

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Connectors for electronic equipment – Product requirements –
Part 3-120: Rectangular connectors – Detail specification for rewirable power
connectors with snap locking for rated voltage of 250 V d.c. and rated current of
30 A**

**Connecteurs pour équipements électroniques – Exigences de produit –
Partie 3-120: Connecteurs rectangulaires – Spécification particulière pour
connecteurs de puissance démontables à encliquetage pour une tension
continue assignée de 250 V et un courant assigné de 30 A**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2016 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
Fax: +41 22 919 03 00
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 corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

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 also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

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: csc@iec.ch.

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.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

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 aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 15 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

65 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

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

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Connectors for electronic equipment – Product requirements –
Part 3-120: Rectangular connectors – Detail specification for rewirable power
connectors with snap locking for rated voltage of 250 V d.c. and rated current of
30 A**

**Connecteurs pour équipements électroniques – Exigences de produit –
Partie 3-120: Connecteurs rectangulaires – Spécification particulière pour
connecteurs de puissance démontables à encliquetage pour une tension
continue assignée de 250 V et un courant assigné de 30 A**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.220.10

ISBN 978-2-8322-3555-3

**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
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions	9
4 Technical information.....	9
4.1 Ratings and characteristics	9
4.2 Performance levels	9
4.3 Compatibility levels	9
4.4 Classification into climatic categories	9
4.5 Clearance and creepage distances	9
4.6 Current-carrying capacity	10
4.7 Marking.....	10
5 Dimensional information	10
5.1 General.....	10
5.2 Isometric view and common features (see Figure 1 and Figure 2).....	10
5.3 Fixed connectors (see Figure 3 and Table 2)	11
5.3.1 Dimensions.....	11
5.3.2 Terminations.....	12
5.4 Free connectors (see Figure 4 and Table 3).....	13
5.4.1 Dimensions.....	13
5.4.2 Terminations.....	14
5.5 Accessories	14
5.6 Mounting information.....	14
5.7 Gauges.....	14
5.7.1 Sizing gauges and retention force gauges (see Figure 5 and Table 4)	14
6 Characteristics	15
6.1 Classification into climatic categories	15
6.2 Electrical characteristics.....	15
6.2.1 Clearance and creepage distance.....	15
6.2.2 Voltage proof	15
6.2.3 Contact resistance	15
6.2.4 Insulation resistance	16
6.2.5 Temperature rise.....	16
6.3 Mechanical characteristics	16
6.3.1 Mechanical operation	16
6.3.2 Insertion and withdrawal forces	16
6.3.3 Contact retention in insert	16
6.3.4 Polarizing and coding method.....	17
6.3.5 Effectiveness of connector coupling devices	17
6.3.6 Conductor secureness.....	17
6.4 Dynamic stress test.....	17
6.4.1 Vibration (sine)	17
6.4.2 Shock	17
6.5 Climatic test.....	18
6.5.1 Damp heat steady state.....	18

6.5.2	Rapid change of temperature	18
6.5.3	Salt spray	18
6.5.4	Dry heat	18
6.6	Environmental aspects	18
6.6.1	Marking of insulation material (plastic)	18
6.6.2	Design/use of material	18
7	Test schedule	19
7.1	General	19
7.2	Test schedules	19
7.2.1	Basic (minimum) test schedule	19
7.2.2	Full test schedule	19
7.3	Test procedures and measurement methods	24
7.4	Pre-conditioning	24
7.5	Wiring and mounting of test specimens	24
7.5.1	Wiring	24
7.5.2	Mounting	24
	Bibliography	25
	Figure 1 – Isometric view of free connector	10
	Figure 2 – Isometric view of fixed connector	10
	Figure 3 – Fixed connector	11
	Figure 4 – Free connector	13
	Figure 5 – Gauge	15
	Table 1 – Climatic categories	9
	Table 2 – Dimensions of the fixed connector	12
	Table 3 – Dimensions of the free connector	14
	Table 4 – Gauge dimensions	15
	Table 5 – Conductor secureness test	17
	Table 6 – Number of test specimens	19
	Table 7 – Test group P	19
	Table 8 – Test group AP	20
	Table 9 – Test group BP	21
	Table 10 – Test group CP	22
	Table 11 – Test group DP	22
	Table 12 – Test group EP	23
	Table 13 – Test group JP	23
	Table 14 – Test group KP	24

INTERNATIONAL ELECTROTECHNICAL COMMISSION

CONNECTORS FOR ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 3-120: Rectangular connectors – Detail specification for rewirable power connectors with snap locking for rated voltage of 250 V d.c. and rated current of 30 A

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) 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.

