

Connectors for electronic equipment — Product requirements —

**Part 3-104: Detail specification for
8-way, shielded free and fixed
connectors for data transmissions with
frequencies up to 1 000 MHz**

The European Standard EN 61076-3-104:2006 has the status of a
British Standard

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National foreword

This British Standard was published by BSI. It is the UK implementation of EN 61076-3-104:2006. It is identical with IEC 61076-3-104:2006. It supersedes BS EN 61076-3-104:2003 which is withdrawn.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.

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**Connectors for electronic equipment -
Product requirements
Part 3-104: Detail specification for 8-way, shielded free
and fixed connectors for data transmissions
with frequencies up to 1 000 MHz
(IEC 61076-3-104:2006)**

Connecteurs pour équipements
électroniques -
Exigences de produit
Partie 3-104: Spécification particulière
pour connecteurs blindés à 8 voies ,
socle et fiche, pour transmissions
de données, pour fréquences
jusqu'à 1000 MHz
(CEI 61076-3-104:2006)

Steckverbinder für elektronische
Einrichtungen -
Produktanforderungen
Teil 3-104: Bauartspezifikation
für geschirmte freie und
feste Steckverbinder, 8polig,
für Datenübertragungen
bis 1000 MHz
(IEC 61076-3-104:2006)

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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

The text of document 48B/1678/FDIS, future edition 2 of IEC 61076-3-104, prepared by SC 48B, Connectors, of IEC TC 48, Electromechanical components and mechanical structures for electronic equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61076-3-104 on 2006-10-01.

This European Standard supersedes EN 61076-3-104:2003.

Changes from EN 61076-3-104:2003 include editorial changes throughout the standard and:

- an increase of upper frequency from 600 MHz to 1 000 MHz;
- changes to the characteristics clause (Clause 6) and test schedules clause (Clause 7) to align the document with test schedules of EN 60603-7 series documents.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2007-07-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2009-10-01

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Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61076-3-104:2006 was approved by CENELEC as a European Standard without any modification.

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CONNECTORS FOR ELECTRONIC EQUIPMENT – PRODUCT REQUIREMENTS –

Part 3-104: Detail specification for 8-way, shielded free and fixed connectors for data transmissions with frequencies up to 1000 MHz

1 General

1.1 Scope

This part of IEC 61076 establishes uniform specifications, type testing requirements and quality assessment procedures for 8-way, shielded free and fixed connectors for data transmissions with frequencies up to 1 000 MHz, and intended to be used within cabling for information and communications technology, home entertainment and multimedia. It contains a choice of all test methods and sequences, severity and preferred values for dimensions and characteristics.

1.2 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.

IEC 60050-581, *International Electrotechnical Vocabulary. Electromechanical components for electronic equipment*

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

IEC 60068-2-6, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60169-16, *Radio-frequency connectors. Part 16: R.F. coaxial connectors with inner diameter of outer conductor 7 mm (0.276 in) with screw coupling – Characteristic impedance 50 ohms (75 ohms) (Type N)*

IEC 60352 (all parts), *Solderless connections*

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

IEC 60512-1-100, *Connectors for electronic equipment – Tests and measurements – Part 1-100: General – Applicable publications*

IEC 60603-7, *Connectors for frequencies below 3 MHz for use with printed boards – Part 7: Detail specification for connectors, 8-way, including fixed and free connectors with common mating features, with assessed quality*

IEC 61076-1:2006, *Connectors for electronic equipment – Product requirements – Part 1: Generic specifications*

IEC 61156-2, *Multicore and symmetrical pair/quad cables for digital communications – Part 2: Horizontal floor wiring – Sectional specification*

IEC 61156-3, *Multicore and symmetrical pair/quad cables for digital communications – Part 3: Work area wiring – Sectional specification*

IEC 61156-4, *Multicore and symmetrical pair/quad cables for digital communications – Part 4: Riser cables – Sectional specification*

IEC 61156-5, *Multicore and symmetrical pair/quad cables for digital communications – Part 5: Symmetrical pair/quad cables with transmission characteristics up to 600 MHz – Horizontal floor wiring – Sectional specification*

IEC 61196, *Coaxial communication cables*

ISO/IEC 11801, *Information technology – Generic cabling for customer premises*

EN 50289-1-14, *Communication cables – Specifications for test methods – Part 1-14: Electrical test methods – Coupling attenuation or screening attenuation of connecting hardware*

ISO 1302, *Geometrical Product Specifications (GPS) – Indication of surface texture in technical product documentation*

ITU-T G.117, *Transmission aspects of unbalance about earth*

ITU-T O.9, *Measuring arrangements to assess the degree of unbalance about earth*

2 Technical information

This detail specification covers connectors intended for use in cabling for information and communications technology, home entertainment and multimedia.

2.1 Terminology

2.1.1 General

The terminology used in and applicable to this specification is stated in 2.1 of IEC 61076-1. Some applicable terms are also covered in IEC 60512-1. (For definitions of terms used, refer to IEC 60050-581.)

2.1.2 Transmission performance categories

In this IEC standard, the term “category”, when used in reference to transmission performance, refers to those categories defined by ISO/IEC 11801:2002.

2.1.3 Interchangeability level

2.1.3.1 General

These connectors interchangeably insofar as the intermateability and interoperability requirements herein are ensured for mated connectors when individual connector halves are from different sources.

2.1.3.2 Intermateability

Intermateability is ensured by applying the “Go” and “No-Go” gauge requirements herein, and adherence to dimensional requirements herein.

2.1.3.3 Interoperability

Interoperability of different IEC 61076-3-104 connectors is assured by compliance with all transmission requirements when the connector is mated with the respective “test” connector as described in Annex C.

