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INTERNATIONAL STANDARD

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

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FOREWORD

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International Standard IEC 61169-24 has been prepared by subcommittee 46F: RF and microwave passive components, of IEC technical committee 46: Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories.

This second edition cancels and replaces the first edition published in 2001. It constitutes a technical revision.

This second edition differs from the first edition in that all drawings have been reworked and improved to allow frequency extension up to 3 GHz.

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

FDIS	Report on voting
46F/108/FDIS	46F/128/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 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- withdrawn,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 24: Sectional specification – Radio frequency coaxial connectors with screw coupling, typically for use in 75 Ω cable networks (type F)

1 Scope

This part of IEC 61169, which is a sectional specification (SS), provides information and rules for the preparation of detail specifications (DS) for RF coaxial connectors with screw coupling, typically for use in 75 Ω cable networks (type F).

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

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

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*
Amendment 1 (1996)
Amendment 2 (1997)

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

3 Interface dimensions

3.1 Dimensions

Millimetres are original dimensions.

All undimensioned pictorial configurations are for reference purposes only.

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

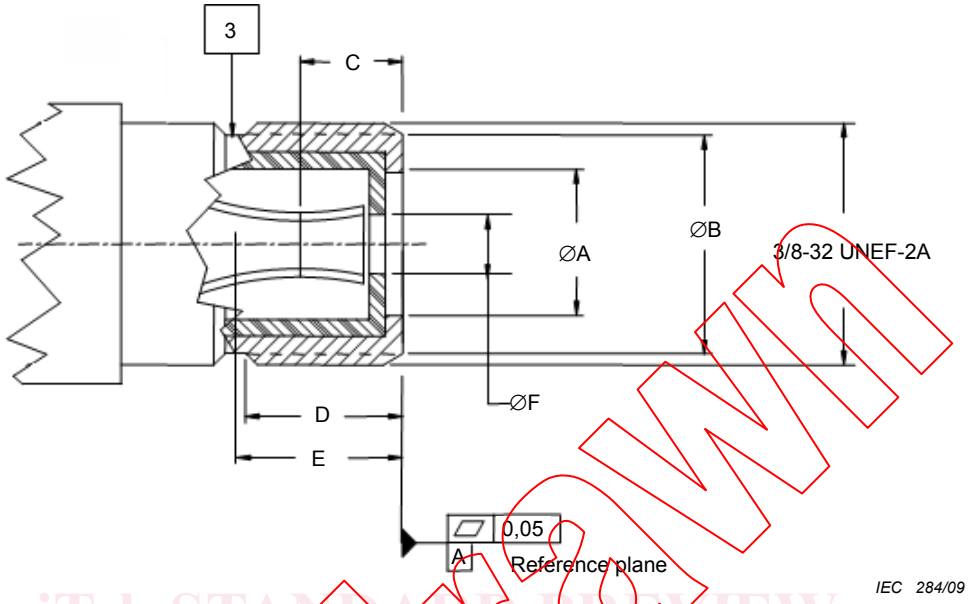

Figure 1 – Connector “F” type female socket (indoor) (for dimensions, see Table 1)

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

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

NOTE 1 Drawing not to scale.

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

NOTE 3 Thread relief not to exceed two full threads.

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

NOTE 5 Center contact geometry optional.

