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## INTERNATIONAL STANDARD

Radio-frequency connectors – Part 47: Sectional specification for radio-frequency-coaxial connectors with clamp coupling, typically for use in 75  $\Omega$  cable networks (type F-Quick)

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### CONTENTS

1       Scope       5         2       Normative references       5         3       Interface dimensions       5         3.1       Dimensions       5         3.1.1       Common dimensions       5         3.1.2       Example of connector "F-Quick" type male plug with resiltem outer conductor sleve (indoor) physical dimensions       6         3.1.3       Example of connector "F-Quick" type male plug with slotted outer conductor (indoor) effective type male plug with slotted outer conductor and snap ring (indoor) physical dimensions       7         3.1.4       Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor) physical dimensions       7         3.2       Mechanical gauges       8       9         4.1       General       9       4.1         4.1       General       9       4.2         4.3       Environmental characteristics for outfoor ockets       11         4.4       Test schedule and inspection requirements       11         4.4.1       Acceptance tests       11         4.5.1       Qualify conformance inspection       13         4.5.1       Qualify conformance inspection       13         5.1       Instructions for preparation of the detail specification       13         5.1	FO	REWO	DRD		3				
3       Interface dimensions       5         3.1       Dimensions       5         3.1.1       Common dimensions       5         3.1.2       Example of connector "F-Quick" type male plug with resilient outer conductor (indoor) physical dimensions       6         3.1.3       Example of connector "F-Quick" type male plug with slotted outer conductor (indoor) physical dimensions       7         3.1.4       Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor) physical dimensions       7         3.2       Mechanical gauges       8         4       Quality assessment procedures       9         4.1       General       9         4.2       Ratings and characteristics for outfoor acckets       9         4.3       Environmental characteristics for outfoor acckets       9         4.4.1       Acceptance tests       11         4.4.2       Periodic tests       11         4.5       Procedures       13         4.5.1       Qualification approval and its maintenance       13         5.1       General       13         5.1       General       13         5.1       General       13         5.1       General       13         5.1 <t< td=""><td>1</td><td>Scop</td><td>e</td><td></td><td>5</td></t<>	1	Scop	e		5				
3.1       Dimensions       5         3.1.1       Common dimensions       5         3.1.2       Example of connector "F-Quick" type male plug with resilient outer conductor sleeve (indoor) physical dimensions       6         3.1.3       Example of connector "F-Quick" type male plug with slotted outer conductor (indoor) physical dimensions       7         3.1.4       Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor) physical dimensions       7         3.2       Mechanical gauges       8       9         4.1       General       9       9         4.2       Ratings and characteristics for outfoor ackets       9         4.3       Environmental characteristics for outfoor ackets       11         4.4       Acceptance tests       11         4.4.1       Acceptance tests       11         4.5       Periodic tests       11         4.5.2       Quality conformance inspection       13         5       Instructions for preparation of delail specifications       13         5.1       General       13         5.2       Identification of the detail specification       14         5.3       Identification of the detail specification       14         5.4       Peformance       14     <	2	Norm	ative re	ferences	5				
3.1.1       Common dimensions       5         3.1.2       Example of connector "F-Quick" type male plug with resilient outer conductor sleeve (indoor) physical dimensions       6         3.1.3       Example of connector "F-Quick" type male plug with slotted Outer conductor (indoor) physical dimensions       7         3.1.4       Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor) physical dimensions       7         3.2       Mechanical gauges       8         4       Quality assessment procedures       9         4.1       General       9         4.2       Ratings and characteristics       9         4.3       Environmental characteristics for outfloor sockets       11         4.4       Test schedule and inspection requirements       11         4.4.1       Acceptance tests       11         4.5       Procedures       13         4.5.1       Qualification approval and its maintenance       13         5.1       Identification of the detail specifications       13         5.2       Identification of the detail specifications       14         5.3       Identification of the detail specifications       15         5.4       General       14       14         5.5       Marking, ordering informatio	3	Interf	ace dim	ensions	5				
3.1.2       Example of connector "F-Quick" type male plug with resilient outer conductor sleeve (indoor) physical dimensions       6         3.1.3       Example of connector "F-Quick" type male plug with slotted outer conductor (indoor) physical dimensions       7         3.1.4       Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor) physical dimensions       7         3.2       Mechanical gauges       8         4       Quality assessment procedures       9         4.1       General       9         4.2       Ratings and characteristics for outdoor sockets       11         4.4       Test schedule and inspection requirements       11         4.4.1       Acceptance tests       11         4.5       Procedures       13         4.5.1       Quality conformance inspection       13         4.5.2       Quality conformance inspection       13         5       Instructions for preparation of detail specifications       13         5.2       Identification of the detail specification       14         5.4       Performance       14         5.5       Marking, ordering information and related matters       14         5.6       Marking, ordering information and severities       15         5.7       Blahk detail		3.1	Dimen	sions	5				
