

PUBLICLY
AVAILABLE
SPECIFICATION

IEC
PAS 61169-38

Pre-Standard

First edition
2007-06

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**



Reference number
IEC/PAS 61169-38:2007(E)



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2007 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

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

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

- Catalogue of IEC publications: www.iec.ch/searchpub

The IEC on-line Catalogue enables you to search by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, withdrawn and replaced publications.

- IEC Just Published: www.iec.ch/online_news/justpub

Stay up to date on all new IEC publications. Just Published details twice a month all new publications released. Available on-line and also by email.

- Customer Service Centre: www.iec.ch/webstore/custserv

If you wish to give us your feedback on this publication or need further assistance, please visit the Customer Service Centre FAQ or contact us:

Email: csc@iec.ch
Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00

PUBLICLY
AVAILABLE
SPECIFICATION

IEC
PAS 61169-38

Pre-Standard

First edition
2007-06

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**



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

U

For price, see current catalogue

CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references	6
3 Mating face and gauge information	6
3.1 Dimensions – General connectors – Grade 2.....	7
3.1.1 Connectors with pin-centre contact.....	7
3.1.2 Connectors with socket-centre contact	8
3.2 Gauges	9
3.2.1 Connectors with pin-centre contact.....	9
3.2.2 Connectors with socket-centre contact	10
3.3 Dimensions – Standard test connectors – Grade 0	11
3.3.1 Connectors with pin-centre contact.....	11
3.3.2 Connectors with socket-centre contact	13
3.4 General requirements for connector mounting in modules and on panels.....	15
3.4.1 Radial misalignment	15
3.4.2 Axial misalignment	15
4 Quality assessment procedure.....	16
4.1 General.....	16
4.2 Rating and characteristics	16
4.3 Test schedule and inspection requirements	19
4.3.1 Acceptance tests	19
4.3.2 Periodic tests	20
4.4 Procedures.....	21
4.4.1 Quality conformance inspection	21
4.4.2 Qualification approval and its maintenance	21
5 Instructions for preparation of detail specifications	21
5.1 General.....	21
5.2 Identification of the detail specification	21
5.3 Identification of the component.....	22
5.4 Performance.....	22
5.5 Marking, ordering information and related matters	22
5.6 Selection of tests, test conditions and severities.....	22
5.7 Blank detail specification pro-forma for type TMA connector.....	23
Figure 1 – Connectors with pin-centre contact	7
Figure 2 – Connectors with socket-centre contact	8
Figure 3 – Gauge for outer contact of pin connector	9
Figure 4 – Gauge pin for socket-centre contact.....	10
Figure 5 – Standard test connector with pin-centre contact	11
Figure 6 – Standard test connector with socket-centre contact	13
Figure 7 – Sketch map of connector radial misalignment.....	15
Figure 8 – Sketch map of rigidly mounted and float-mounted connectors	15

Table 1 – Dimensions of connectors with pin-centre contact	7
Table 2 – Dimensions of connectors with socket-centre contact	8
Table 3 – Dimensions of gauge for outer contact of pin connectors	9
Table 4 – Dimensions of gauge pin for socket-centre contact	10
Table 5 – Dimensions of standard test connector with pin-centre contact	12
Table 6 – Dimensions of standard test connector with socket-centre contact	14
Table 7 – Rating and characteristics	16
Table 8 – Acceptance tests	19
Table 9 – Periodic tests	20

IECNORM.COM . Click to view the full PDF of IEC PAS 61169-38:2007

Withdrawn

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

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

A PAS is a technical specification not fulfilling the requirements for a standard but made available to the public.

IEC-PAS 61169-38 has been prepared by IEC 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.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document

Draft PAS	Report on voting
46F/58A/PAS	46F/68A/RVD

Following publication of this PAS, which is a pre-standard publication, the technical committee or subcommittee concerned will transform it into an International Standard.

This PAS shall remain valid for an initial maximum period of three years starting from 2007-05. The validity may be extended for a single three-year period, following which it shall be revised to become another type of normative document, or shall be withdrawn.

