

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Radio-frequency connectors –
Part 60: Sectional specification for RF coaxial connectors with push on mating –
Characteristic impedance 50 Ohm (type SMP-M)**

**Connecteurs pour fréquences radioélectriques –
Partie 60: Spécification intermédiaire relative aux connecteurs coaxiaux pour
fréquences radioélectriques avec couplage par poussée – Impédance
caractéristique 50 Ohm (type SMP-M)**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2021 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.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
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 corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

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 It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC online collection - oc.iec.ch

Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 18 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC -

webstore.iec.ch/advsearchform

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, ...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC online collection - oc.iec.ch

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 000 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Radio-frequency connectors –

**Part 60: Sectional specification for RF coaxial connectors with push on mating –
Characteristic impedance 50 Ohm (type SMPM)**

Connecteurs pour fréquences radioélectriques –

**Partie 60: Spécification intermédiaire relative aux connecteurs coaxiaux pour
fréquences radioélectriques avec couplage par poussée – Impédance
caractéristique 50 Ohm (type SMPM)**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 33.120.30

ISBN 978-2-8322-9541-0

Warning! Make sure that you obtained this publication from an authorized distributor.

Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

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 SMPM connector with pin-centre contact	7
4.1.2 SMPM connector with socket-centre contact (see Figure 3)	9
4.2 SMPM gauges	7
4.2.1 SMPM gauge pin for socket-centre contact.....	10
4.2.2 Gauges for outer contact of SMPM connector with socket-centre contact	11
5 Quality assessment procedure.....	19
5.1 General.....	19
5.2 Rating and characteristics (see Clause 5 of IEC 61169-1:2013)	19
5.3 Test schedule and inspection requirements.....	22
5.3.1 Acceptance tests	22
5.3.2 Periodic tests.....	22
5.4 Procedures for the quality conformance	24
5.4.1 Quality conformance inspection	24
5.4.2 Quality conformance and its maintenance	24
6 Instructions for preparation of detail specifications (DS)	24
6.1 General.....	24
6.2 Identification of the component	24
6.3 Performances	25
6.4 Marking, ordering information and related matters	25
6.5 Selection of tests, test conditions and severities	25
6.6 Blank detail specification, pro-forma for type SMPM connector	26
7 Marking	30
7.1 Marking of component.....	30
7.2 Marking and contents of package.....	30
Figure 1 – SMPM connector with pin-centre contact – Full detent (for dimensions, see Table 1).....	7
Figure 2 – SMPM connector with pin-centre contact – Smooth bore (for dimensions, see Table 2)	8
Figure 3 – SMPM connector with socket-centre contact (for dimensions, see Table 3).....	9
Figure 4 – SMPM gauge pin for socket-centre contact (for dimensions, see Table 4)	10
Figure 5 – SMPM engagement force gauge – Full detent (for dimensions, see Table 5).....	11
Figure 6 – SMPM Separation force gauge – Full detent (for dimensions, see Table 6)	13
Figure 7 – SMPM Engagement force gauge – Smooth bore (for dimensions, see Table 7).....	15
Figure 8 – SMPM Separation force gauge – Smooth bore (for dimensions, see Table 8).....	17
Figure 9 – SMPM gauge block (for dimensions, see Table 9)	18
Table 1 – Dimensions of SMPM connector with pin-centre contact full detent.....	7

Table 2 – Dimensions of SMPM connector with pin-centre contact – Smooth bore	8
Table 3 – Dimensions of SMPM connector with socket-centre contact.....	9
Table 4 – Dimensions of SMPM gauge pin for socket-centre contact.....	10
Table 5 – Dimensions of SMPM engagement force gauge – Full detent	12
Table 6 – Dimensions of SMPM separation force gauge – Full detent	14
Table 7 – Dimensions of SMPM engagement force gauge – Smooth bore	16
Table 8 – Dimensions of SMPM separation force gauge – Smooth bore.....	18
Table 9 – Dimensions of SMPM gauge block	19
Table 10 – Preferred climatic categories (see IEC 60068-1).....	19
Table 11 – Rating and characteristics	20
Table 12 – Acceptance tests	22
Table 13 – Periodic tests	23

INTERNATIONAL ELECTROTECHNICAL COMMISSION

RADIO-FREQUENCY CONNECTORS –

Part 60: Sectional specification for RF coaxial connectors with push on mating – Characteristic impedance 50 Ohm (type SMPM)

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 Publications”). 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) 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.

IEC 61169-60 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:

FDIS	Report on voting
46F/548/FDIS	46F/555/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/standardsdev/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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

RADIO-FREQUENCY CONNECTORS –

Part 60: Sectional specification for RF coaxial connectors with push on mating – Characteristic impedance 50 Ohm (type SMPM)

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 (SMPM).

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 SMPM 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 SMPM 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. The operating frequency limit is up to 65 GHz.

NOTE Imperial dimensions are original dimensions. All undimensioned pictorial configurations are for reference purpose 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 60068-1, *Environmental testing – Part 1: General and guidance*

IEC 61169-1:2013, *Radio frequency connectors – Part 1: Generic specification – General requirements and measuring methods*

IEC 62037 (all parts), *Passive RF and microwave devices, intermodulation level measurement*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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