2.2 Groups of related connectors

Groups of connectors within a subfamily having common features. Typical examples are same type and range but different style. A group of related connectors is covered by a single detail specification.

Type: Connectors within a particular subfamily such as a multicontact connector with one, two or four pairs.

Range: The housing (shell) sizes and contacts arrangements within a type. For example, a housing containing one, two or four pairs.

Style: A particular connector within a type, for example fixed panel, PCB or free connector.

Variant: Variations within a type, style or range.

2.3 Interchangeability level

These connectors shall be fully interchangeable and intermateable. The mechanical and electrical characteristics shall be met whatever the source of the connector is. Elements of connecting hardware, e.g. plugs, sockets that terminate more than one cable are permitted.

The plug/socket interface may be constructed so as to permit the use of multiple modules e.g. 2×2 pairs or 4×1 pair plugs mated directly with a single 4 pairs socket.

2.4 IEC type designation

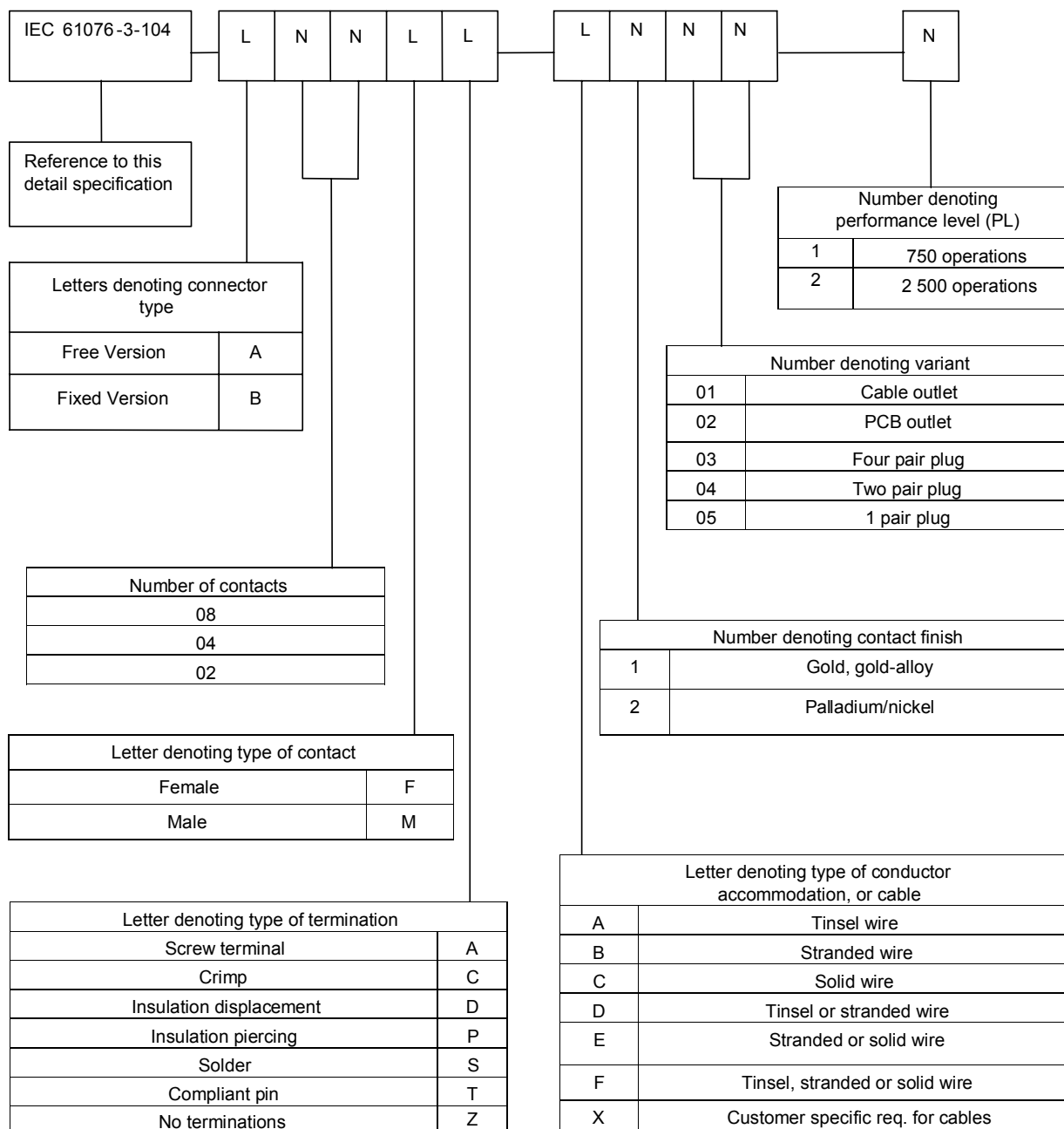
Connectors, connector bodies and connectors with pre-inserted contacts according to this detail specification shall be designated by the following system.

Connectors conforming to this standard shall be identified by the following indications and in the order given:

The letters "IEC".

The number denoting this detail specification.

The number of the detail specification (without dashes), being nine characters (e.g. IEC 610763104-B08S-C101-2 Shielded connector, fixed version B, having 8 female contacts, solder termination, solid wire, gold, cable outlet, 250 operations)).



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

3 Isometric views and common features

3.1 General

Original dimensions are in millimetres except where noted.

