

Detail Specification: High density rectangular connectors, round removable crimp contacts

The European Standard EN 175301-801: 2006 has the status of a British Standard

ICS 31.220.10

National foreword

This British Standard was published by BSI. It is the UK implementation of EN 175301-801:2006. It supersedes BS EN 175301-801:2000 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/48, Electromechanical components and mechanical structures for electronic equipment.

A list of organizations represented on EPL/48 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.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2007

© BSI 2007

ISBN 978 0 580 49904 3

Amendments issued since publication

Amd. No.	Date	Comments

English version

**Detail Specification: High density rectangular connectors,
round removable crimp contacts**

Spécification particulière: Connecteurs
rectangulaires haute densité à contacts
circulaires démontables à sertir

Bauartspezifikation: Hochpolige
Rechteck-Steckverbinder mit runden
auswechselbaren Crimpkontakten

This European Standard was approved by CENELEC on 2006-10-01. 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, 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

This European Standard was prepared by the CENELEC BTWG 117-1 "Revision of EN 175310-801 and EN 175301-803".

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 175301-801 on 2006-10-01.

This European Standard supersedes EN 175301-801:1999.

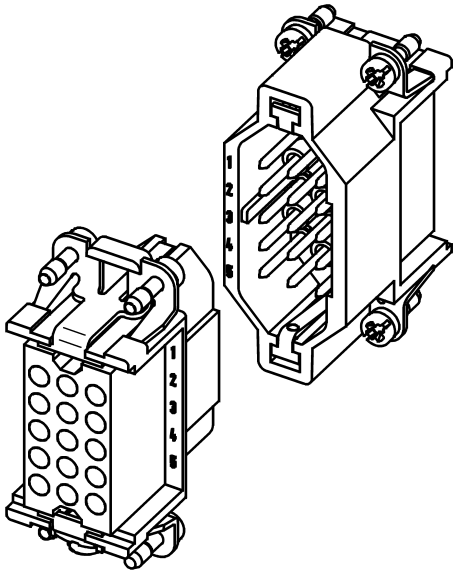
The following dates are proposed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2007-10-01
 - latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2009-10-01
-

Contents

	Page
1 Scope	5
2 Normative references	6
3 Type designation	7
4 Common features	8
4.1 Isometric view	8
4.2 Mating information	8
4.3 Survey of styles	10
5 Dimensions	12
5.1 General	12
5.2 Connector with male contacts	12
5.3 Connector with female contacts	16
5.4 Marking	20
5.5 Contacts	21
5.6 Locking mechanism	21
5.7 Connector housing, metal version	22
5.8 Mounting dimensions	25
6 Gauges	26
6.1 Sizing gauge and retention force gauge	26
6.2 Locking (latching) mechanism gauges	27
7 Characteristics	30
7.1 Climatic category	30
7.2 Electrical characteristics	30
7.3 Mechanical characteristics	32
8 Test schedule	33
8.1 General	33
8.2 Test group P (preliminary)	34
8.3 Test groups AP, BP and CP	35
9 Quality assessment procedures	38
9.1 Qualification approval testing	38
9.2 Quality Conformance Inspection	39
9.3 Delayed delivery, re-inspection	41
10 Ordering information	40
Figure 1 – Isometric view	7
Figure 2 – Plug-in direction	7
Figure 3 – Perpendicular to plug-in direction	8
Figure 4 – Inclination	8
Figure 5 – Fixed connector – Style A	9
Figure 6 – Fixed connector – Style B	9
Figure 7 – Free connector – Style C	10
Figure 8 – Free connector – Style E	10
Figure 9 – Connector with male contacts – Dimensions	11
Figure 10 – Connector insert E 015M	12
Figure 11 – Connector insert E 025M	12
Figure 12 – Connector insert E 040M	13
Figure 13 – Connector insert E 064M	14