Withdrawn
IECNORM.COM. Click to view the full PDF of IEC PAS 61169-38:2007

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 PAS 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 microstrip in microwave fields that has a blind entry and middle low power. The connectors can be used up to a frequency of at least 6 GHz.

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

This PAS 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*

3 Mating face and gauge information

Metric dimensions are original dimensions.

All undimensioned pictorial configurations are for reference purposes only.

3.1 Dimensions – General connectors – Grade 2

3.1.1 Connectors with pin-centre contact

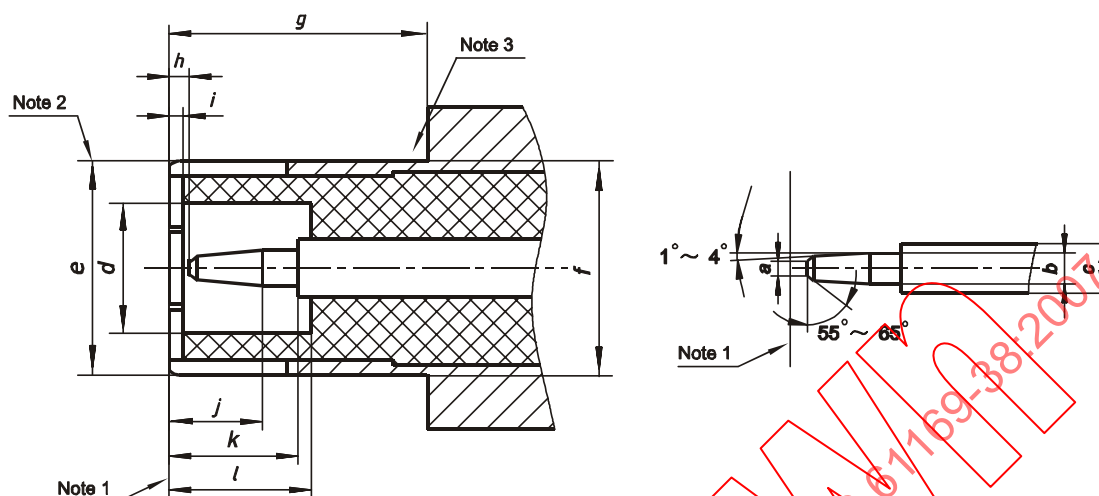


Figure 1 – Connectors with pin-centre contact
(for dimensions, see Table 1)

Table 1 – Dimensions of connector with pin-centre contact

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

NOTE 1 Mechanical and electrical reference plane.

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

NOTE 3 Design and location of the sealing feature is optional but should ensure that environmental performance requirement are met.

3.1.2 Connectors with socket-centre contact

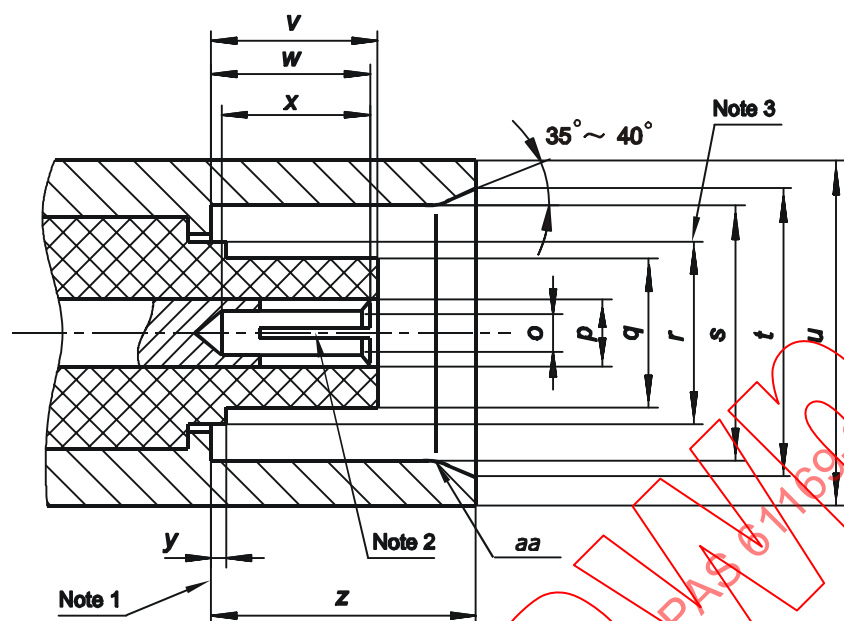


Figure 2 – Connectors with socket-centre contact
(for dimensions, see Table 2)

