

Radio-frequency connectors —

**Part 16: Sectional specification — RF
coaxial connectors with inner diameter
of outer conductor 7 mm (0,276 in) with
screw coupling — Characteristic
impedance 50 ohms (75 ohms) (type N)**

The European Standard EN 61169-16:2007 has the status of a
British Standard

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National foreword

This British Standard was published by BSI. It is the UK implementation of EN 61169-16:2007. It is identical with IEC 61169-16:2007. It supersedes BS QC222100:1997 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee EPL/46, Cables, wires and waveguides, radio frequency connectors and accessories for communication and signalling, to Subcommittee EPL/46/2, Radio frequency connectors and waveguides.

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.

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

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**Radio-frequency connectors -
Part 16: Sectional specification -
RF coaxial connectors with inner diameter
of outer conductor 7 mm (0,276 in) with screw coupling -
Characteristic impedance 50 ohms (75 ohms) (type N)
(IEC 61169-16:2006)**

Connecteurs pour fréquences
radioélectriques -
Partie 16: Spécification intermédiaire -
Connecteurs coaxiaux pour fréquences
radioélectriques avec diamètre intérieur
du conducteur extérieur de 7 mm
(0,276 in) à verrouillage à vis -
Impédance caractéristique
de 50 ohms (75 ohms) (Type N)
(CEI 61169-16:2006)

Hochfrequenz-Steckverbinder -
Teil 16: Rahmenspezifikation -
Koaxiale Hochfrequenzsteckverbinder
mit 7 mm (0,276 in) Innendurchmesser
des Außenleiters
und Schraubverbindung -
Wellenwiderstand 50 Ohm (75 Ohm)
(Typ N)
(IEC 61169-16:2006)

This European Standard was approved by CENELEC on 2007-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 46F/54/FDIS, future edition 1 of IEC 61169-16, 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 was approved by CENELEC as EN 61169-16 on 2007-03-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2007-12-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2010-03-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61169-16:2006 was approved by CENELEC as a European Standard without any modification.

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RADIO-FREQUENCY CONNECTORS –

Part 16: Sectional specification – RF coaxial connectors with inner diameter of outer conductor 7 mm (0,276 in) with screw coupling – Characteristics impedance 50 Ω (75 Ω) (type N)

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 pin and socket R.F. coaxial connectors, with screw coupling mechanism, for low to medium power applications. The connector is commonly known as the "type N".

Three versions of the 50 Ω characteristic impedance type N connector are included, each version being mateable with each of the others.

The general purpose connector (grade 2) derived from the specifications MIL-C17B and MIL-C-39012 may preferably be used with R.F. cable 60096 IEC 50-7 up to about 12 GHz maximum frequency.

The high performance connector (grade 1) is particularly suitable for microwave applications when lower reflection factors than are offered by the general purpose connector are required. The connectors may also be suitable for microwave components. The tolerances of the interface dimensions lie between those for grade 0 and grade 2, and are chosen to give the performance required. Some grade 1 connectors conforming to this specification may be used up to 18 GHz maximum frequency.

The standard test connector (grade 0) has a closely controlled interface to provide a reference for the measurement of connectors, cable assemblies, components and equipment with the above two interfaces. It may also be used as a microwave connector in situations when the most precise interface for use up to 18 GHz maximum frequency is required.

A 75 Ω characteristic impedance connector is given in Annex A even though the use of 75 Ω type N connectors is strongly deprecated.

Accidental cross-coupling of 75 Ω with 50 Ω connectors can destructively damage the 75 Ω version, but in view of the extensive use of a number of marginally different 75 Ω versions, the interface now given provides common design guidance. 75 Ω connectors should be clearly identified.

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 60068-1:1988, *Environmental testing – Part 1: General and guidance*
Amendment 1 (1992)

IEC 60096-2:1988, *Radio-frequency cables – Part 2: Relevant cable specifications*

IEC 61169-1:1992, *Radio-frequency connectors – Part 1: Generic specification – General requirements and measuring methods*

Amendment 1 (1996)

Amendment 2 (1997)

ISO 263:1973, *ISO inch screw threads – General plan and selection for screws, bolts and nuts – Diameter range 0.06 to 6 in*

3 IEC type designation

Connectors conforming to this specification shall be designated by:

- a) the reference to this specification: 61169-16 IEC;
- b) characteristic impedance 50 Ω (75 Ω);
- c) number of the grade :
 - grade 0 = standard test connector = G 0;
 - grade 1 = high performance connector = G 1;
 - grade 2 = general purpose connector
 - if grade 2 is required, no grade designation is necessary;
- d) a group of figures specifying the climatic category (see 7.2.5).