3.2 Isometric views

3.2.1 General

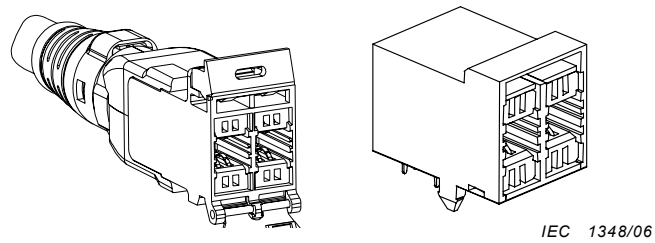


Figure 1 – Isometric view of cable and PCB fixed connectors

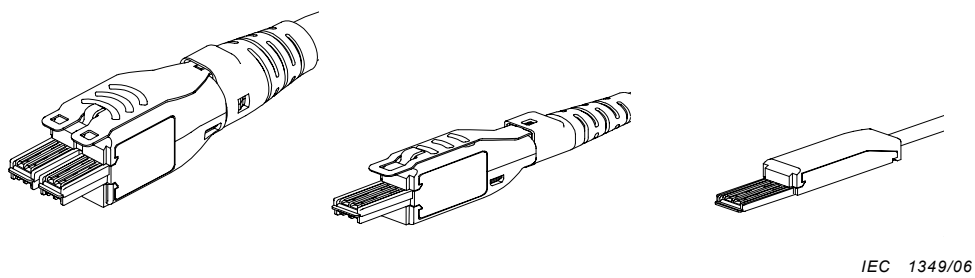


Figure 2 – Isometric view of 4, 2 and 1 pair free connectors

3.2.2 Fixed connector variant 01 (cable outlet) drawings

Third angle projection

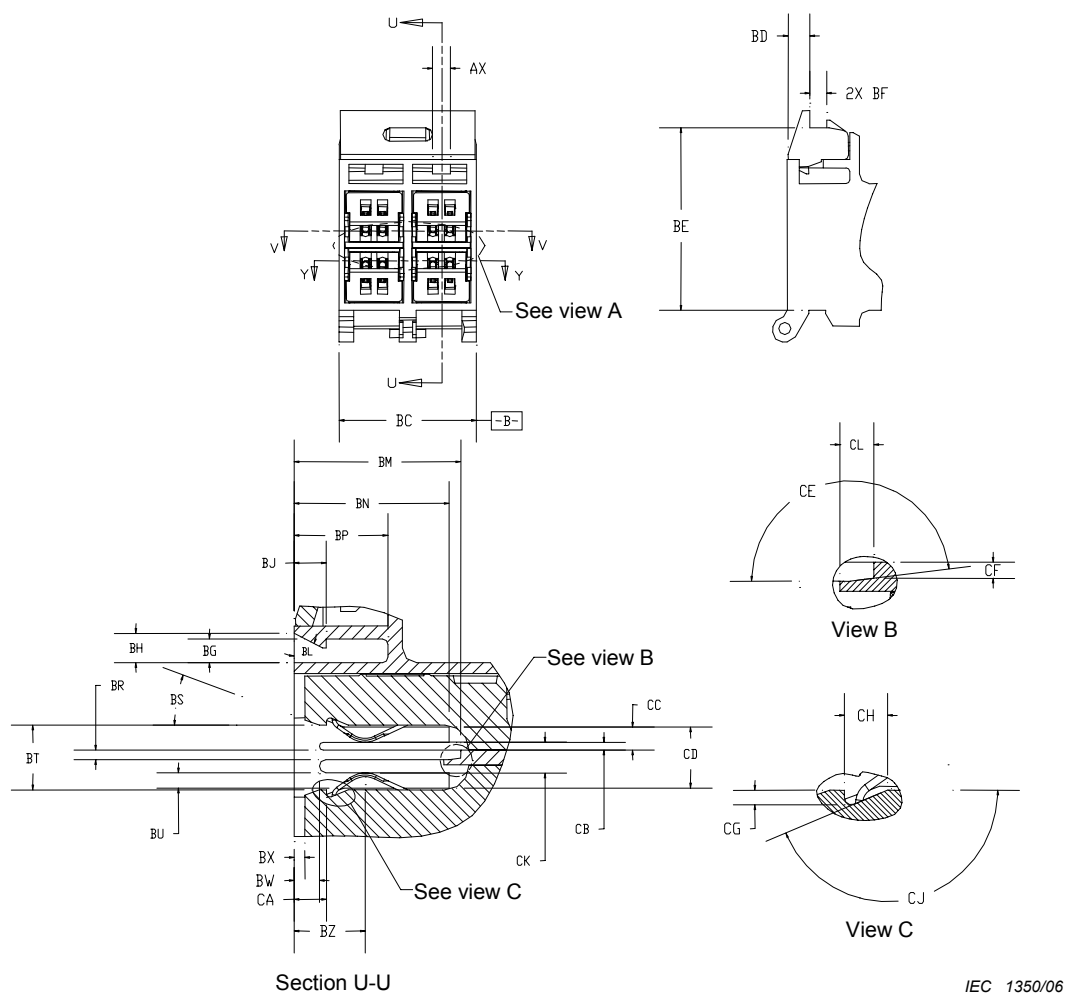


Figure 3 – Variant 01 drawing 1

Table 1 – Variant 01 drawing 1 dimensions*Dimensions in millimetres*

	Nominal	Maximum	Minimum
AX	1,91	1,98	1,83
BC	14,48	14,61	14,35
BD	2,39	2,54	2,24
BE	19,05	19,20	18,90
BF	1,78	1,85	1,70
BG	1,65	1,88	1,42
BH	2,03	2,18	1,88
BJ	2,26	2,34	2,18
BK	70°	73°	67°
BL	63°	66°	60°
BM	11,73	11,79	11,68
BN	10,92	11,00	10,85
BP	6,60	6,68	6,53
BR	0,66	0,71	0,61
BS	20°	23°	17°
BT	4,55	4,80	4,29
BU	10,07	1,12	1,02
BW	1,78	1,85	1,70
BX	0,79	0,99	0,69
BZ	5,21	5,41	5,00
CA	2,31	2,59	2,03
CB	0,57	0,75	0,39
CC	1,61	1,66	1,56
CD	4,24	4,29	4,19
CE	7°	8°	6°
CF	0,56	0,58	0,53
CG	0,51	0,58	0,43
CH	1,52	1,65	1,40
CJ	23°	24°	18°
CK	2,16	2,46	1,85
CL	1,19	1,24	1,14