Table 2 – Dimensions of connectors with socket-centre contact

Ref.	Millimetres		Inches		Notes
	Min.	Max.	Min.	Max.	
<i>o</i>	—	—	—	—	Diameter (see Note 2)
<i>p</i>	2,06	2,21	0,081	0,087	Diameter
<i>q</i>	—	4,72	—	0,186	Diameter
<i>r</i>	—	6,50	—	0,256	Diameter (see Note 3)
<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>	4,78	5,28	0,188	0,208	
<i>w</i>	4,72	5,23	0,186	0,206	
<i>x</i>	4,95	—	0,195	—	
<i>y</i>	—	0,15	—	0,006	
<i>z</i>	8,31	8,51	0,327	0,335	
<i>aa</i>	—	—	—	—	See Note 4

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

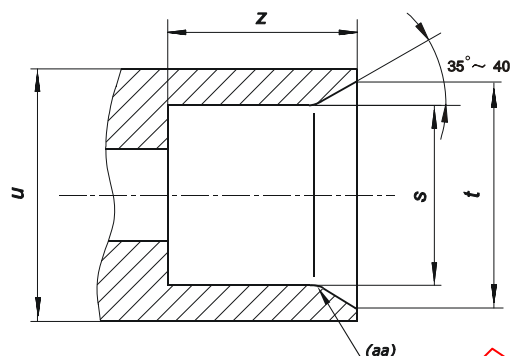


Figure 3 – Gauge for outer contact of pin connector
(for dimensions, see Table 3)

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

Gauge A (for sizing purposes)					Gauge B (for measurement of gauge retention force for outer conductor) Mass of gauge(weight): 225 ± 5 g				Notes
Ref.	Millimetres		Inches		Millimetres		Inches		
	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		Radius (see Note 2)
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 once over the outer electrical contact of the connector. 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 with socket-centre contact

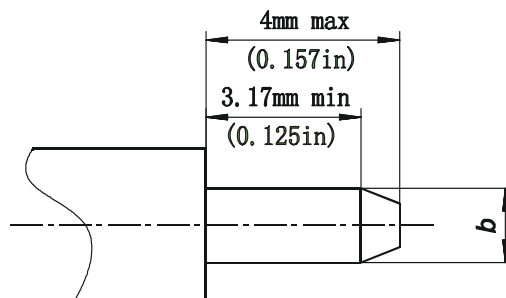


Figure 4 – Gauge pin for socket-centre contact
(for dimensions, see Table 4)

Table 4 – Dimensions of gauge pin for socket-centre contact

Gauge C (for sizing purpose)					Gauge D (for measurement of gauge retention force for inner conductor) Mass (weight) of gauge: 57 ± 1 g				Note
Ref.	Millimetres		Inches		Millimetres		Inches		
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
b	1,372	1,377	0,0540	0,0542	1,308	1,321	0,0515	0,0520	Diameter
NOTE Material: steel, polished, surface roughness: $R_a \leq 0,4 \mu\text{m}$ (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 3,17mm (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 Connectors with pin-centre contact