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

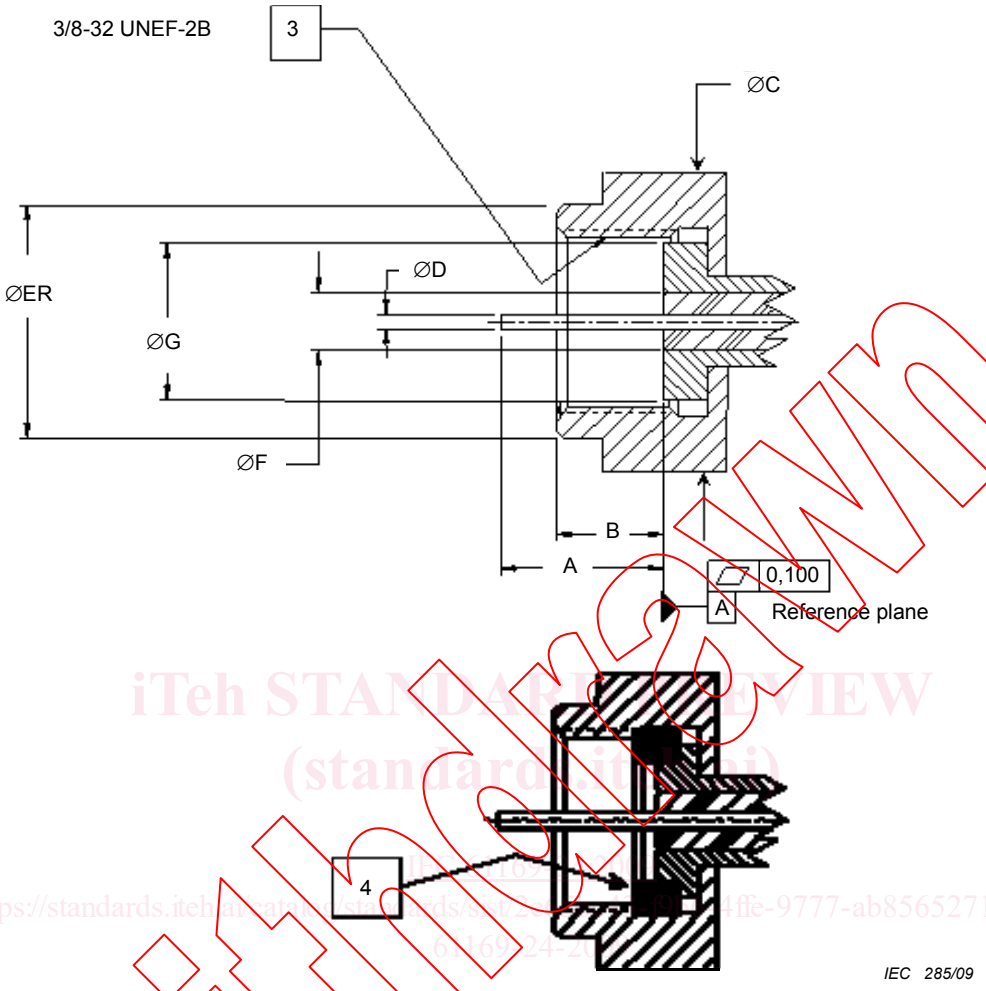

Figure 2 – Connector “F” type male plug (indoor) (for dimensions, see Table 2)

Table 2 – Connector “F” type male plug (indoor)

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

NOTE 1 Drawing not to scale.

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

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

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

3.2 Mechanical gauges

Millimetres are original dimensions.

All undimensioned pictorial configurations are for reference purposes only.

3.2.1 Mating socket centre conductor acceptance diameter test

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

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

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

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

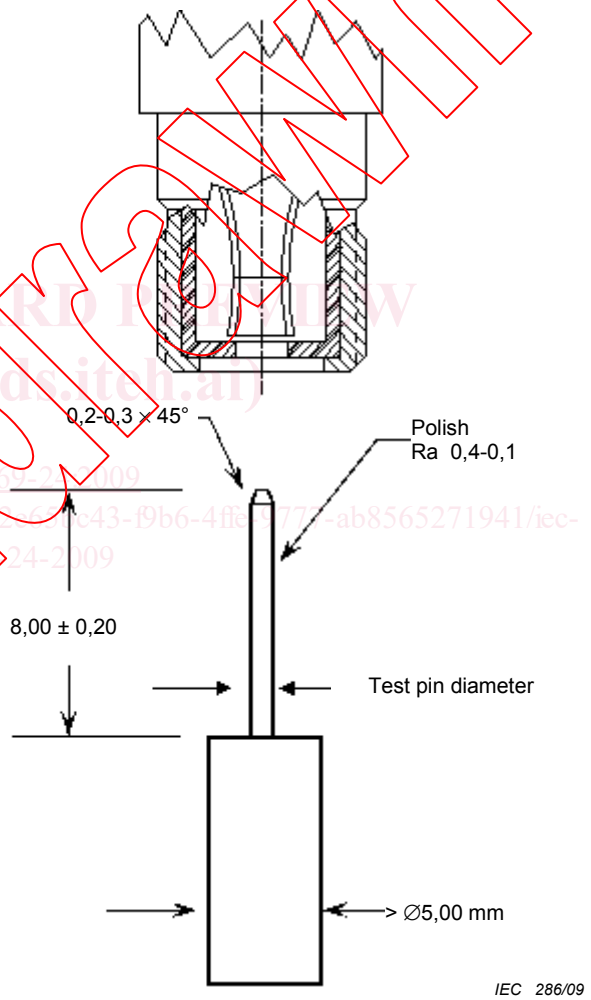

Figure 3 – Gauge for the centre socket conductor

Table 3 – Test sequence for the centre socket conductor

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