Figure 14 – Connector with female contacts – Dimensions	15
Figure 15 – Connector insert E 015	16
Figure 16 – Connector insert E 025	16
Figure 17 – Connector insert E 040F	17
Figure 18 – Connector insert E 064F	18
Figure 19 – Locking mechanism – 15 + PE and 25 + PE	20
Figure 20 – Locking mechanism – 40 + PE and 64 + PE	20
Figure 21 – Style A – Transversal locking levers (S)	21
Figure 22 – Style A – Longitudinal locking lever (L)	21
Figure 23 – Style B – Transversal locking levers (S)	21
Figure 24 – Style B – Longitudinal locking lever (L)	22
Figure 25 – Style C – Transversal locking pins (S)	22
Figure 26 – Style C – Longitudinal locking pins (L)	22
Figure 27 – Mounting dimensions	24
Figure 28 – Sizing gauge and retention force gauge	25
Figure 29 – Locking (latching) mechanism gauge – Transversal locking levers (S) (40, 64 + PE contacts)	26
Figure 30 – Locking (latching) mechanism gauge – Longitudinal locking lever (L) (15, 25 + PE contacts)	27
Figure 31 – Locking (latching) mechanism gauge – Longitudinal locking lever (L) (40, 64 + PE contacts)	28
Figure 32 – Derating curves	30
Figure 33 – Arrangement for static load, transverse test	31
Table 1 – Plug-in direction – Dimensions	7
Table 2 – Connector with male contacts – Dimensions	11
Table 3 – Connector with female contacts – Dimensions	15
Table 4 – Locking mechanism – Dimensions	20
Table 5 – Connector housing, metal version – Dimensions according Figure 21 to 26	23
Table 6 – Mounting dimensions	24
Table 7 – Sizing gauge and retention force gauge	25
Table 8 – Locking (latching) mechanism gauge – Transversal locking lever (S) (40, 64 + PE contacts)	26
Table 9 – Locking (latching) mechanism gauge – Longitudinal locking lever (L) (15, 25 + PE contacts)	27
Table 10 – Locking (latching) mechanism gauge – Longitudinal locking lever (L) (40, 64 + PE contacts)	26
Table 11 – Climatic category	29
Table 12 – Clearance and creepage information	29
Table 13 – Test group information	32
Table 14 – Group P test sequence	33
Table 15 – Group AP test sequence	34
Table 16 – Group BP test sequence	35
Table 17 – Group CP test sequence	36
Table 18 – Group DP test sequence (crimped connections only)	36
Table 19 – Qualification approval group information	37
Table 20 – Lot-by-lot tests	38
Table 21 – Periodic tests	39
Table 22 – Delayed delivery, re-inspection	40

ELECTRONIC COMPONENTS OF ASSESSED QUALITY – DETAIL SPECIFICATION IN ACCORDANCE WITH EN 61076-1:1995	EN 175301-801:2006
See Clause 5 for dimensions 	1 Scope Detail specification for high-density rectangular connectors, round removable crimp contacts 15, 25, 40 to 64 contacts + protective earth contacts (PE) Termination: crimp Performance level: 1 Assessment levels: B and G (*)

Climatic category: see 7.1

Electrical characteristics: see 7.2

Mechanical characteristics: see 7.3

Ordering information: see Clause 10

(*) see Clauses 8 and 9

Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00 200 (Register of Firms, Products and Services Approved under the CECC System).