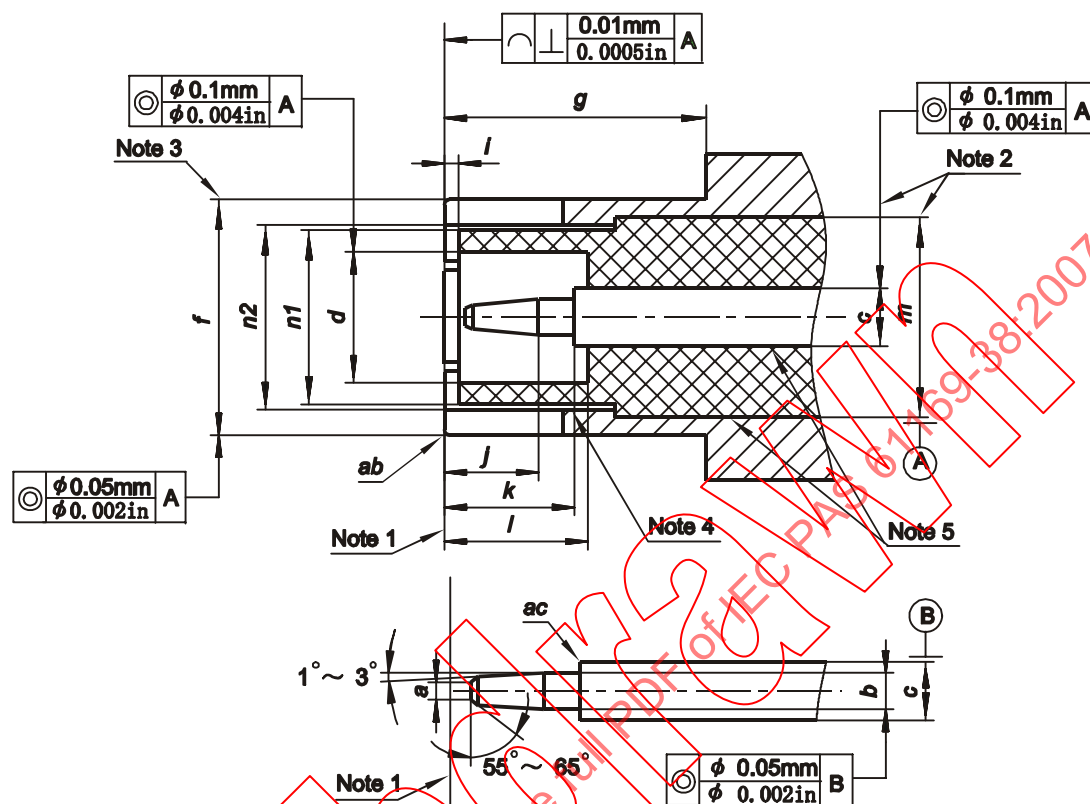


Figure 5 – Standard test connector with pin-centre contact
(for dimensions, see Table 5)

Table 5 – Dimensions of standard test connector with pin-centre contact

Ref.	Millimetres		Inches		Notes
	Min.	Max.	Min.	Max.	
<i>a</i>	—	0,64	—	0,025	Diameter
<i>b</i>	1,35	1,37	0,0530	0,0541	Diameter
<i>c</i>	2,140 nom		0,0842 nom		Diameter (see Note 2)
<i>d</i>	4,88	4,93	0,192	0,194	Diameter
<i>f</i>	8,06	8,09	0,3175	0,3185	Diameter (see Note 3)
<i>g</i>	8,60	—	0,339	—	
<i>i</i>	0,15	0,30	0,006	0,012	
<i>j</i>	3,66	3,98	0,144	0,157	
<i>k</i>	5,31	5,38	0,209	0,212	
<i>l</i>	5,38	5,54	0,212	0,218	
<i>m</i>	6,99	7,01	0,2752	0,2760	Diameter (see Note 2)
<i>n1</i>	6,60	6,65	0,260	0,262	Diameter
<i>n2</i>	6,72	6,74	0,2645	0,2655	Diameter
<i>ab</i>	0,1	0,3	0,004	0,012	Radius
<i>ac</i>	—	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* should be $50 \Omega \pm 0,2 \Omega$.

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 the outer contact should be 6,718 mm to 6,744 mm (0,2645 in to 0,2655 in) when inserted into a ring gauge with an inner diameter of 8,125 mm to 8,131 mm (0,3199 in to 0,3201 in).