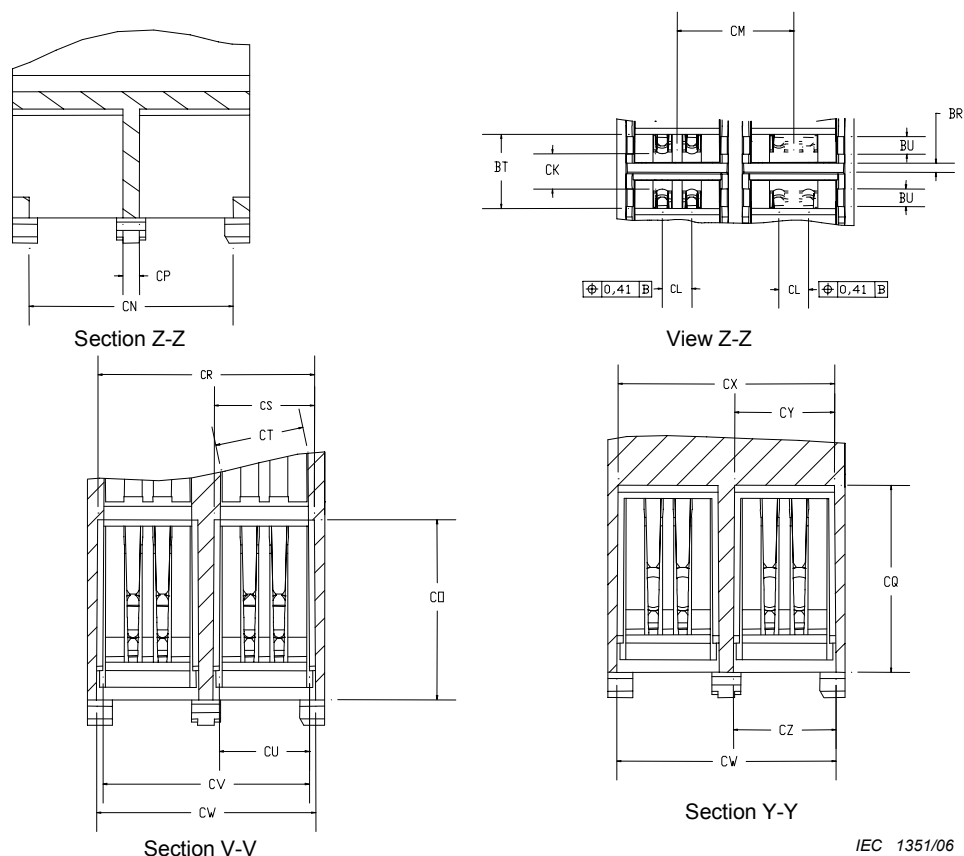


Figure 4 – Variant 01 drawing 2

Table 2 – Variant 01 drawing 2 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
CK	2,21	2,34	2,08
CL	1,78		
CM	7,11		
CN	12,45	12,57	12,32
CP	0,76	0,84	0,69
CR	13,21	13,26	13,16
CS	6,10	6,15	6,05
CT	5,33	5,38	5,28
CU	5,49	5,51	5,46
CV	12,60	12,65	12,55
CW	13,36	13,41	13,31
CX	13,21	13,26	13,16
CY	6,10	6,15	6,05
CZ	5,49	5,51	5,46
CQ	11,73	11,79	11,68
CO	10,92	11,00	10,85

3.2.3 Fixed connector variant 02, Printed Circuit Board (PCB) outlet drawing

Third angle projection

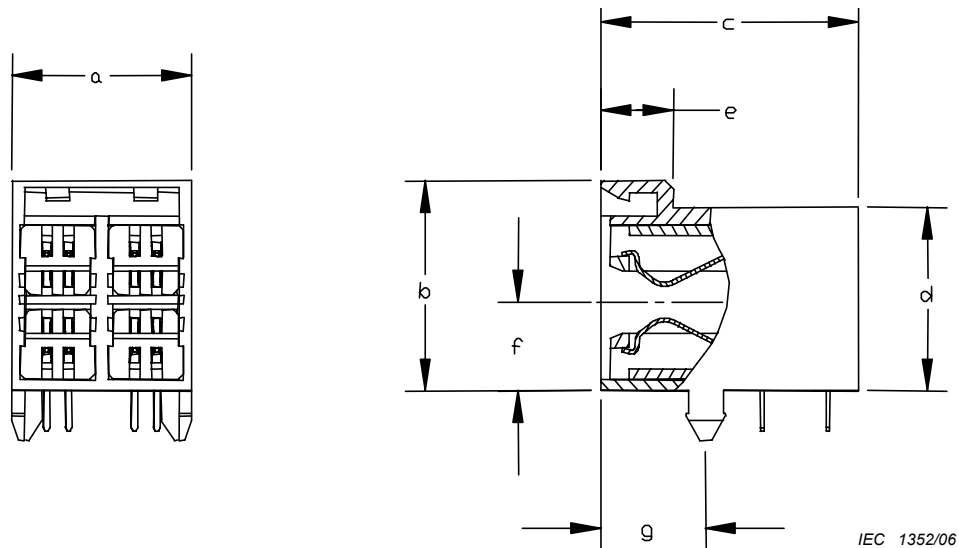


Figure 5 – Variant 02 drawing

Table 3 – Variant 02 drawing dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
A	14,48	14,55	14,40
B	15,75	15,88	15,62
C	20,78	20,85	20,70
D	13,72	13,84	13,59
E	5,84	5,97	5,72
F	6,63	6,73	6,53
G	8,46	8,53	8,38

NOTE See Figure 3 and 4 for internal dimensions.

