

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

**Connectors for electronic equipment – Product requirements –
Part 2-114: Circular connectors – Detail specification for data and power
connectors with M8 screw-locking**

Withdrawn



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.

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 It also gives information on projects, replaced and withdrawn publications.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.

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

**Connectors for electronic equipment – Product requirements –
Part 2-114: Circular connectors – Detail specification for data and power
connectors with M8 screw-locking**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 31.220.10

ISBN 978-2-8322-3365-8

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

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions	9
4 Technical information.....	9
4.1 Systems of levels	9
4.1.1 Performance levels	9
4.1.2 Compatibility levels, according to IEC 61076-1:2006.....	9
4.2 Classification into climatic categories (Table 1).....	10
4.3 Creepage and clearance distances	10
4.4 Current-carrying capacity	10
4.5 Marking.....	10
5 Dimensional information	10
5.1 General.....	10
5.2 Isometric view and common features	10
5.2.1 General	10
5.2.2 Common features.....	10
5.2.3 Reference system	10
5.3 Engagement (mating) information	10
5.3.1 Engaging (mating) direction.....	10
5.3.2 Contact levels and sequencing.....	11
5.3.3 Perpendicular to the engaging (mating) direction	11
5.3.4 Inclination	11
5.4 Fixed connectors.....	11
5.4.1 Dimensions.....	11
5.4.2 Terminations.....	14
5.5 Free connectors	14
5.5.1 Dimensions.....	14
5.6 Accessories	20
5.7 Mounting information for connectors	21
5.7.1 Mounting on panels.....	21
5.8 Gauges	21
5.8.1 Sizing gauges and retention force gauges	21
5.8.2 Mechanical function, engaging/separating/insertion/withdrawal force gauges	21
5.8.3 Probes.....	21
5.8.4 Contact resistance gauge.....	21
5.8.5 Test panel (for voltage proof test).....	21
5.8.6 Test panel (for EMC/ crosstalk, etc.).....	22
6 Characteristics	22
6.1 General.....	22
6.2 Pin assignment and other definitions	22
6.3 Classification into climatic categories	22
6.4 Electrical characteristics.....	22
6.4.1 Creepage and clearance distances.....	22

6.4.2	Voltage proof	22
6.4.3	Current-carrying capacity	23
6.4.4	Contact and shield resistance.....	23
6.4.5	Insulation resistance	23
6.4.6	Impedance.....	23
6.5	Mechanical characteristics	23
6.5.1	Mechanical operation	23
6.5.2	Effectiveness of connector coupling device.....	23
6.5.3	Engaging and separating forces (or insertion and withdrawal forces).....	24
6.5.4	Contact retention in insert	24
6.5.5	Polarization and coding method.....	24
6.6	Other characteristics	24
6.6.1	Shock and vibration (method either random or sine).....	24
6.6.2	Degree of protection provided by enclosures (IP code)	26
6.6.3	Screen and shielding properties	26
6.7	Environmental aspects	26
6.7.1	Marking of insulation material (plastics).....	26
6.7.2	Design/ use of material	26
7	Test schedule.....	26
7.1	General.....	26
7.2	Climatic category	27
7.3	Creepage and clearance distances	27
7.4	Arrangement for contact resistance measurement.....	28
7.5	Arrangement for dynamic stress tests	28
7.6	Arrangement for testing static load, axial.....	29
7.7	Wiring of specimens.....	30
7.8	Test schedules.....	30
7.8.1	Basic (minimum) test schedule	30
7.8.2	Full test schedule.....	30
7.9	Test procedures and measuring methods.....	41
7.10	Pre-conditioning	41
7.11	Wiring and mounting of specimens	42
7.11.1	Wiring.....	42
7.11.2	Mounting.....	42
Annex A (informative)	Contact and pair designation for balanced cabling	43
A.1	Recommendation for cable connection.....	43
Figure 1	– Engagement (mating) information	11
Figure 2	– Tube insert, male contacts dip solder mounting, long version	12
Figure 3	– Tube insert, male contacts dip solder mounting, short version	13
Figure 4	– Fixed connector with wire ends, style EM.....	13
Figure 5	– Fixed connector with wire ends, style EF.....	14
Figure 6	– Rewireable connector, male contacts, straight version, with locking nut	15
Figure 7	– Rewireable connector, male contacts, right angled version, with locking nut	15
Figure 8	– Non-rewireable connector, male contacts, straight version, with locking nut.....	16
Figure 9	– Non-rewireable connector, male contacts, right angled version, with locking nut ..	16
Figure 10	– Rewireable connector, female contacts, straight version, with locking nut	17