NOTE 4 If concentric, 0,05 mm (0,002 in) nominal radial air gap when inserted into a ring gauge with an inner diameter of 8,125 mm to 8,131 mm (0,3199 in to 0,3201 in).

NOTE 5 Zero air gap.

3.3.2 Connectors with socket-centre contact

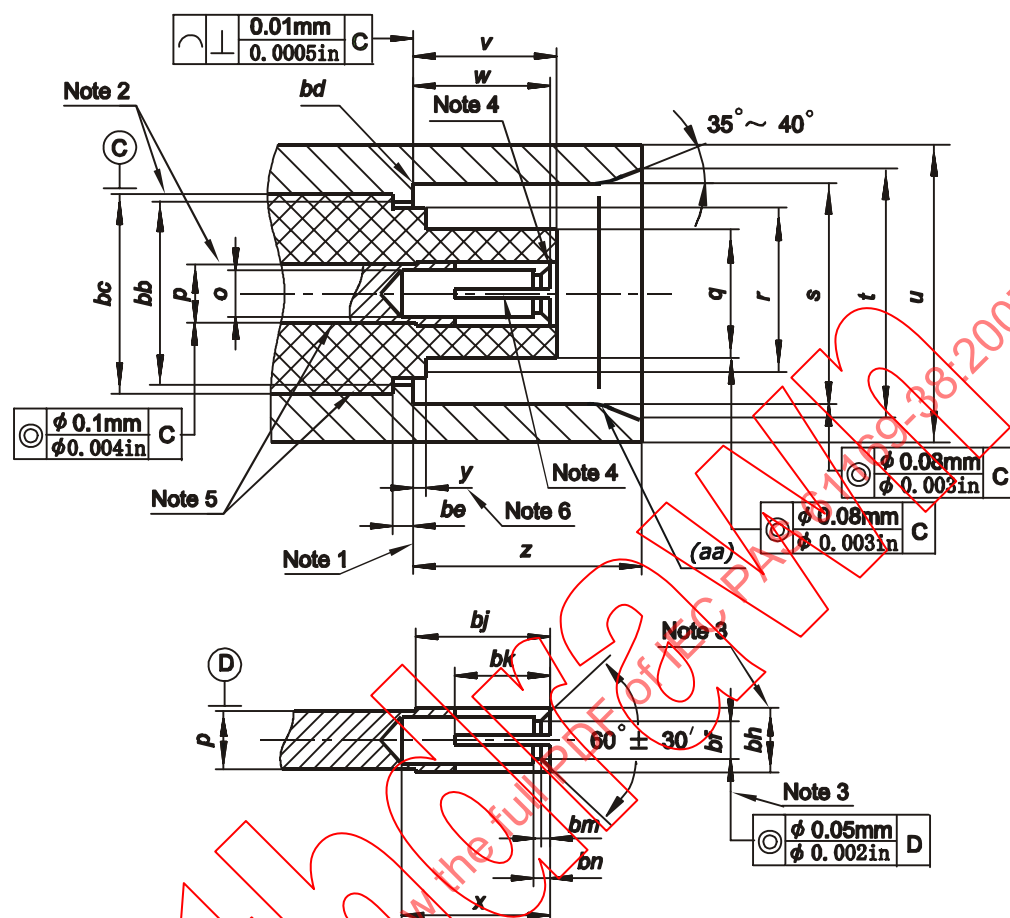


Figure 6 – Standard test connectors with socket-centre contact
(for dimensions, see Table 6)

Table 6 – Dimensions of standard test connectors with socket-centre contact

Ref.	Millimetres		Inches		Notes
	Min.	Max.	Min.	Max.	
<i>o</i>	1,52	1,63	0,060	0,064	Diameter
<i>p</i>	2,140 nom		0,0842 nom		Diameter (see Note 2)
<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	See Note 6
<i>z</i>	8,36	8,46	0,329	0,333	
<i>aa</i>	0,8		0,031		Diameter (see Note 6)
<i>bb</i>	6,71	6,76	0,264	0,266	Diameter
<i>bc</i>	6,99	7,01	0,2752	0,2760	Diameter (see Note 2)
<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	0,0534	0,0536	Diameter (see Note 3)
<i>bh</i>	2,16	2,18	0,0849	0,0859	Diameter (see Note 3)
<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	

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 *p* and *bc* should be $50 \Omega \pm 0,2 \Omega$.

