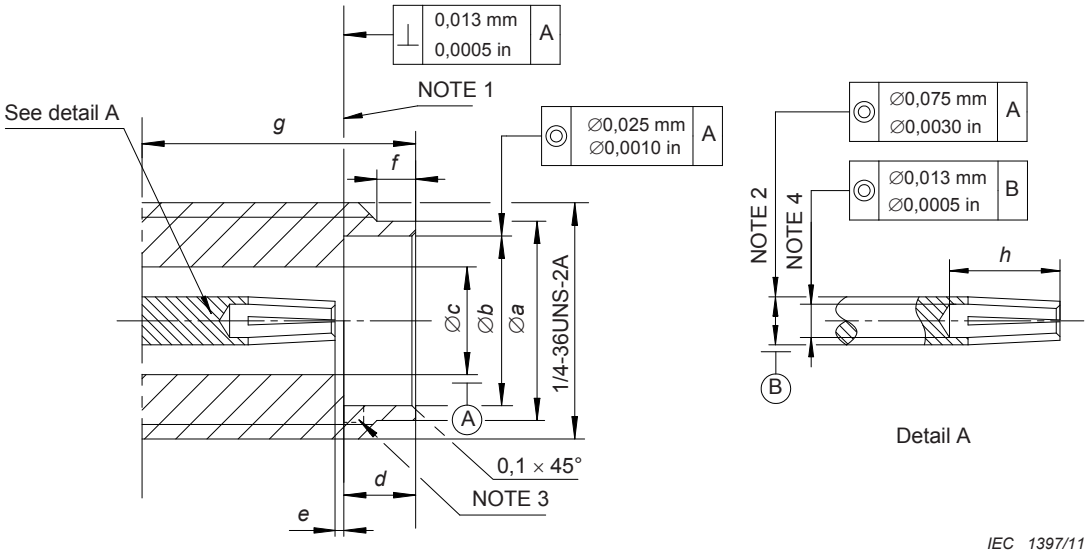

Figure 5 – Connector with socket-centre contact
(for dimensions and notes, see Table 5)

Table 5 – Dimensions of connector with socket-centre contact

Ref.	mm		in	
	Min.	Max.	Min.	Max.
a	5,28	5,46	0,208	0,215
b	4,60	4,63	0,181	0,1822
c	2,91	2,93	0,1145	0,1153
d	1,88	1,98	0,074	0,078
e	0,02	0,076	0,0008	0,003
f	0,38	1,14	0,015	0,045
g	5,54	—	0,218	—
h	2,65	—	0,104	—

NOTE 1 Mechanical and electrical reference plane, surface roughness: Ra = 0,4 μm (16 μin) maximum,

NOTE 2 Diameter is chosen to obtain a normal impedance of 50 Ω ± 0,5 Ω,

NOTE 3 Design for root cut to be allowed, chamfer not to be allowed.

NOTE 4 Design of centre contact is optional, but should meet electrical and mechanical performance requirements, when mating with Ø 0,906 mm to Ø 0,922 mm (Ø 0,0360 in to Ø 0,0368 in) gauge pin.

4 Quality assessment procedure

4.1 General

The following subclauses 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 pro forma 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)

The values indicated below are recommended for 2,92 series RF 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 6 – Rating and characteristics