3.2.4 Free connector (plug) dimensions

3.2.4.1 Free connector variant 03 (4-pair plug) drawings

Third angle projection

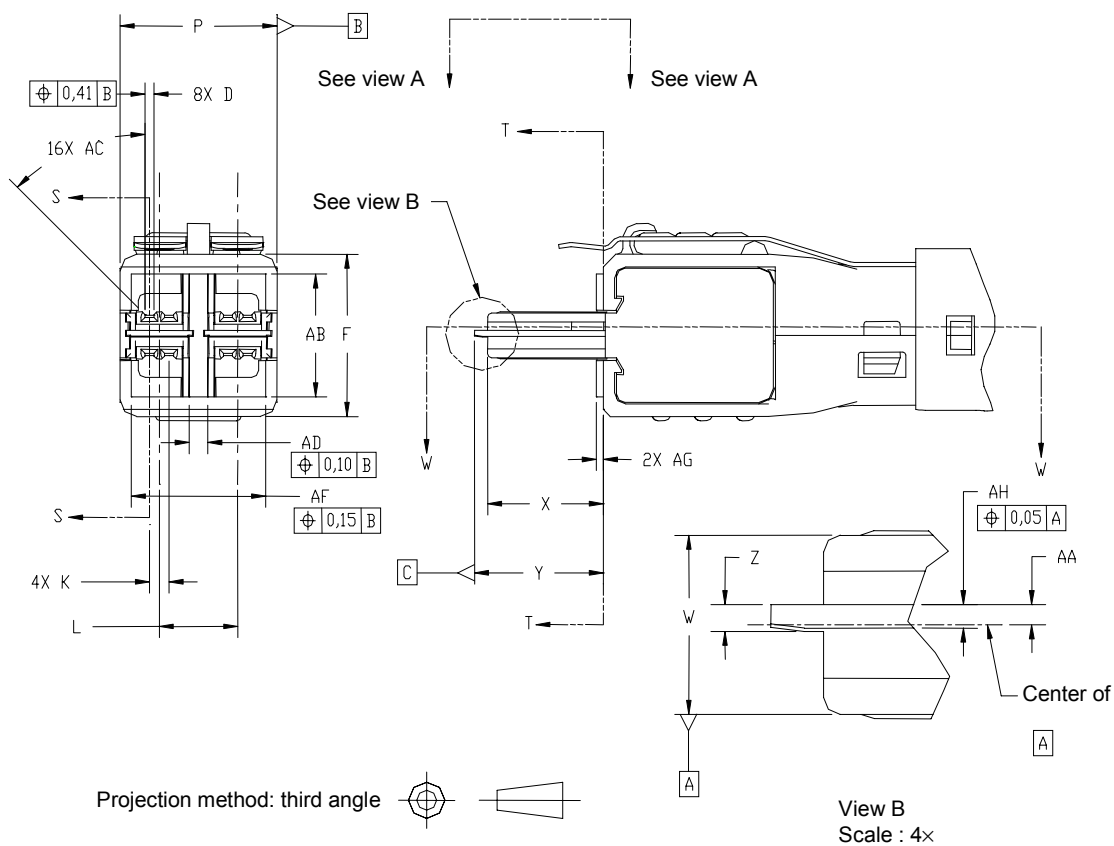


Figure 6 – Variant 03 drawing 1

Table 4 – Variant 03 drawing 1 dimensions*Dimensions in millimetres*

	Nominal	Maximum	Minimum
D ^a	0,81	0,86	0,76
F	14,73	14,88	14,58
K	1,78		
L	7,11		
P	14,22	14,35	14,10
W	4,06	4,11	4,01
X	10,49	10,67	10,31
Y	11,68	11,86	11,51
Z	0,61	0,64	0,58
AA	0,46	0,48	0,43
AB	11,18	11,48	10,87
AC	45°	46°	44°
AD	1,70	1,75	1,65
AF	12,12	12,32	12,07
AG	0,64	0,71	0,56
AH	0,53	0,58	0,48
^a Dimension D is the same as ES in Figure 10 and GS in Figure 13.			