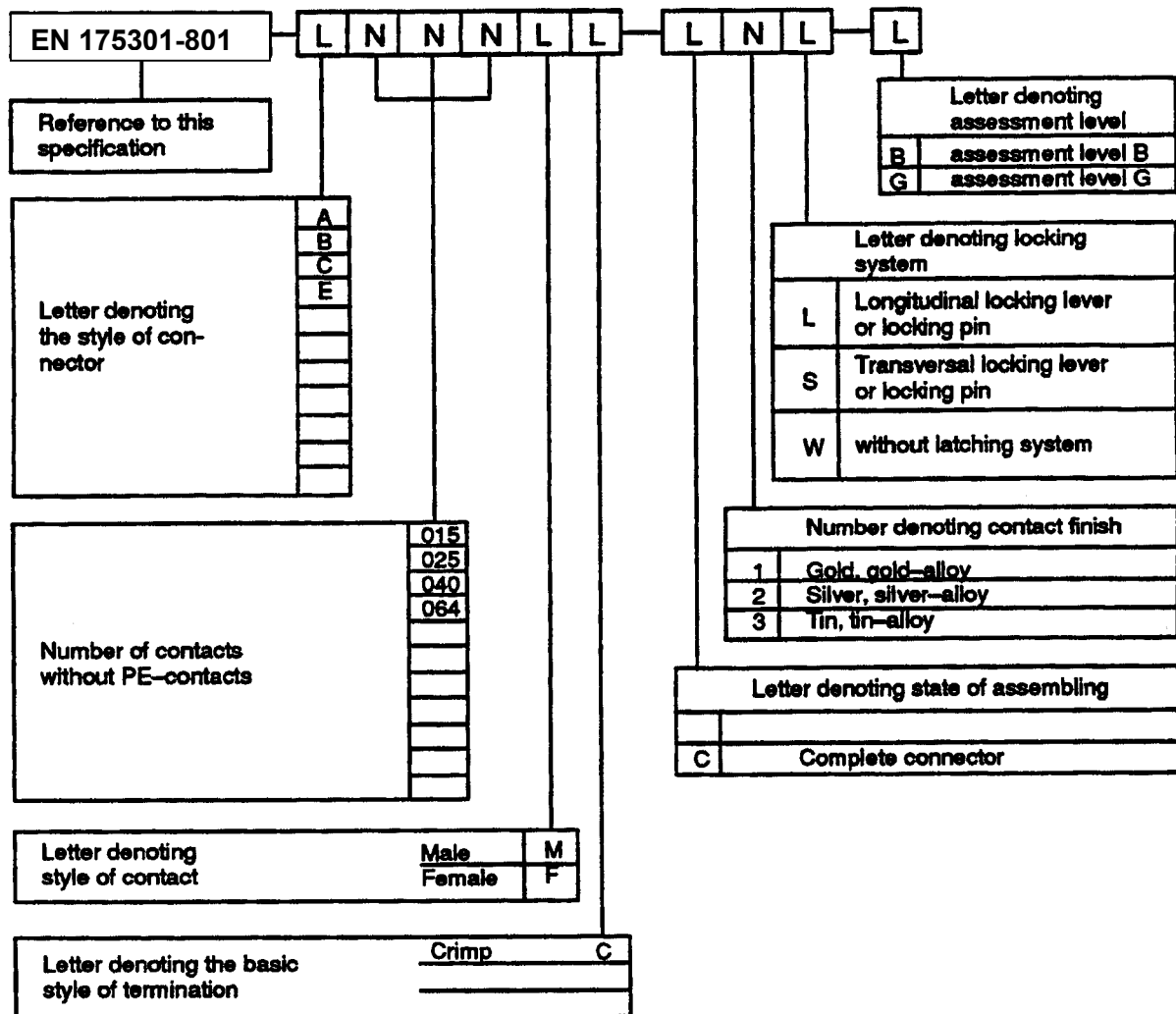
2 Normative references

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.