Rating and characteristics	IEC 61169-1 Subclause	Values	Remarks, deviations from standard test method
Electrical			
Nominal impedance		50 Ω	
Frequency range Grade 1 connectors		DC~ 40 GHz	Or upper frequency limit of cable
Reflection factor[a] General connectors - straight styles - right-angle styles - component mounting styles - solder bucket and PCB mounting styles	9.2.1	 DC~18 GHz: 0,0501 max. 18 GHz to 26,5 GHz 0,0631 max 26,5 GHz to 40 GHz 0,1259 max. See DS See DS See DS	
Centre contact resistance[b] - initial - after conditioning	9.2.3	 ≤ 3,0 mΩ ≤ 4,0 mΩ	
Outer conductor continuity [b] - initial - after conditioning	9.2.3	 ≤ 2,0 mΩ ≤ 3,0 mΩ	
Insulation resistance - initial - after conditioning	9.2.5	 ≥ 5 000 MΩ ≥ 200 MΩ	
Proof voltage at sea-level [c,d] - uncabled styles - semi-rigid 0,118 in diameter - semi-rigid and semi-flexible 0,086 in diameter - semi-rigid and semi-flexible 0,047 in diameter	9.2.6	 750 V 750 V 750 V 500 V	
Proof voltage at 4,4 kPa [c,d] - uncabled styles - semi-rigid 0,118 in diameter - semi-rigid and semi-flexible 0,086 in diameter - semi-rigid and semi-flexible 0,047 in diameter	9.2.6	 150 V 150 V 150 V 100 V	4,4 kPa approximately equivalent to 20 km

Rating and characteristics	IEC 61169-1 Subclause	Values	Remarks, deviations from standard test method
Environmental test voltage at sea level [c,d] - uncabled styles - semi-rigid 0,118 in diameter - semi-rigid and semi-flexible 0,086 in diameter - semi-rigid and semi-flexible 0,047 in diameter	9.2.6	 250 V 250 V 250 V 175 V	
Environmental test voltage at 4,4 kPa [c,d] - uncabled styles - semi-rigid 0,118 in diameter - semi-rigid and semi-flexible 0,086 in diameter - semi-rigid and semi-flexible 0,047 in diameter	9.2.6	 65 V 65 V 65 V 45 V	4,4 kPa approximately equivalent to 20 km
Screening effectiveness (straight cables only)[g]	9.2.8	≥ 100 dB at 1 GHz	
Discharge test (corona effect)	9.2.9	See DS	Extinction voltage
Mechanical			
Gauge retention force (resilient contacts) - centre	 9.3.4	 ≥ 0,4 N	
Centre contact captivation - axial force - torque	9.3.5	 20 N 0,01 N•m min	Maximum displacement 0,076 mm in each direction
Engagement and separation - coupling nut friction	9.3.6	≤ 0,23 N•m	Can be carried out by hand
Coupling torque - standard torque - Nm-proof torque	9.3.6	 0,8 ~1,1 N•m 1,69 N•m	
Technical tests on cable fixing - cable rotation (nutation) - cable pulling - cable bending - cable torsion	 9.3.7.2 9.3.8 9.3.9 9.3.10	 See DS See DS See DS See DS	
Tensile strength of coupling mechanism	9.3.11	≥ 100 N	
Bending torque	9.3.12	Na[f]	
Vibration	9.3.3	150 m/s^2 10～2 000 Hz	15 g_n
Shock	9.3.14	500 m/s^2 1/2 sine wave 11 ms	50 g_n
Environmental			
Climatic category	9.4.2	A:40/085/21 B:55/125/21	
Sealing non-hermetic	9.4.5.1	≤ 100 kPa•cm^3/h	100 kPa to 110 kPa differential
Hermetic	9.4.5.2	≤ 10^{-3} Pa•cm^3/s	100 kPa to 110 kPa differential
Salt mist	9.4.6	48 h spray	

Rating and characteristics	IEC 61169-1 Subclause	Values	Remarks, deviations from standard test method
Endurance			
Mechanical endurance	9.5	500 operations	
High temperature endurance [e]	9.6	A: 1 000 h at 85 °C B: 1 000 h at 125 °C	

[a] These values apply to basic connector. In practice, these may be influenced by the cable used and reference should always be made to the actual values given in the detail specification.

[b] Values for a single pair of connectors.

[c] Voltages are r.m.s values of a.c. at 40 Hz to 65 Hz, unless otherwise specified.

[d] Some cables usable with these connectors have ratings lower than the values given here.