International Standard IEC 61076-3-120 has been prepared by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment.

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

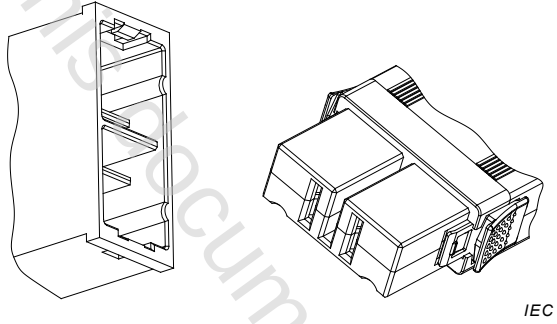
FDIS	Report on voting
48B/2498/FDIS	48B/2511/RVD

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.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

The International Electrotechnical Commission IEC SC 48B —Electrical connectors	IEC 61076-3-120
Detail specification in accordance with IEC 61076-3	
	Rewirable power connectors with snap locking for rated voltage of 250 V d.c. and rated current of 30 A
	Fixed and free connectors, for telecommunication equipment

INTRODUCTION

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning connectors given in this specification.

The IEC takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured the IEC that he/she is willing to give free licences with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with the IEC.

Information may be obtained from:

Sichuan Huafeng Enterprise Group Co., Ltd.

Product and Market Planning Department

No.36 Yuejin Road, Mianyang, Sichuan, China

Telephone: 0086-816-231 1322

FAX: 0086-816-233 2716

Email: pangbin@huafeng796.com

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

ISO (www.iso.org/patents) and IEC (<http://patents.iec.ch>) maintain on-line data bases of patents relevant to their standards. Users are encouraged to consult the data bases for the most up to date information concerning patents.

CONNECTORS FOR ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 3-120: Rectangular connectors – Detail specification for rewirable power connectors with snap locking for rated voltage of 250 V d.c. and rated current of 30 A

1 Scope

This part of IEC 61076-3 describes a 2 pole 30 A rectangular power connector with snap locking (hereinafter shortly referred to as connector), including overall dimensions, interface dimensions, technical characteristics, performance requirements and test methods.

The products covered by this detail specification are connectors without breaking capacity according to IEC 61984:2008 which are mainly for use in DC power distribution equipment in the telecommunications field, such as in outdoor telecom modules, distributed frames, etc.

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 60050-581:2008, *International Electrotechnical Vocabulary – Part 581: Electro-mechanical components for electronic equipment*

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

IEC 60228:2004, *Conductors of insulated cables*

IEC 60352 (all parts), *Solderless connections*

IEC 60512 (all parts), *Connectors for electronic equipment – Tests and measurements*

IEC 60512-1-2:2002, *Connectors for electronic equipment – Tests and measurements – Part 1-2: General examination*

IEC 60999-1:1999, *Connecting devices – Electrical copper conductors – Safety requirements for screw type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm² up to 35 mm² (included)*

IEC 61076-1:2006, *Connectors for electronic equipment – Part 1: Generic specification*

IEC 61076-3:2008, *Connectors for electronic equipment – Product requirements – Part 3: Rectangular connectors – Sectional specification*

IEC 61984:2008, *Connectors – Safety requirements and tests*

IEC 62430, *Environmentally conscious design for electrical and electronic products*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-581 apply.

4 Technical information

4.1 Ratings and characteristics

Connectors according this specification are connectors without breaking capacity (COC) according to IEC 61984. Therefore, they are not intended to be engaged or disengaged in normal use when live or under load, if not otherwise specified by the manufacturer.

Rated voltage: 250 V d.c., overvoltage category: 4 kV, pollution degree: 3.

Rated current: 30 A

Insulation resistance: $\geq 1\,000\text{ M}\Omega$.

Suitable wire: cross-sectional area 1 mm^2 to 4 mm^2 , single-core or multi-core.

4.2 Performance levels

Performance level for this connector is 1.

4.3 Compatibility levels

Connectors according to this standard are intermateable according to IEC 61076-1:2006.

4.4 Classification into climatic categories

Conditions: according to IEC 60068-1 and Table 1.

Table 1 – Climatic categories

Climatic category	Lower temperature °C	Upper temperature °C	Damp heat steady state (days)
55/125/4	–55	125	4

4.5 Clearance and creepage distances

Clearance and creepage distances shall be measured according to IEC 60512-1-2 with the following additional requirement.

For these connectors clearance and creepage distances shall be measured only in mated position (connector without breaking capacity as defined in IEC 61984).

Minimum clearance: 3,0 mm.

Minimum creepage distance: 4,0 mm.