EN 2591	1992	Aerospace series – Elements of electrical and optical connection – Test methods – General
EN 60068-1	1994	Environmental testing – Part 1: General and guidance (IEC 60068-1:1988 + corrigendum October 1988 + A1:1992)
EN 60352-2 A1 A2	1994 1997 2002	Solderless connections – Part 2: Solderless crimped connections – General requirements, test methods and practical guidance (IEC 60352-2:1990 + A1:1996 + A2:2002)
EN 60512	Series	Connectors for electronic equipment – Tests and measurements (IEC 60512 series)
EN 60529 A1	1991 2000	Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989 + A1:1999)
EN 60664-1	2003	Insulation co-ordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests (IEC 60664-1:1992 + A1:2000 + A2:2002)
EN 61076-1 A1	1995 1996	Connectors with assessed quality, for use in d.c., low-frequency analogue and in digital high-speed data applications – Part 1: Generic specification – Capacity approval (IEC 61076-1:1995 + A1:1996)
EN 61076-7-100	2006	Connectors for electronic equipment - Product requirements – Part 7-100: Cable outlet accessories - Detail specification for a metric cable sealing consisting of an integrated part of heavy-duty rectangular or circular connector hoods and a sealing system (IEC 61076-7-100:2006)
EN 61984	2001	Connectors – Safety requirements and tests (IEC 61984-1:2001)
EN ISO 1043-1	2001	Plastics – Symbols and abbreviated terms – Part 1: Basic polymers and their special characteristics (ISO 1043-1:2001)
EN ISO 1043-2	2001	Plastics – Symbols and abbreviated terms – Part 2: Fillers and reinforcing materials (ISO 1043-2:2000)
EN ISO 1302	2002	Geometrical Product Specification (GPS) – Indication of surface texture in technical product documentation (ISO 1302:2002)
EN ISO 6743-4	2001	Lubricants, industrial oils and related products (class L) – Classification – Part 4: Family H (Hydraulic systems) (ISO 6743-4:1999)
EN ISO 11469	2000	Plastics – Generic identification and marking of plastics products (ISO 11469:2000)
IEC 60410	1973	Sampling plans and procedures for inspections by attributes

3 Type designation

Connectors, performance level and assessment level according to this specification shall be designated by the following system:



Note "L" stands for letter
"N" stands for number

Examples: Connector style E, having 15 male contacts with silver alloy contact finish with crimp terminations. Complete connector without latching system and with assessment level G:
EN 175301-801-E015MC-C2W-G.

Connector style A, having 25 female contacts with silver alloy contact finish with crimp termination. Complete connector with latching system L and assessment level B:
EN 175301-801-A025FC-C2L-B.

4 Common features

4.1 Isometric view

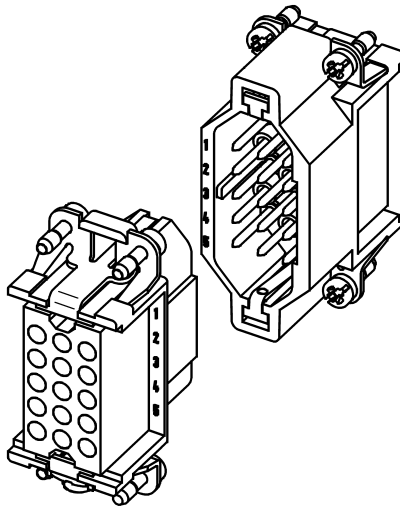
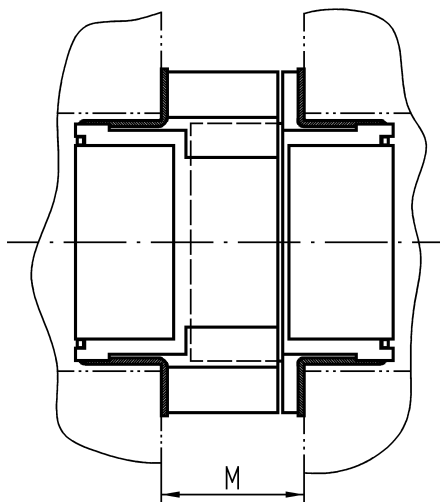


Figure 1 – Isometric view

4.2 Mating information

4.2.1 Plug-in direction

The specified contact resistance must be maintained on a mated pair, within the limits of the dimensions specified.



Specified contact resistance must also be met, if the fixed and free connectors could be engaged below dimension M = 19,5 mm resp. 22,3 mm.

Figure 2 – Plug-in direction

Table 1 – Plug-in direction – Dimensions

No. of contacts	M mm
15 + PE, 25 + PE	22,3 to 24
40 + PE, 64 + PE	19,5 to 21

4.2.2 Perpendicular to plug-in direction

The design of the connectors is such that a displacement of at least 0,5 mm in transversal and longitudinal direction of the connectors can be accommodated, to achieve necessary alignment of both parts if one part to the connector pairs is float mounted.