[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 and semi-flexible cables are used, the upper temperature is limited to 115 °C maximum.

[f] na -not applicable.

[g] When interfaces are fully mated.

4.3 Test schedule and inspection requirements – Acceptance tests

4.3.1 Acceptance tests

Table 7 – Acceptance tests

	Test method	Assessment level M (higher)				Assessment level H (lower)			
	IEC 61169-1 subclause	Test required	IL	AQL %	Period	Test required	IL	AQL %	Period
Group A1 Visual examination	9.1.2	a	II	1,0		a	S-3	1,5	
Group B1 Outline dimension	9.1.3.1	a	S-4	0,40	Lot	a	S-3	4,0	Lot
Mechanical compatibility	9.1.3.3	a	II	1,0		a	S-3	1,5	
Engagement and separation	9.3.6	a	S-4	0,40	By	a	S-3	1,5	By
Gauge retention (resilient contacts)	9.3.4	ia	II	1,0	Lot	ia	S-3	1,5	Lot
Sealing									
non-hermetic	9.4.5.1	ia	II	0,65		ia	S-3	1,0	
hermetic	9.4.5.2	ia	II	0,015		ia	S-3	0,025	
Voltage proof	9.2.6	a	II	0,40		a	II	4,0	
Solderability (d)	9.3.2.1.1	ia	S-4	0,40		ia	S-3	4,0	
Insulation resistance	9.2.5	a	S-4	0,40		a	S-3	4,0	
For the symbols, abbreviations and procedures, see the end of Table 8.									

4.3.2 Periodic tests

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

Table 8 – Periodic tests

	Test method	Assessment level M (higher)				Assessment level H (lower)			
	IEC 61169-1 subclause	Test required	Number of specimens	Permitted failures per group [a]	Period	Test required	Number of specimens	Permitted failures per group [a]	Period
Group D1 (d)			6	1	3 years		3	1	3 years
Solderability	9.3.2.1.1	ia				ia			
- connector assemblies									
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							
- cable bending	9.3.9								
- cable torsion	9.3.10	ia							
Bending moment	9.3.12	ia				ia			
Strength of coupling mechanism	9.3.11	a				a			
Group D2 (d)			6	1	3 years		3	1	3 years
Contact resistance	9.2.3	a				a			
Outer conductor and screen continuity	9.2.3								
Centre conductor continuity	9.2.3	a				a			
Vibration	9.3.3	a				a			
Shock	9.3.14	a							
Damp heat, steady state	9.4.3								
Salt mist	9.4.6	a							
Group D3			[b]	1	3 years		[b]	1	3 years
Dimensions piece part 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								

	Test method IEC 61169-1 subclause	Assessment level M (higher)				Assessment level H (lower)			
		Test required	Number of specimens	Permitted failures per group [a]	Period	Test required	Number of specimens	Permitted failures per group [a]	Period
Group D5 (d)			6	1	3		3	1	3
Reflection factor	9.2.1	ia			years	ia			years
Screening effectiveness	9.2.8	ia				ia			
Water immersion	9.2.7								
Group D6 (d)			6	1	3		3	1	3
Contact captivation	9.3.5	ia			years	ia			years
Discharge test (corona effect)	9.2.9	a							
Rapid change of temperature	9.4.4	a				a			
Climatic sequence	9.4.2	a				a			
Group D7 (d)									
Resistance to solvents and contamination fluids	9.7		1[c]	1	3 years		1[c]	1	3 years

ABBREVIATIONS:

a - applicable

na - not applicable

ia - test required (if technically applicable)

(d) - destructive test -specimens shall not be returned to stock

IL - inspection level

AQL-acceptable quality level

[a] For qualification approval, a total of 2 failures only permitted for level H and 1 failure only permitted for level M from groups D1 to D7.

[b] One set of piece parts each style and variant unless using common piece parts.