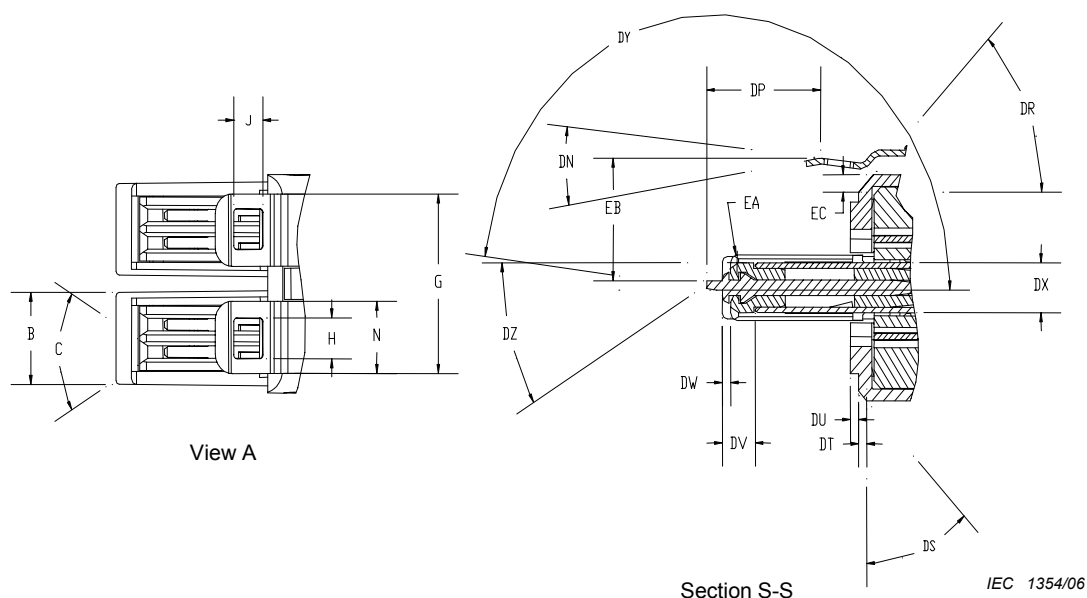


Figure 7 – Variant 03 drawing 2

Table 5 – Variant 03 drawing 2 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
B	5,99	6,05	5,94
C	60°	62°	58°
G	11,68	11,81	11,56
H	2,67	2,74	2,59
J	2,26	2,39	2,13
N	4,70	4,80	4,60
DN	15°	18°	12°
DP	9,12	9,45	8,79
DR	45°	46°	44°
DS	45°	46°	44°
DT	0,64	0,76	0,51
DU	0,64	0,71	0,56
DV	2,54	2,67	2,41
DW	0,64	0,76	
DX	3,25	3,48	3,02
DY	7°	8°	6°
DZ	30°	31°	29°
EA	R 0,51	R 0,66	R 0,38
EB	7,98		
EC	1,14	1,27	1,02

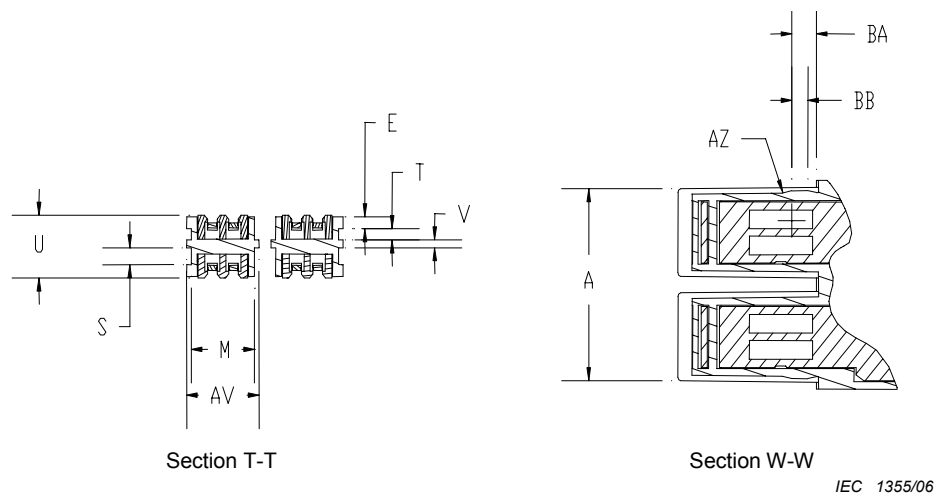


Figure 8 – Variant 03 drawing 3

Table 6 – Variant 03 drawing 3 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
A	13,11	13,16	13,06
E	0,81	0,86	0,76
M	5,41	5,46	5,36
S	1,14	1,22	1,07
T	0,76	0,84	0,69
U	4,27	4,60	3,94
V	0,53	0,58	0,48
AV	6,20	6,25	6,15
AZ	R 2,03	R 2,11	R 1,96
BA	2,34	2,41	2,26
BB	1,37	1,55	1,19