conductor sleeve (indoor) physical dimensions       6         3.1.3       Example of connector "F-Quick" type male plug with slotted outer conductor (indoor) physical dimensions       7         3.1.4       Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor) physical dimensions       7         3.2       Mechanical gauges       8         4       Quality assessment procedures       9         4.1       General       9         4.2       Ratings and characteristics for outdoor sockets       9         4.3       Environmental characteristics for outdoor sockets       11         4.4       Test schedule and inspection requirements       11         4.4.1       Acceptance tests       11         4.5       Periodic tests       11         4.5.1       Quality conformance inspection       13         4.5.2       Qualification approval and (is maintenance       13         5       Instructions for preparatiop of detail specification       14         5.1       General       13         5.2       Identification of the component       14         5.4       Marking, ordering information and related matters       14         5.5       Marking, ordering information and severitites       14 <t< td=""><td></td><td>3.1.1</td><td>Common dimensions</td><td>5</td></t<>			3.1.1	Common dimensions	5				
conductor (indoor) physical dimensions       7         3.1.4       Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor) physical dimensions       7         3.2       Mechanical gauges       8         4       Quality assessment procedures       9         4.1       General       9         4.2       Ratings and characteristics for outdoor sockets       9         4.3       Environmental characteristics for outdoor sockets       11         4.4       Test schedule and inspection requirements       11         4.4.1       Acceptance tests       11         4.4.2       Periodic tests       11         4.5.1       Quality conformance inspection       13         4.5.2       Qualification approval and its maintenance       13         5       Instructions for preparation of detail specifications       13         5.1       General       14         5.4       Performance       14         5.5       Identification of the detail specification       14         5.4       Performance       14         5.5       Identification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug with slotted outer conductor (indoor)       7 <t< td=""><td></td><td>3.1.2</td><td></td><td>6</td></t<>			3.1.2		6				
conductor and snap ring (indoor) physical dimensions			3.1.3	conductor (indoor) physical dimensions	7				
4       Quality assessment procedures       9         4.1       General       9         4.2       Ratings and characteristics for outdon acokets       9         4.3       Environmental characteristics for outdon acokets       11         4.4       Test schedule and inspection requirements       11         4.4       Test schedule and inspection requirements       11         4.4.1       Acceptance tests       11         4.4.2       Periodic tests       11         4.5.1       Quality conformance inspection       13         4.5.2       Quality conformance inspection       13         4.5.1       Quality conformance inspection       13         4.5.2       Quality conformance inspection       13         5       Instructions for preparation of detail specifications       13         5.1       General       13         5.2       Identification of the detail specification       14         5.4       Performance       14         5.5       Identification of the detail specification       14         5.4       Performance       14         5.5       Arking ordering information and related matters       14         5.6       Selection of tests, test conditions and severiti				conductor and snap ring (indoor) physical dimensions	7				
4.1       General       9         4.2       Ratings and characteristics       9         4.3       Environmental characteristics for outdoor sockets       11         4.4       Test schedule and inspection requirements       11         4.4       Test schedule and inspection requirements       11         4.4.1       Acceptance tests       11         4.4.2       Periodic tests       11         4.5.1       Qualification approval and its maintenance       13         4.5.2       Qualification approval and its maintenance       13         5       Instructions for preparation of detail specifications       13         5.2       Identification of the detail specification       14         5.3       Identification of the detail specification       14         5.4       Performance       14         5.5       Marking ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with slotted outer conductor (indoor)       7         Figure 3 – Exa									
4.3       Environmental characteristics for outdoor lockets       11         4.4       Test schedule and inspection requirements       11         4.4.1       Acceptance tests       11         4.4.2       Periodic tests       11         4.4.2       Periodic tests       11         4.5.4       Qualification epipoval and its maintenance       13         4.5.1       Qualification approval and its maintenance       13         5       Instructions for preparation of detail specifications       13         5.1       General       13         5.2       Identification of the detail specifications       13         5.1       General       13         5.2       Identification of the detail specification       14         5.3       Identification of the detail specification       14         5.4       Performance       14         5.5       Marking, ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blant detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with slotted outer conductor </td <td>4</td> <td>Quali</td> <td></td> <td></td> <td></td>	4	Quali							
4.3       Environmental characteristics for outdoor lockets       11         4.4       Test schedule and inspection requirements       11         4.4.1       Acceptance tests       11         4.4.2       Periodic tests       11         4.4.2       Periodic tests       11         4.5.4       Qualification epipoval and its maintenance       13         4.5.1       Qualification approval and its maintenance       13         5       Instructions for preparation of detail specifications       13         5.1       General       13         5.2       Identification of the detail specifications       13         5.1       General       13         5.2       Identification of the detail specification       14         5.3       Identification of the detail specification       14         5.4       Performance       14         5.5       Marking, ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blant detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with slotted outer conductor </td <td></td> <td></td> <td>Genera</td> <td>al</td> <td>9</td>			Genera	al	9				