[c] Group D7 - number of pairs for each solvent.

4.4 Procedures

4.4.1 Quality conformance inspection

This shall consist of test groups A1 and B1 on a lot-by-lot basis and test groups D1 to D7 on a periodic basis.

4.4.2 Qualification approval and its maintenance

This still consists 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) writer shall use the appropriate blank detail specification (BDS) pro-forma. The following pages comprise the BDS dedicated for use with type 2,92 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 to be covered as indicated. The numbers in brackets in the BDS correspond to the following indications which shall be given.

5.2 Identification of the detail specification

(1) The name of the National authorized institution (NAI) under whose authority the DS is published and, if applicable, the organization from whom the DS is available.

(2) The number allocated to the DS by the relevant National authorized institution immediately preceded by the ISO two letter national identity code or "XX" when the DS is produced by an IEC technical subcommittee.

(3) The number and issue number of the IEC/IECQ generic specification and, when applicable, the sectional specification with the 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 marking: as applicable.
- Series designation: in bold characters/digits approximately 15 mm high.

(6) Enter detail 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 type (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 in accordance with the requirements of the relevant sectional specification. Deviations from the minimum requirements shall be clearly indicated. Not applicable 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 of the relevant sectional specification. Any additional test 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 2,92 series connectors

The following pages contain the complete BDS pro-forma.

(1)			Page 1 of 10 IECQ		
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH GENERIC SPECIFICATION IEC 61169-1 SECTIONAL SPECIFICATION IEC 61169-35 NATIONAL REFERENCE			(4) ISSUE		
(5) Detail specification for Radio frequency coaxial connector of assessed quality			type **2,92**		
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	61196 IEC			
01.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....
Information about manufacturers who have components qualified to this detail specification is available through IECQ on-line certificate system.					

(9) Performance (including limiting conditions of use)

Ratings and characteristics		IEC 61169-1 Subclause	Value	Remarks including any deviations from standard test methods
Electrical				
Nominal impedance			50 Ω	
Frequency range			0 GHz - 18 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.....	9.2.4	.....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)
Electrical				
Screening effectiveness	01.....	9.2.8	≥ dB at....GHz	Z_t≤.....Ω
ADDITIONAL ELECTRICAL CHARACTERISTICS				

\+ Voltage values are r.m.s. values at 50 Hz-60 Hz, unless otherwise specified.

Ratings and characteristics		IEC 61169-1 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	.....	For gauging detail, see Figure 3 and Table 3
Centre contact captivation - axial force - permitted displacement each direction		9.3.5	.....N .....mm	
Engagement and separation - axial force		9.3.6		Achievable by hand
Effectiveness of cable fixing against				
- cable rotation	01.....	9.3.7.2	Rotations	
- cable pulling	01.....	9.3.8	.....N	Point of application and duration .....mm.....s .....mm.....s .....mm.....s .....mm.....s
- cable bending	01.....	9.3.9	.....Cycles	Length of cable mass ....
- cable torsion	01.....	9.3.10	.....Nm	Duration of applied torque .....s .....s .....s .....s .....s
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				

Ratings and characteristics	IEC 61169-1 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		

(10) Supplementary information

– Marking of the component: in accordance with 11.1 of IEC 61169-1 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 .....50 Ω.....
3) Assessment level code letter .....
4) Any additional marking required .....

Ordering information
1) Number of the detail specification ...../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.

Bibliography

IEC 60169-23, *Radio-frequency connectors – Part 23: Pin and socket connector for use with 3.5 mm rigid precision coaxial lines with inner diameter of outer conductor of 3.5 mm (0.1378 in)*

IEEE STD 287-2007 (2.92mm) IEEE Standard for Precision Coaxial Connectors (DC to 110 GHz

MIL-PRF-39012D Connectors, Coaxial, Radio Frequency General Specification for

MIL-STD-348A. Military Standard, Radio Frequency Connector Interfaces

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