3.2.4.2 Free connector variant 04 (2-pair plug) drawings

Third angle projection

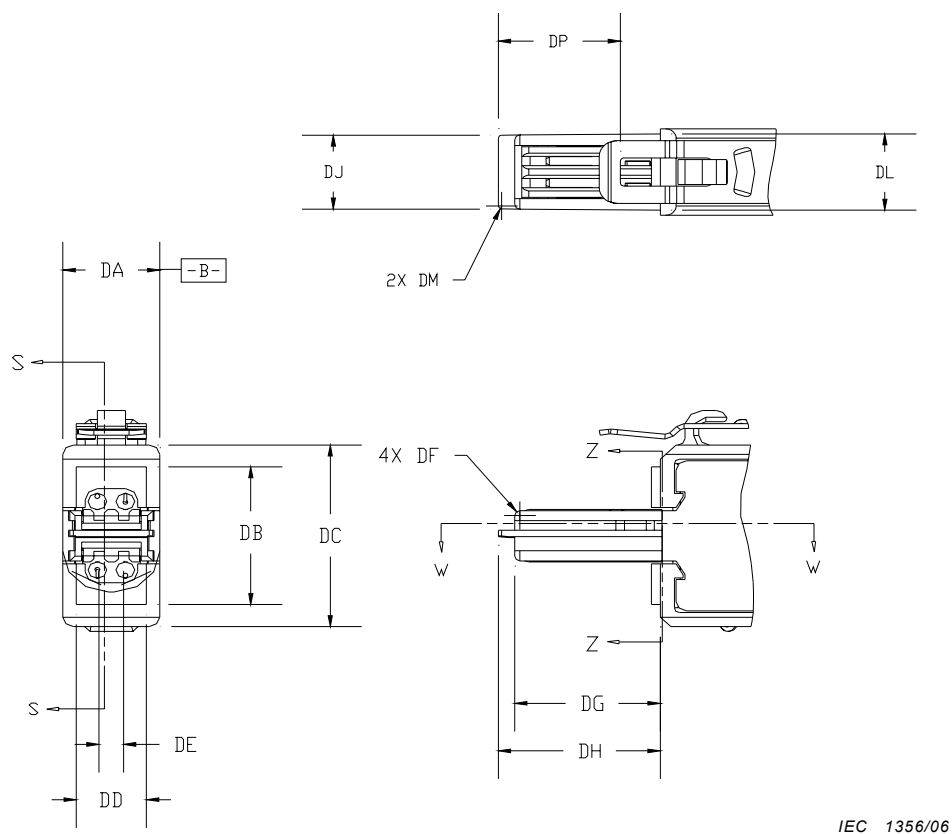
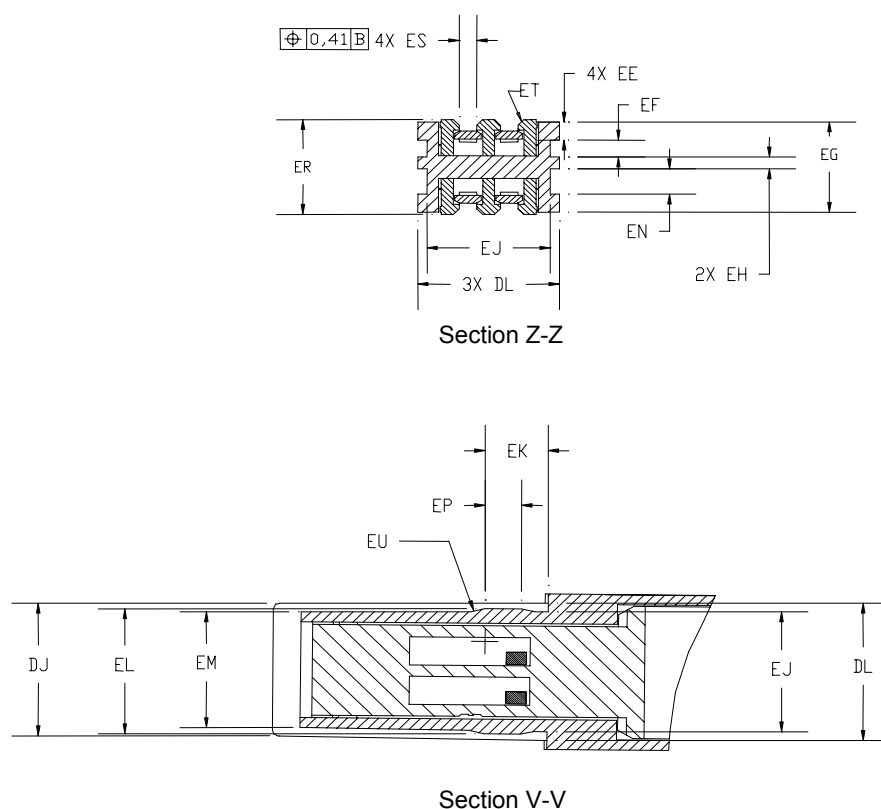


Figure 9 – Variant 04 drawing 1

Table 7 – Variant 04 drawing 1 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
DA	7,01	7,14	6,88
DB	11,18	11,48	10,87
DC	14,73	14,88	14,58
DD	5,08	5,21	4,95
DE	1,78	1,88	1,68
DF	R 0,38	R 0,46	R 0,30
DG	10,49	10,67	10,31
DH	11,68	11,86	11,51
DJ	5,99	6,05	5,94
DK	60°	62°	58°
DL	6,20	6,25	6,15
DM	0,25	0,30	0,20



IEC 1357/06

Figure 10 – Variant 04 drawing 2

Table 8 – Variant 04 drawing 2 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
EE	0,81	0,86	0,76
EF	0,76	0,84	0,69
EG	4,06	4,11	4,01
EH	0,53	0,58	0,48
EJ	5,41	5,46	5,36
EK	2,34	2,41	2,26
EL	5,64	5,69	5,61
EM	5,23	5,28	5,16
EN	1,14	1,22	1,07
EP	1,37	1,55	1,19
ER	4,27	4,60	3,94
ES ^a	0,81	0,86	0,76
ET	45°X0,25	46°X0,38	44°X0,13
EU	R 2,03	R2,11	R1,96

