



BSI Standards Publication

Radio-frequency connectors

Part 69: Sectional specification for RF coaxial connectors with push on mating — Characteristic impedance 50 Ω (type SMP3)

National foreword

This British Standard is the UK implementation of EN IEC 61169-69:2024. It is identical to IEC 61169-69:2024.

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 committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2024
Published by BSI Standards Limited 2024

ISBN 978 0 539 11996 1

ICS 33.060; 33.060.30

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

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 August 2024.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

English Version

Radio-frequency connectors - Part 69: Sectional specification for
RF coaxial connectors with push on mating - Characteristic
impedance 50 Ω (type SMP3)
(IEC 61169-69:2024)

Connecteurs pour fréquences radioélectriques - Partie 69:
Spécification intermédiaire relative aux connecteurs
coaxiaux pour fréquences radioélectriques à accouplement
par poussée - Impédance caractéristique 50 Ω (type SMP3)
(IEC 61169-69:2024)

Hochfrequenzsteckverbinder - Teil 69: Rahmenspezifikation
für HF-Koaxialsteckverbinder mit Push-On-Verbindung -
Wellenwiderstand 50 Ohm (Typ SMP3)
(IEC 61169-69:2024)

This European Standard was approved by CENELEC on 2024-07-17. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 46F/666/FDIS, future edition 1 of IEC 61169-69, prepared by SC 46F "RF and microwave passive components" of IEC/TC 46 "Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61169-69:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2025-04-17 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2027-07-17 document have to be withdrawn

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 61169-69:2024 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-1	-	Environmental testing - Part 1: General and guidance	EN 60068-1	-
IEC 61169-1	2013	Radio frequency connectors - Part 1: Generic specification - General requirements and measuring methods	EN 61169-1	2013

CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Mating face and gauge information	7
4.1 Dimensions – General connectors – Grade 2	7
4.1.1 SMP3 connector with pin-centre contact	7
4.1.2 SMP3 connector with socket-centre contact	8
4.2 SMP3 gauges	10
4.2.1 SMP3 gauge pin for socket-centre contact	10
4.2.2 Gauges for outer contact of SMP3 connector with socket-centre contact	11
5 Quality assessment procedure	20
5.1 General	20
5.2 Rating and characteristics (see IEC 61169-1:2013, Clause 5)	20
5.3 Test schedule and inspection requirements	23
5.3.1 Acceptance tests	23
5.3.2 Periodic tests	24
5.4 Procedures for the quality conformance	25
5.4.1 Quality conformance inspection	25
5.4.2 Quality conformance and its maintenance	25
6 Instructions for preparation of detail specifications (DS)	26
6.1 General	26
6.2 Identification of the component	26
6.3 Performances	26
6.4 Marking, ordering information and related matters	26
6.5 Selection of tests, test conditions and severities	27
6.6 Blank detail specification pro-forma for type SMP3 connector	27
7 Marking	31
7.1 Marking of component	31
7.2 Marking and contents of package	32
Figure 1 – SMP3 connector with pin-centre contact – Full detent	7
Figure 2 – SMP3 connector with pin-centre contact – Smooth bore	8
Figure 3 – SMP3 connector with socket-centre contact	9
Figure 4 – SMP3 gauge pin for socket-centre contact	10
Figure 5 – SMP3 engagement force gauge – Full detent	11
Figure 6 – SMP3 separation force gauge – Full detent	13
Figure 7 – SMP3 engagement force gauge – Smooth bore	15
Figure 8 – SMP3 Separation force gauge – Smooth bore	17
Figure 9 – SMP3 gauge block	19

Table 1 – Dimensions of SMP3 connector with pin-centre contact – Full detent	7
--	---

Table 2 – Dimensions of SMP3 connector with pin-centre contact – Smooth bore	8
--	---