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 *y* with 1,356 mm (0,0534 in) min: 1,361 mm (0,0536 in) max. pin gauge inserted after slotting and closing.

NOTE 4 If concentric 0,02 mm (0,0008 in) radial air gap when mated with 1,359 mm (0,0535 in) diameter pin.

NOTE 5 Zero air gap.

NOTE 6 Insulator should be flush or protruding.

NOTE 7 Parentheses indicate the reference size for size.

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 (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 a rigidly mounted connector and a float-mounted connector shall be no more than 0,51 mm.

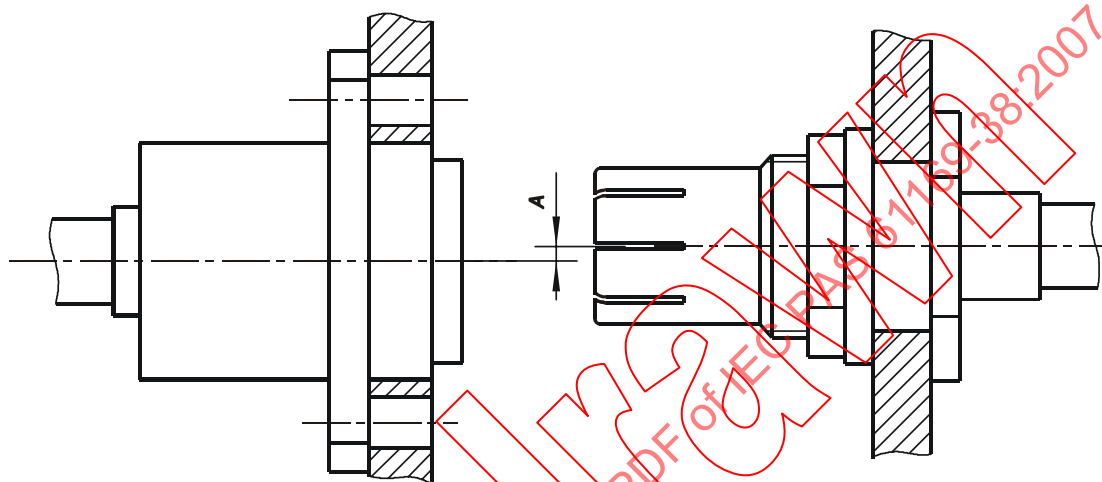


Figure 7 – Sketch map of connector radial misalignment

3.4.2 Axial misalignment

For rigidly mounted and float-mounted connectors, 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 the full length of engagement is maintained under operational conditions (Figure 8).