For fixed mounted connector pairs, the mounting must be kept accordingly in a sufficient small range.

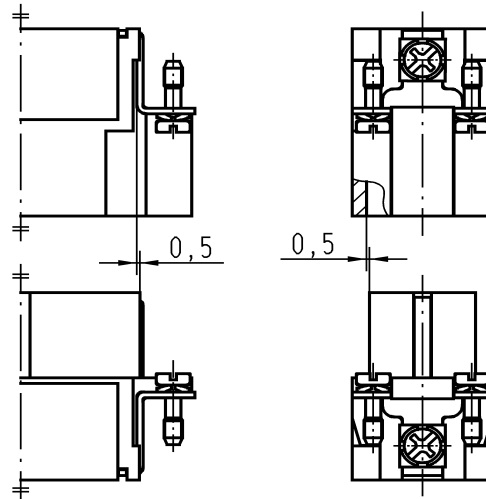


Figure 3 – Perpendicular to plug-in direction

4.2.3 Inclination

The design of the free and fixed connectors is such to allow for a misalignment of $\pm 5^\circ$ in longitudinal axis and $\pm 2^\circ$ in transverse axis. In the mated position the condition according to 4.2.1 must be met.

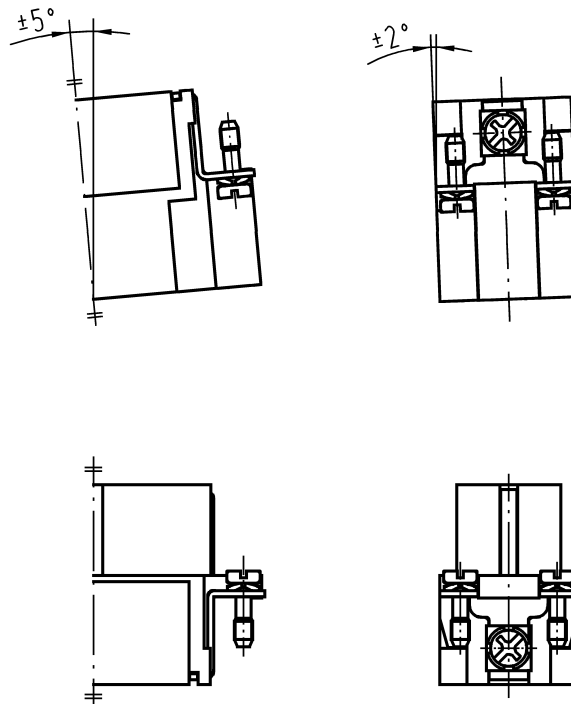