^a Dimension ES is the same as D in Figure 6 and GS in Figure 13

3.2.4.3 Free connector variant 05 (1-pair plug) drawings

Third angle projection

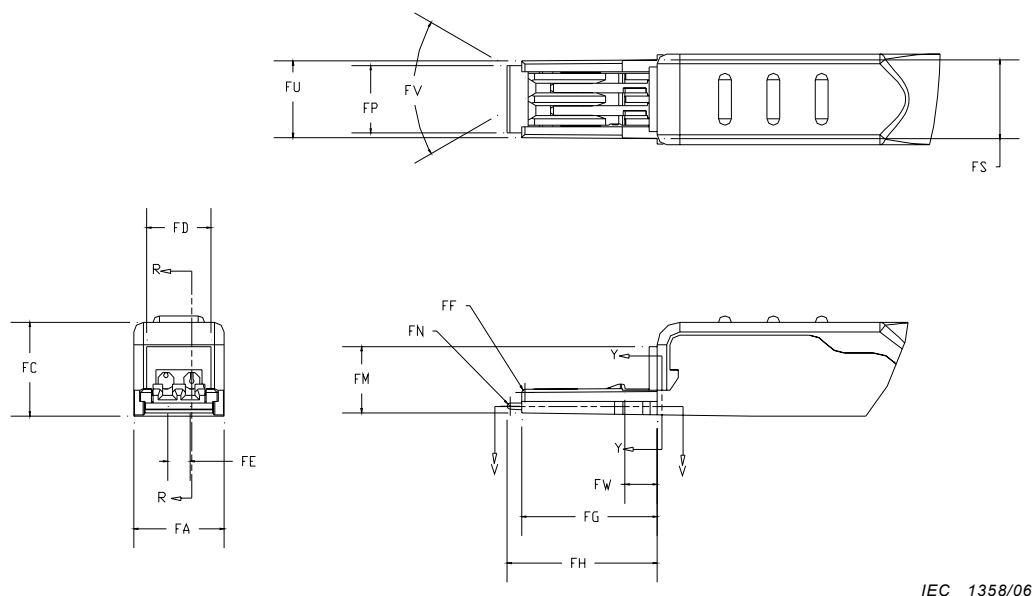


Figure 11 – Variant 05 drawing 1

Table 9 – Variant 05 drawing 1 dimensions*Dimensions in millimetres*

	Nominal	Maximum	Minimum
FA	7,11	7,19	7,06
FC	7,37	7,45	7,29
FD	5,08	5,21	4,95
FE	1,78		
FF	R 0,25	R0,33	R 0,18
FG	10,67	10,67	10,62
FH	11,81	11,81	11,71
FK	45°	46°	44°
FL	1,14	1,27	1,02
FM	5,72	5,80	5,64
FN	R 0,23	R 0,31	R 0,15
FP	5,28	5,33	5,23
FR	R 0,25	R 0,33	R 0,18
FS	6,20	6,25	6,15
FU	6,02	6,11	5,93
FV	60°	62°	58°
FW	2,36	2,49	2,24

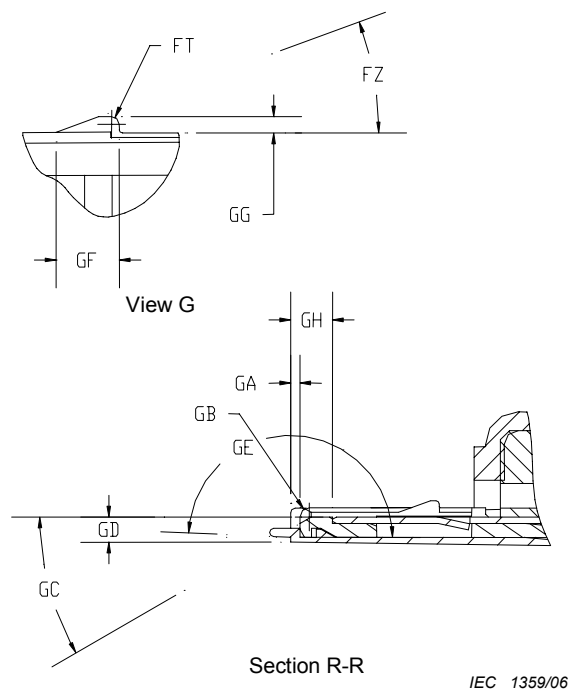


Figure 12 – Variant 05 drawing 2

Table 10 – Variant 05 drawing 2 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
FT	R 0,18	R 0,30	R 0,05
FZ	20°	21°	19°
GA	0,66	0,76	0,56
GB	R 0,51	R 0,64	R 0,38
GC	30°	31°	29°
GD	1,63	1,78	1,47
GE	177,5°	178,5°	176,5°
GF	1,52	1,65	1,40
GG	0,38	0,46	0,30
GH	2,44	2,54	2,34

Third angle projection

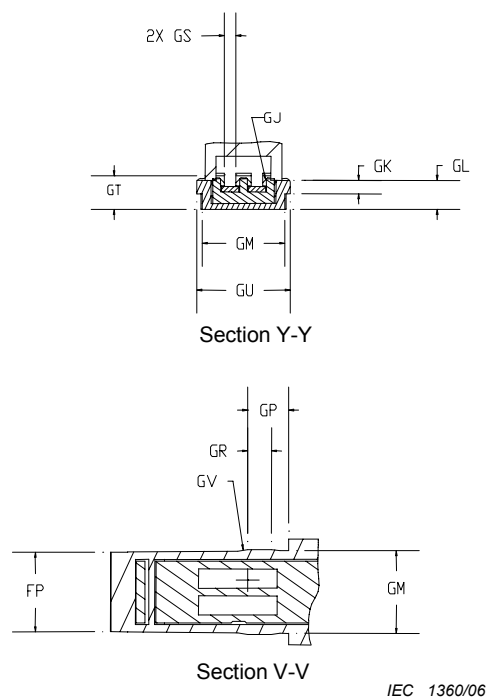


Figure 13 – Variant 05 drawing 3

Table 11 – Variant 05 drawing 3 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
GJ	45°X0,25	46°X0,38	44°X0,13
GK	0,97	1,07	0,86
GL	2,11	2,21	2,01
GM	5,49	5,56	5,41
GP	2,34	2,41	2,26
GR	1,37	1,55	1,19
GS ^a	0,81	0,86	0,76
GT	2,13	2,34	1,93
GU	6,03	6,07	5,97
GV	R 2,03	R 2,11	R 1,96

^a Dimension GS is the same as D in Figure 6 and ES in Figure 10.