Figure 11 – Rewireable connector, female contacts, right angled version, with locking nut...	17
Figure 12 – Non-rewireable connector, female contacts, straight version, with locking nut	18
Figure 13 – Non-rewireable connector, female contacts, right angled version, with locking nut	18
Figure 14 – Fixed connector.....	19
Figure 15 – Free connector.....	20
Figure 16 – Gauge dimensions.....	21
Figure 17 – Dynamic stress test arrangement.....	25
Figure 18 – Contact resistance arrangement	28
Figure 19 – Dynamic stress test arrangement.....	29
Figure A.1 – Example of contact arrangement for balanced cabling (informative).....	43
Table 1 – Climatic category.....	10
Table 2 – Styles of fixed connectors.....	12
Table 3 – Styles of free connectors	14
Table 4 – Dimensions of fixed connector	19
Table 5 – Dimensions of free connector.....	20
Table 6 – Gauges	21
Table 7 – Ratings of connectors	22
Table 8 – Performance levels.....	22
Table 9 – Current-carrying capacity.....	23
Table 10 – Number of mechanical operations.....	23
Table 11 – Insertion and withdrawal forces.....	24
Table 12 – Insertion force	24
Table 13 – Number of test specimens.....	27
Table 14 – Performance levels	27
Table 15 – Rated voltage – Rated impulse voltage – Pollution degree.....	27
Table 16 – Voltage proof.....	27
Table 17 – Number of test specimens and contacts	30
Table 18 – Test group P.....	31
Table 19 – Test group AP	32
Table 20 – Test group BP	35
Table 21 – Test group CP	37
Table 22 – Test group DP	38
Table 23 – Test group GP	38
Table 24 – Test group MP.....	40
Table A.1 – Example of contact and pair designation for balanced cabling (informative)	43

INTERNATIONAL ELECTROTECHNICAL COMMISSION

CONNECTORS FOR ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 2-114: Circular connectors – Detail specification for data and power connectors with M8 screw-locking

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.

A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public.

IEC PAS 61076-2-114 has been processed by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document

Draft PAS	Report on voting
48B/2459/PAS	48B/2476/RVC

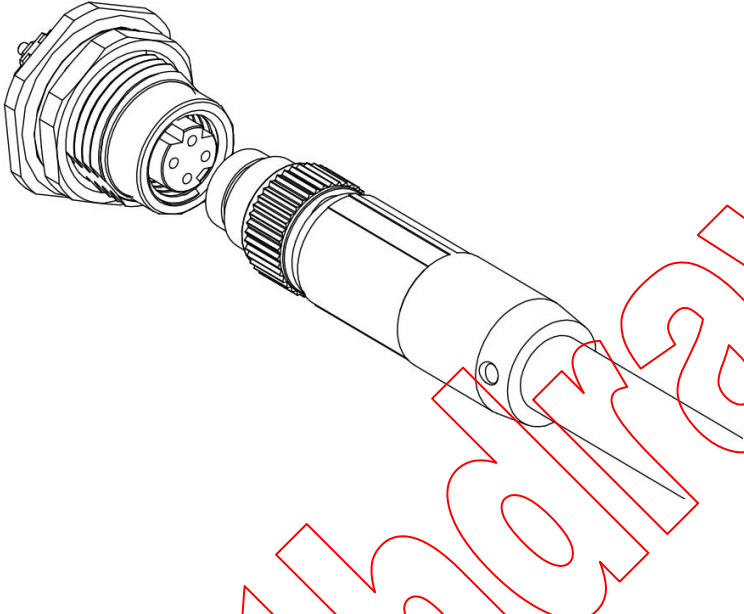
Following publication of this PAS, which is a pre-standard publication, the technical committee or subcommittee concerned may transform it into an International Standard.

This PAS shall remain valid for an initial maximum period of 3 years starting from the publication date. The validity may be extended for a single period up to a maximum of 3 years, at the end of which it shall be published as another type of normative document, or shall be withdrawn.

A bilingual version of this publication may be issued at a later date.

Withdrawn

INTRODUCTION

<p>IEC SC 48B – Connectors</p> <p>Specification available from: IEC General secretariat or from the addresses shown on the inside cover.</p>	<p>IEC 61076-2-114</p>
<p>ELECTRONIC COMPONENTS</p> <p>DETAIL SPECIFICATION in accordance with IEC 61076-1</p>	
	<p>Circular connectors M8 for data and power applications with screw-locking and 4 ways</p> <p>Male and female connectors Male and female contacts</p> <p>Rewireable – Non-rewireable</p> <p>Free cable connectors Straight and right angle connectors</p> <p>Fixed connectors Flange mounting Single hole mounting</p>