Table 3 – Dimensions of SMP3 connector with socket-centre contact	9
Table 4 – Dimensions of SMP3 gauge pin for socket-centre contact	10
Table 5 – Dimensions of SMP3 engagement force gauge – Full detent	12
Table 6 – Dimensions of SMP3 separation force gauge – Full detent	14
Table 7 – Dimensions of SMP3 engagement force gauge – Smooth bore	16
Table 8 – Dimensions of SMP3 separation force gauge – Smooth bore	18
Table 9 – Dimensions of SMP3 gauge block	19
Table 10 – Preferred climatic categories	20
Table 11 – Rating and characteristics	21
Table 12 – Acceptance tests	23
Table 13 – Periodic tests	24

INTERNATIONAL ELECTROTECHNICAL COMMISSION

RADIO-FREQUENCY CONNECTORS –

**Part 69: Sectional specification for RF coaxial connectors
with push on mating – Characteristic impedance 50 Ω (type SMP3)**

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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 61169-69 has been prepared by subcommittee 46F: RF and microwave passive components, of IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
46F/666/FDIS	46F/671/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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 document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

RADIO-FREQUENCY CONNECTORS –

Part 69: Sectional specification for RF coaxial connectors with push on mating – Characteristic impedance 50 Ω (type SMP3)

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 push-on coupling, typically for use in 50 Ω RF cables or micro-strips in microwave, telecommunication, wireless systems, and other fields (SMP3).

It specifies mating face dimensions for general purpose connectors – grade 2, 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 SMP3 RF 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 SMP3 push-on coupling structure series RF coaxial connectors with the characteristic of normative impedance 50 Ω are used with various kinds of RF cables or micro-strips in microwave, telecommunication, wireless systems, and other fields. The operating frequency limit is up to 65 GHz.

NOTE Imperial dimensions are the original dimensions since this is a very miniature RF connector. There is a concern that conversion to the metric system could lead to rounding errors which can lead to performance degradation from the original imperial design. The SMPM connector was released as an imperial design for this reason. All undimensioned pictorial information is for reference only.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 61169-1:2013, *Radio frequency connectors – Part 1: Generic specification – General requirements and measuring methods*

IEC 60068-1, *Environmental testing – Part 1: General and guidance*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

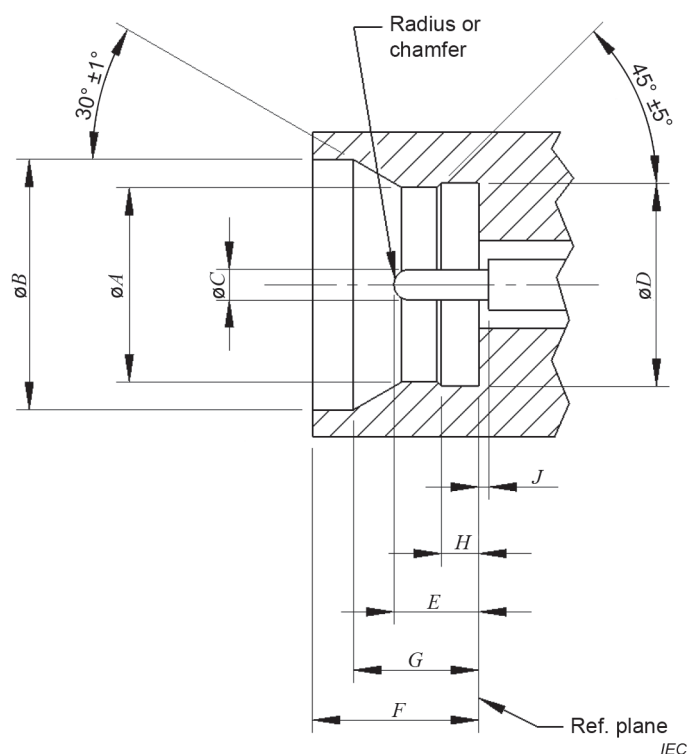
4 Mating face and gauge information

4.1 Dimensions – General connectors – Grade 2

4.1.1 SMP3 connector with pin-centre contact

4.1.1.1 SMP3 connector with pin-centre contact – Full detent

Figure 1 shows an SMP3 connector with pin-centre contactor – Full detent.