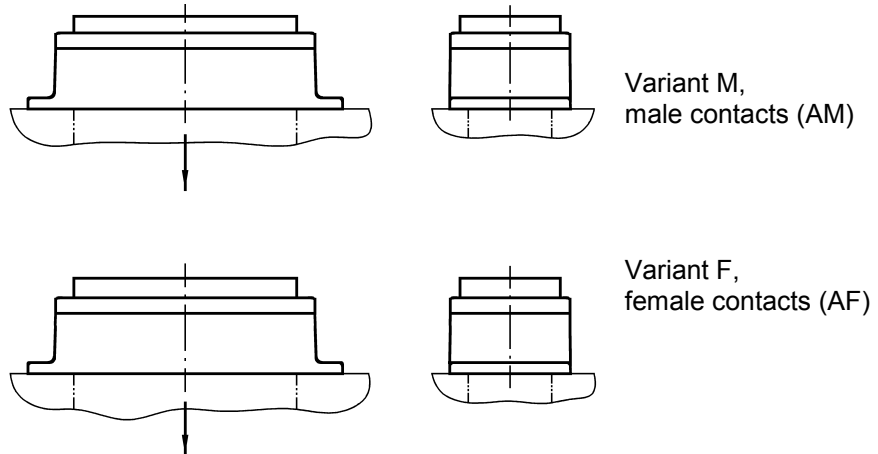
Figure 4 – Inclination

4.3 Survey of styles

Number of contacts: 15 + PE; 25 + PE; 40 + PE; 64 + PE

4.3.1 Fixed connector

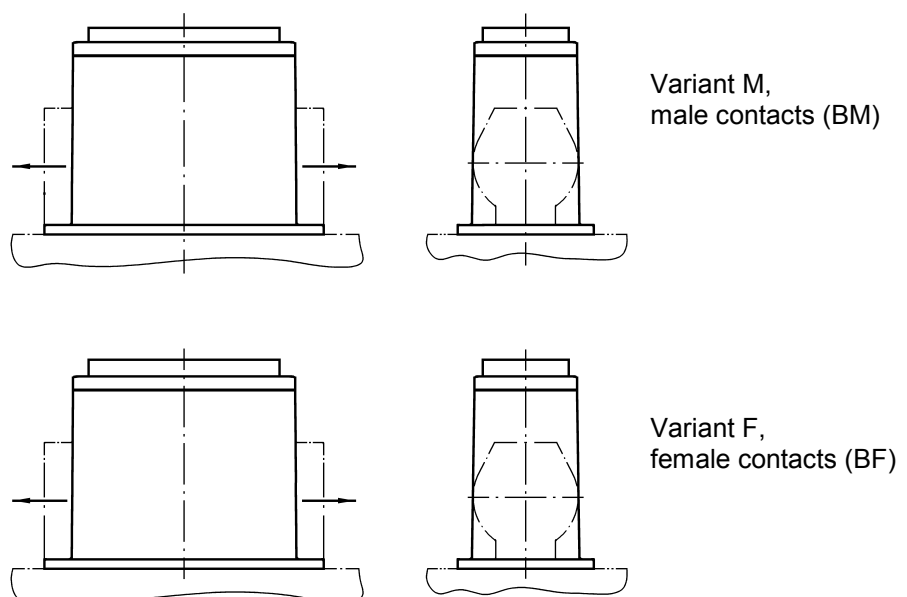
Style A
Bulkhead mounting
receptacle ¹⁾



¹⁾ Alternatively with cover or hinged cover.

Figure 5 – Fixed connector – Style A

Style B
Box mounting
receptacle ^{1) 2)}



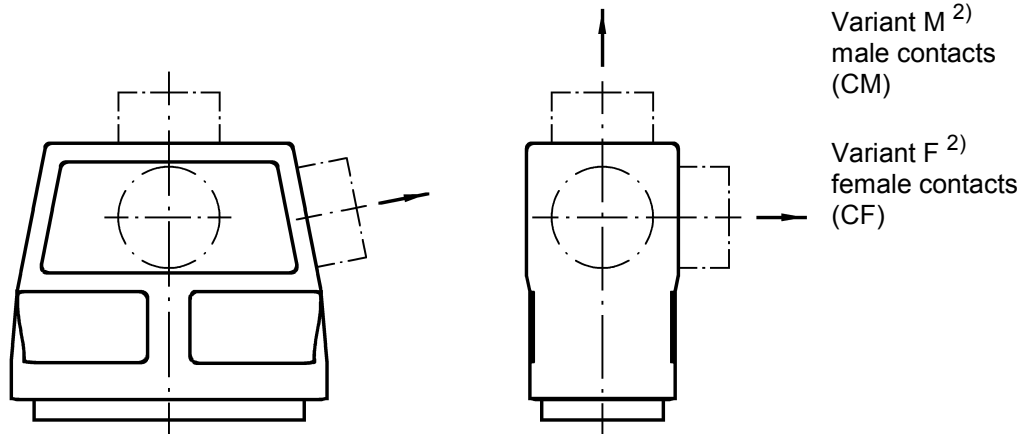
¹⁾ Alternatively with cover or hinged cover.