4.4       Test schedule and inspection requirements       11         4.4.1       Acceptance tests       11         4.4.2       Periodic tests       11         4.5       Procedures       13         4.5.1       Qualification approval and its maintenance       13         5.1       General       13         5.2       Identification of the detail specifications       13         5.2       Identification of the detail specification       14         5.3       Identification of the detail specification       14         5.4       Performance       14         5.5       Marking, ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer conductor (indoor)       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor)       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor)       8         Figure 5 – Mechanical gauge       8			Rating	s and characteristics	9				
4.4.1       Acceptance tests       11         4.4.2       Periodic tests       11         4.5       Procedures       13         4.5.1       Qualification approval and its maintenance       13         4.5.2       Qualification approval and its maintenance       13         5       Instructions for preparation of detail specifications       13         5.1       General       13         5.2       Identification of the detail specification       14         5.3       Identification of the detail specification       14         5.4       Performance       14         5.5       Marking ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       8         Figure 5 – Mechanical gauge       8       8         Table 1 – Connector "F"			Enviro	nmental characteristics for outdor bockets	11				
4.4.2       Periodic tests       11         4.5       Procedures       13         4.5.1       Quality conformance inspection       13         4.5.2       Qualification approval and its maintenance       13         5       Instructions for preparation of detail specifications       13         5.1       General       13         5.1       General       13         5.2       Identification of the stall specifications       13         5.2       Identification of the stall specification       14         5.3       Identification of the stall specification       14         5.4       Performance       14         5.5       Marking ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       8         Table 1 – Connector "F" type m		4.4							
4.5       Flocedures       13         4.5.1       Qualify conformance inspection       13         1.1       1.1       1.1         1.1 </td <td></td> <td></td> <td></td> <td>Acceptance tests</td> <td> 11</td>				Acceptance tests	11				
4.5       Flocedures       13         4.5.1       Qualify conformance inspection       13         1.1       1.1       1.1         1.1 </td <td></td> <td>4 5</td> <td></td> <td></td> <td>11 12</td>		4 5			11 12				
https://4.5.2 mQualification approval and its maintenance.       11.5.2.102.00000000000000000000000000000		4.5		Ouglity conformance increation	13				
5       Instructions for preparation of detail specifications       13         5.1       General       13         5.2       Identification of the detail specification       14         5.3       Identification of the component       14         5.4       Performance       14         5.5       Marking, ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       8         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11									
5.1       General       13         5.2       Identification of the detail specification       14         5.3       Identification of the component       14         5.4       Performance       14         5.5       Marking, ordering information and related matters       14         5.6       Marking, ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       8         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11	5								
5.2       Identification of the detail specification       14         5.3       Identification of the component       14         5.4       Performance       14         5.5       Marking, ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       8         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11	0		<	$\langle \rangle \langle \langle \langle \rangle \rangle \langle \rangle \rangle$					
5.3       Identification of the component.       14         5.4       Performance.       14         5.5       Marking ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       8         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11		-							
5.4       Performance       14         5.5       Marking, ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11									
5.5       Marking, ordering information and related matters       14         5.6       Selection of tests, test conditions and severities       14         5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       8         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11			$\sim$						
5.7       Blank detail specification pro-forma for type F connector       15         Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11		5.5	\						
Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11		5.6 <							
Figure 1 – Connector "F-Quick" type male plug: General dimensions       6         Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11		5.7	Blank	detail specification pro-forma for type F connector	15				
Figure 2 – Example of connector "F-Quick" type male plug with resilient outer       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor       7         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11									
conductor sleeve (indoor)       7         Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor (indoor)       7         Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor)       8         Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11	Fig	ure 1	– Conne	ector "F-Quick" type male plug: General dimensions	6				
(indoor)					7				
and snap ring (indoor)					7				
Figure 5 – Mechanical gauge       8         Table 1 – Connector "F" type male plug (indoor)       6         Table 2 – Ratings and characteristics (1 of 2)       9         Table 3 – Acceptance tests       11					8				
Table 2 – Ratings and characteristics (1 of 2)									
Table 3 – Acceptance tests   11	Tat	ole 1 –	Conne	ctor "F" type male plug (indoor)	6				
Table 3 – Acceptance tests   11	Tab	ole 2 –	Rating	s and characteristics (1 of 2)	9				
•			-						
	Tab	ole 4 –	Period	ic tests (1 of 2)	12				