NOTE For dimensions, see Table 1.

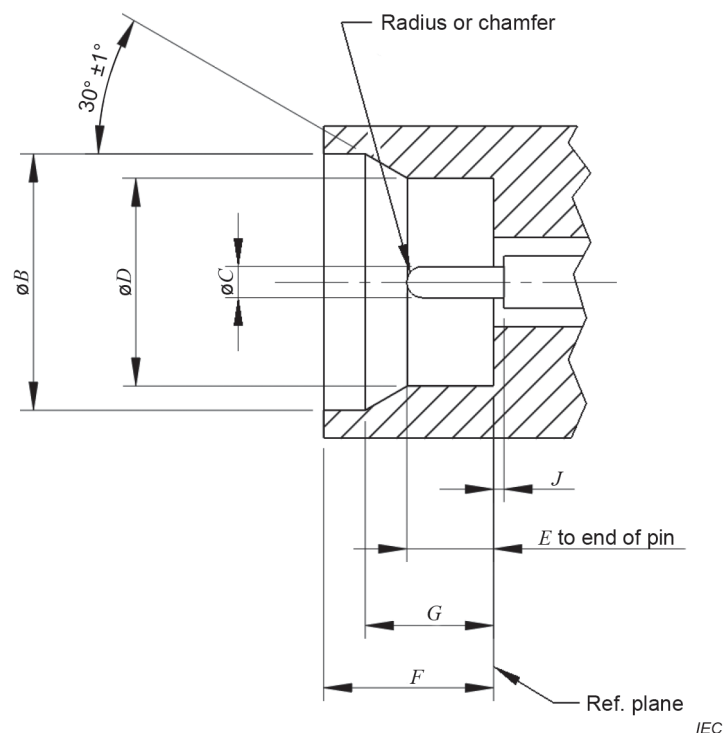
Figure 1 – SMP3 connector with pin-centre contact – Full detent

Table 1 – Dimensions of SMP3 connector with pin-centre contact – Full detent

Ref.	Inches (millimetres)		Remarks
	Min.	Max.	
<i>A</i>	0,057 (1,448)	0,058 (1,473)	
<i>B</i>	0,073 (1,854)	0,075 (1,905)	
<i>C</i>	0,008 5 (0,216)	0,009 5 (0,241)	
<i>D</i>	0,059 (1,499)	0,061 (1,549)	
<i>E</i>	0,020 (0,508)	0,030 (0,762)	
<i>F</i>	0,048 (1,219)	0,050 (1,270)	
<i>G</i>	0,033 (0,838)	0,041 (1,041)	
<i>H</i>	0,010 (0,254)	0,012 (0,305)	
<i>J</i>	0,000 (0,000)	-	

4.1.1.2 SMP3 connector with pin-centre contact – Smooth bore

Figure 2 shows a SMP3 connector with pin-centre contact – Smooth bore.



NOTE For dimensions, see Table 2.

Figure 2 – SMP3 connector with pin-centre contact – Smooth bore

Table 2 – Dimensions of SMP3 connector with pin-centre contact – Smooth bore

Ref.	Inches (millimetres)		Remarks
	Min.	Max.	
<i>B</i>	0,073 (1,854)	0,075 (1,905)	
<i>C</i>	0,008 5 (0,216)	0,009 5 (0,241)	
<i>D</i>	0,059 (1,499)	0,061 (1,549)	
<i>E</i>	0,020 (0,508)	0,030 (0,762)	
<i>F</i>	0,048 (1,219)	0,050 (1,270)	
<i>G</i>	0,033 (0,838)	0,041 (1,041)	
<i>J</i>	0,000 (0,000)	-	

4.1.2 SMP3 connector with socket-centre contact

Figure 3 shows a SMP3 connector with socket-centre contact.