²⁾ Cable outlet alternatively.

Figure 6 – Fixed connector – Style B

4.3.2 Free connector

Style C ¹⁾
straight plug



¹⁾ Cable outlet alternatively.

²⁾ Outside view of variant M and F are identical.

Figure 7 – Free connector – Style C

Style E
connector insert

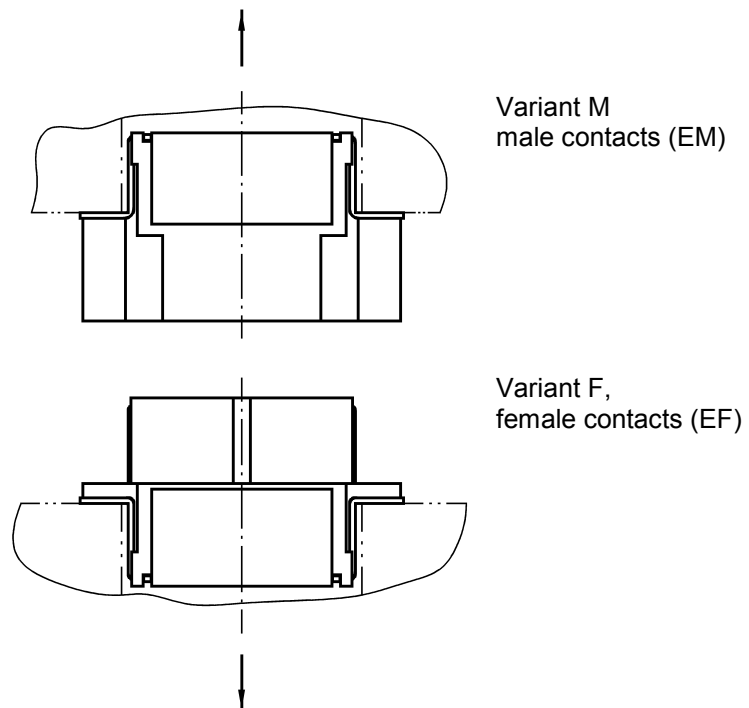


Figure 8 – Free connector – Style E

5 Dimensions

5.1 General

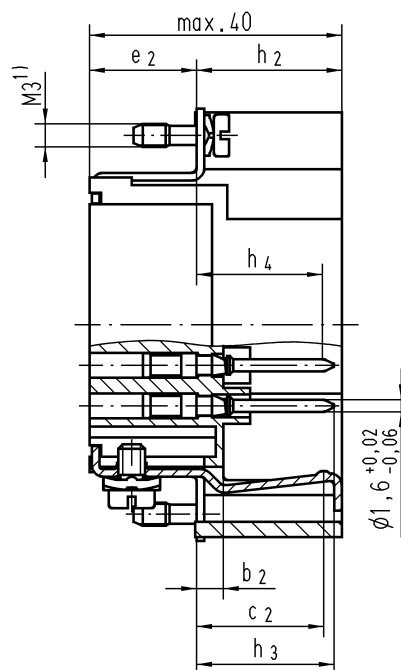
Dimensions in mm are original. Drawings are shown in the first angle projection. The shape of the connectors may deviate from those given in the following drawings as long as the specified dimensions are not influenced.

Missing dimensions shall be chosen according to common characteristics and the intended use.

5.2 Connector with male contacts

Relevant dimensions shall be suitable for mounting dimensions according to 5.8.

Connector insert: Variant M (all styles)



1) Mounting screws undetachable.

Figure 9 – Connector with male contacts – Dimensions

Table 2 – Connector with male contacts – Dimensions

Number of contacts	b_2 max.	c_2 min.	e_2 min.	h_2 max.	h_3 max.	h_4 min.
15 + PE 25 + PE	3,8	16,5	12	19,2	18	15,4
40 + PE 64 + PE	0,9	13,5	15,3	15,6	14,8	12,2
NOTE Dimensions are in mm.						