#### INTERNATIONAL ELECTROTECHNICAL COMMISSION

#### **RADIO-FREQUENCY CONNECTORS –**

# Part 47: Sectional specification for radio-frequency coaxial connectors with clamp coupling, typically for use in 75 $\Omega$ cable networks (type F-Quick)

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

CDV	Report on voting
46F/204/CDV	46F/213/RVC

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.

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- withdrawn,
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- amended.

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#### RADIO-FREQUENCY CONNECTORS -

# Part 47: Sectional specification for radio-frequency coaxial connectors with clamp coupling, typically for use in 75 $\Omega$ cable networks (type F-Quick)

#### 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 clamp coupling, typically for use in 75  $\Omega$  cable networks (type F-Quick).

It describes the interface dimensions with gauging information, electrical and mechanical performance including the mandatory tests selected from IEC 61169-11992, applicable to all DS relating to type F-Quick connectors.

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

NOTE This interface is typically used for indeor connections, which are easily disconnected and reconnected. The typical application is for F-type coaxial receiver leads or F-type coaxial patch cables. The interface may also be known as a Push – On connector.

It is preferred to use the fixed (screwed) connectors type F according to IEC 61169-24:2009.

#### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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<sup>1</sup> Amendment 1:1996 Amendment 2:1997

IEC 61169-24:2009, Radio-frequency connectors – Part 24: Sectional specification – Radio frequency coaxial connectors with screw coupling, typically for use in 75  $\Omega$  cable networks (type F)

#### 3 Interface dimensions

#### 3.1 Dimensions

#### 3.1.1 Common dimensions

Millimetres are original dimensions.