Example:

61169-16 IEC-50-G 0 denotes a standard test connector, type N, 50 Ω .

4 Interface dimensions

4.1 Dimensions – General purpose connectors – Grade 2

4.1.1 General

Inch dimensions are original dimensions.

NOTE The values for dimensions in millimetres derived from those in inches are not necessarily exact (according to ISO 3701¹), but they should be considered as acceptable alternatives to the original values.

All undimensioned pictorial configurations are for reference purposes only.

¹ This document has been withdrawn.

4.1.2 Connector with pin centre contact

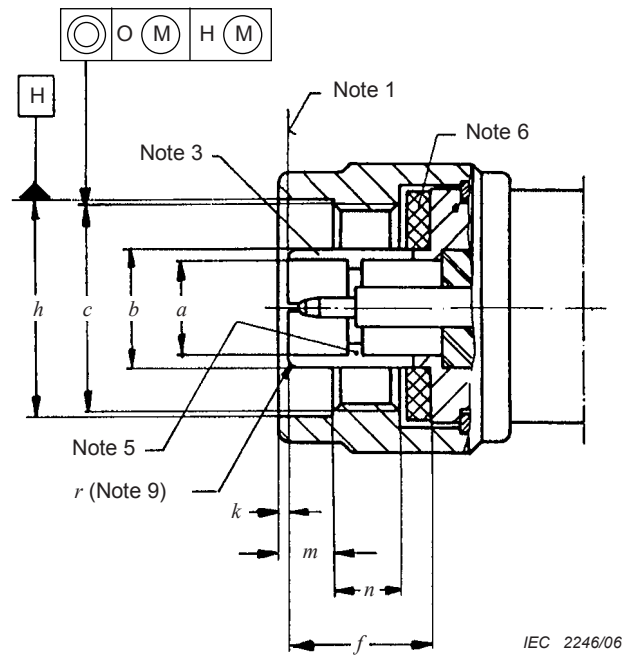


Figure 1 – Connector with pin centre contact (for notes and dimensions, see Table 1)

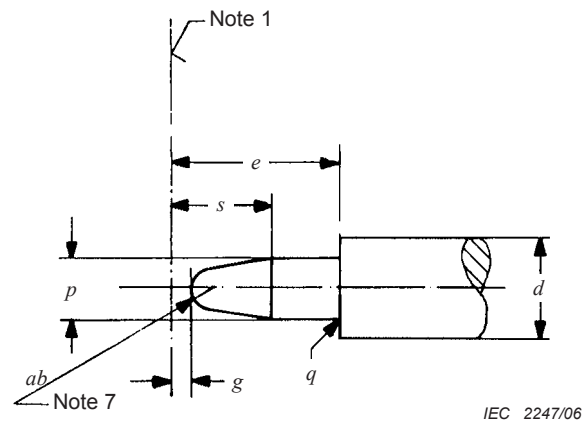
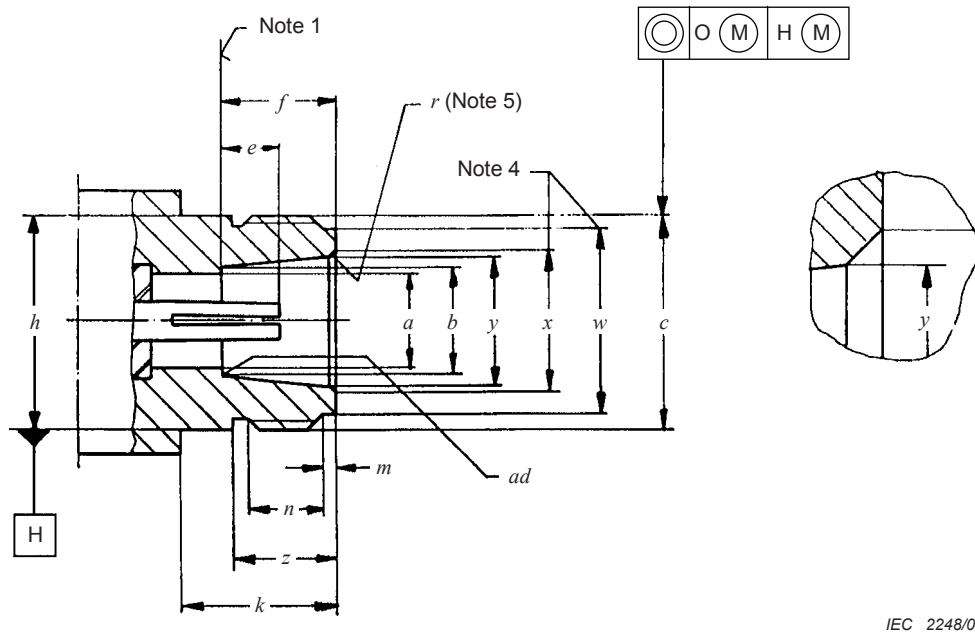