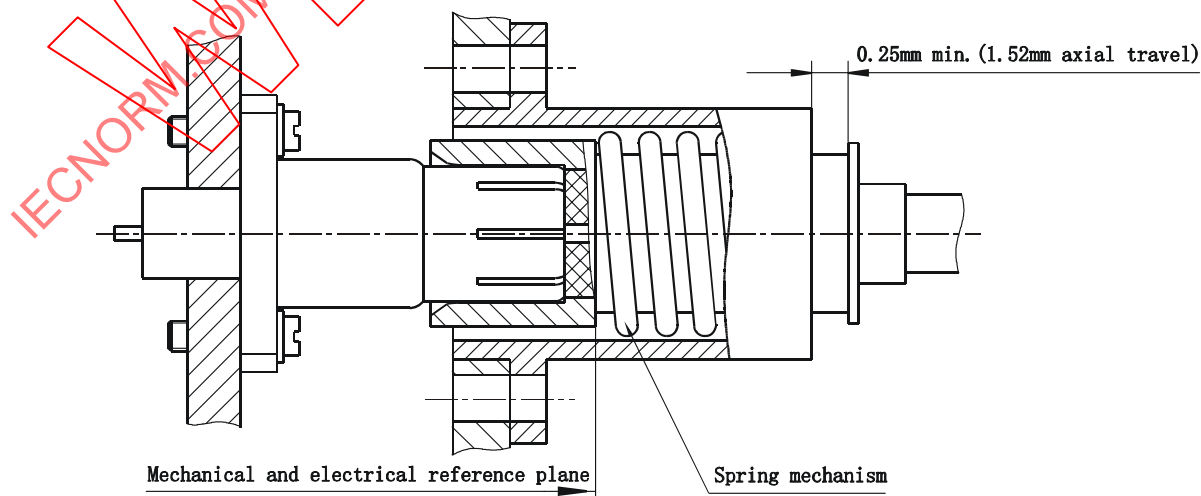


Figure 8 – Sketch map of rigidly mounted and float-mounted connectors

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 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 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 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 ¹	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			
Centre contact resistance ²	9.2.3		
– initial		$\leq 1,5 \text{ m}\Omega$	
– change due to conditioning		$\leq 2 \text{ m}\Omega$	
Outer conductor continuity ²			
– initial	9.2.3	$\leq 2 \text{ m}\Omega$	
– after conditioning		$\leq 3 \text{ m}\Omega$	
Insulation resistance ²	9.2.5		
– initial		$\geq 5 \text{ G}\Omega$	
– after conditioning		$\geq 200 \text{ M}\Omega$	

Ratings and characteristics	Test method IEC 61169-1 subclause	Value	Remarks, deviations from standard test method
Proof voltage at sea-level ^{2,3}	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 ^{3,4}			4,4 kPa approximately equivalent to 20 km (70 000 ft) altitude
– cables 96IEC 50-4		180V	
– cables 96IEC 50-3		180 V	
– cables 96IEC 50-2		150 V	
Environmental test voltage at sea-level ^{3,4}			
– cables 96IEC 50-4		400 V	
– cables 96IEC 50-3		400 V	
– cables 96IEC 50-2		350 V	
Environmental test voltage at 4,4kPa ^{3,4}			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 ⁷ (straight cable connectors only)	9.2.8	60 dB, 3GHz	$Z_t \leq 100 \text{ m}\Omega$
Discharge test at sea-level (corona effect) – cables 96IEC 50-3	9.2.9	≥ 500	Extinction voltage
Mechanical			
Centre 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		$\leq 20 \text{ N}$	
– separation force		$\geq 2,25 \text{ N}$	
Gauge retention force (resilient contacts)	9.3.4		
– centre		$\geq 0,57 \text{ N}$	
– outer		$\geq 2,25 \text{ N}$	
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	

Ratings and characteristics	Test method IEC 61169-1 subclause	Value	Remarks, deviations from standard test method
Vibration	9.3.3	150 m/s ² 10-2 000 Hz	Acceleration: 15 gn
Shock	9.3.14	750 m/s ² 11ms saw tooth	Acceleration: 75 gn
Environmental			
Climatic category ⁵	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 ⁵	9.6	1 000 h at 155 °C	
¹ These values apply to the 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. ² Values for a single pair of connectors. ³ Voltages are r.m.s values of a.c. at 40 Hz to 65 Hz, unless otherwise stated. ⁴ Some cables usable with these connectors have ratings lower than the values given here. ⁵ 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. ⁶ na = not applicable. ⁷ When interfaces are fully mated.			

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
<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 For details of symbols, abbreviations and procedures, see 4.3.2

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
<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 captivation	9.3.5	a				a			
Rapid change of temperature	9.4.4	na				na			
Climatic sequence	9.4.2	a				a			

	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 D7 (d) Resistance to solvents and contaminating fluids	9.7	ia	1§		3 years	ia	1§		3 years
<i>Details of symbols, abbreviations and procedures</i> 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

- 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.
- 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) The following details shall be entered.

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) The details of assessment level and climatic category shall be entered.
- (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 7.2 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 7.3 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.