All un-dimensioned pictorial configurations are for reference purposes only.

<sup>&</sup>lt;sup>1</sup> 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 and Table 1 depict the dimensions that are common to any F connector and thus indispensable for compatibility. Examples of specific design with their dimensions are given in 3.1.2 to 3.1.4.



Figure 1 - Connector "F-Quick" type male plug: General dimensions

#### Table 1 - Connector "F" type male plug (indoor)

DESCRIPTION		mm		inches		NOTES
		Min.	Max.	Min.	Max.	
Inner conductor length	А	6,35	8,63	0,250	0,340	
Length of nut		4,00	7,29	0,167	0,287	
Maximum envelope dimension	С		16,61		0,654	
Inner conductor diameter		0,64	1,13	0,025	0,044	
Reference plane opening inner diameter			6,84		0,230	1
Reference plane outer diameter	G	7,11		0,280		
1 No protrusion of the dielectric beyond the reference plane is permitted.						

#### 3.1.2 Example of connector "F-Quick" type male plug with resilient outer conductor sleeve (indoor) physical dimensions

The connector is shown in Figure 2. Common dimensions are given in 3.1.1.





## Figure 3 – Example of connector "F-Quick" type male plug with slotted outer conductor (indoor)

## 3.1.4 Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor) physical dimensions

The connector is shown in Figure 4. Common dimensions are given in 3.1.1.

Dimension in millimetres



Figure 4 – Example of connector "F-Quick" type male plug with slotted outer conductor and snap ring (indoor)

#### 3.2 Mechanical gauges

See IEC 61169-24:2009 for the test procedure using the gauge as defined in Figure 5.



DESCRIPTION	Dimension	mm	inches		
Outside diameter of thread blank	А	9,34	0,368		
Reference plane opening outer diameter	В	7,48	0,295		
Port thread length	С	7,48	0,295		
Port length	D	12,69	0,357		
Bulkhead diameter	E	16,59	0,654		
1 Outside diameter of thread.					
2 Thread relief not to exceed 2 full threads.					

Figure 5 – Mechanical gauge

#### 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 inspection.

#### 4.2 Ratings and characteristics

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

Ratings and characteristics	IEC 61169- 1:1992 subclause	Value	Remarks including any deviations from standard test methods
<u>Electrical</u>			$\square$
Nominal impedance			Shall meet the requirements of 9.2.1.1 of IEC 61169- 1:1992 when terminating a $Z_{c}$ = 75 $\Omega$ cable
Frequency range		5 MHz to 1 GHz 5 MHz to 2 GHz 5 MHz to 3 GHz	See DS For most applications For some satellite applications For some head end
	N //	<u>69-4 2012</u>	applications
Reflection factor	49.2.14	0 > 0 berc-1 5 br-4041-8	9ce-981089a0143e/lec-
<ul> <li>straight styles</li> </ul>		min. 30 dB up to 1 000 MHz min. 25 dB up to 2 GHz min. 20 dB up to 3 GHz	
- right angle styles			See DS
<ul> <li>solder bucket and PCB mounting style</li> </ul>			Under consideration
<ul> <li>insertion loss</li> </ul>		0,1 dB max. up to 1 GHz 0,2 dB max. at 2 GHz 0,3 dB max. at 3 GHz	
Centre contact resistance	9.2.3		
– initial		$\leq$ 5 m $\Omega$	
<ul> <li>after conditioning</li> </ul>		$\leq$ 10 m $\Omega$	
Outer conductor continuity	9.2.3		
– initial		$\leq$ 2,5 m $\Omega$	
<ul> <li>after conditioning</li> </ul>		$\leq$ 5 m $\Omega$	
Insulation resistance	9.2.5		
– initial		> 1 GΩ	
<ul> <li>after conditioning</li> </ul>		> 1 MΩ	

### Table 2 – Ratings and characteristics (1 of 2