Figure 2 – Details of pin centre contact (for notes and dimensions, see Table 1)

Table 1 – Dimensions for connector with pin centre contact

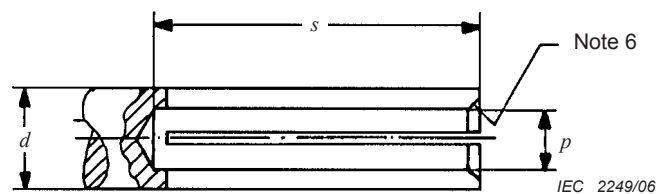
Reference	mm		inches		Note
	Min.	Max.	Min.	Max.	
<i>a</i>	7,00 nom.		0,275 6 nom.		2, diam.
<i>b</i>	–	8,027	–	0,316	3/10, diam.
<i>c</i>	–	–	5/8-24 UNEF-2B		4
<i>d</i>	3,04 nom.		0,120 nom.		2, diam.
<i>e</i>	5,33	–	0,210	–	
<i>f</i>	9,25	–	0,364	–	6
<i>g</i>	0,0	1,57	0,0	0,062	
<i>h</i>	16,0	–	0,630	–	10, diam.
<i>k</i>	0,41	1,52	0,016	0,060	8
<i>m</i>	4,013	4,267	0,158	0,168	
<i>n</i>	4,5	–	0,177	–	
<i>p</i>	1,600	1,676	0,063	0,066	10, diam.
<i>q</i>	–	0,1	–	0,004	radius
<i>r</i>	0,15	–	0,006	–	9
<i>s</i>	2,79	3,56	0,110	0,140	
<i>ab</i>	–	0,64	–	0,025	7, radius
NOTE 1 Mechanical and electrical reference plane. NOTE 2 Diameter of outer and centre contact to provide nominal (50 Ω) characteristic impedance to meet electrical performance requirements. NOTE 3 Slots or other forms of resilience optional. If slotted, indicated dimension <i>b</i> should not exceed 8,38 mm (0,330 in). Gauging requirements (see 5.1.1) to be met. NOTE 4 Thread 5/8-24 UNEF-2B (according to ISO 263). NOTE 5 Compensation for inductance of inner conductor gap in mated pair of connectors optional. NOTE 6 Dimensions given assume no sealing gasket fitted. If sealing is required, dimension <i>f</i> (Figure 1) should be arranged so that with the gasket chosen adequate pressure is applied to the front face (dimensions <i>w</i> and <i>x</i>) of the socket connector (Figure 2) to ensure adequate sealing. NOTE 7 Radius or chamfer, shape of tip optional. 0,25 mm (0,010 in) maximum flat permitted. NOTE 8 Applies with nut biased forward. NOTE 9 External form of leading edge of outer contact optional, but connector should meet electrical and mechanical performance requirements. NOTE 10 Diameters <i>b</i>, <i>h</i> and <i>p</i> and thread <i>c</i> should be gauged to ensure that on MMC, each feature is on or can take up a common axis.					

4.1.3 Connector with socket centre contact



IEC 2248/06

Figure 3 – Connector with socket centre contact (for notes and dimensions, see Table 2)



IEC 2249/06

Figure 4 – Details of socket centre contact (for notes and dimensions, see Table 2)