

Connectors for electronic equipment —

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

The European Standard EN 61076-3-104:2003 has the status of a
British Standard

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National foreword

This British Standard is the official English language version of EN 61076-3-104:2003. It is identical with IEC 61076-3-104:2003.

The UK participation in its preparation was entrusted by Technical Committee EPL/48, Eletromechanical components and mechanical structures for electronic equipment, to Subcommittee EPL/48/2, Connectors, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 77 and a back cover.

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Connectors for electronic equipment
Part 3-104: Rectangular connectors -
Detail specification for 8-way, shielded free and fixed connectors
for data transmissions with frequencies up to 600 MHz minimum
(IEC 61076-3-104:2003)

Connecteurs pour équipements
électroniques
Partie 3-104 : Connecteurs rectangulaires -
Spécification particulière
pour connecteurs fixes, non blindés,
à 8 voies, pour transmission de données
à des fréquences inférieures
ou égales à 600 MHz
(CEI 61076-3-104:2003)

Steckverbinder für elektronische
Einrichtungen
Teil 3-104: Rechteckige Steckverbinder -
Bauartspezifikation für geschirmte freie
und feste Steckverbinder, 8polig,
für Datenübertragungen bis 600 MHz
(IEC 61076-3-104:2003)

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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.

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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/1303/FDIS, future edition 1 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 2003-07-01.

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) 2004-04-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2006-07-01

The International Electrotechnical Commission (IEC) and CENELEC draw attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning 8-way shielded free and fixed connectors for data transmissions with frequencies up to 600 MHz minimum.

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Annexes designated "normative" are part of the body of the standard.
In this standard, annexes A to M and ZA are normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61076-3-104:2003 was approved by CENELEC as a European Standard without any modification.

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CONNECTORS FOR ELECTRONIC EQUIPMENT –

Part 3-104: Rectangular connectors – Detail specification for 8-way, shielded free and fixed connectors for data transmissions with frequencies up to 600 MHz minimum

1 General

1.1 Scope

This part of IEC 61076 establishes uniform specifications, type testing requirements and quality assessment procedures for 8-way connectors, with up to 4 pairs, for frequencies up to 600 MHz minimum, and intended to be used at different locations 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 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 60512 (all parts), *Connectors for electronic equipment – Tests and measurements*

IEC 60512-1-100:2001, *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 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 61076-1:1995, *Connectors with assessed quality, for use in d.c., low frequency analogue applications and in digital high speed data application – Part 1: Generic specification – Capability approval*

IEC 61156 (all parts), *Multicore and symmetrical pair/quad cables for digital communications*

IEC 61196 (all parts), *Radio-frequency cables*

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



Documents

Document Sharing Hub

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 K.20, *Resistibility of telecommunication equipment installed in a telecommunications centre to overvoltages and overcurrents*

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

CENELEC EN 50289-1-14, *Basic reference standard for communication cables – Specification – Part 1-14 Electrical test methods – Coupling attenuation or screening attenuation of connecting hardware*

2 Marking Information

2.1 IEC type designation

Connectors, connector bodies and connectors with pre-inserted contacts according to this standard 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 61076-3-104 B08 FS-G101-1 Shielded connector, fixed version B, having 8 female contacts, solder termination, board mount));
- a letter denoting the style of the connector (the system shall be specified in the detail specification).

2.2 Marking

Each connector and its associated package shall be marked in accordance with the requirements specified in 2.6 of IEC 61076-1.

2.3 Groups of related connectors

Groups of connectors within a subfamily having common features. Typical examples are of the same type and range but of a 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.

2.4 Interchangeability level

These connectors shall be fully interchangeable and intermateable. The mechanical and electrical characteristics shall be met whatever is the source of the connector. Moreover, it is desirable that the mechanical and electrical compatibility with lower performance connecting hardware as defined in ISO/IEC 11801 and IEC 60603-7 is ensured when connected to this connector.

This can be achieved through the use of an adapter cord. Elements of connecting hardware, for example 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, for example 2 × 2 pairs or 4 × 1 pair plugs mated directly with a single 4 pairs socket.

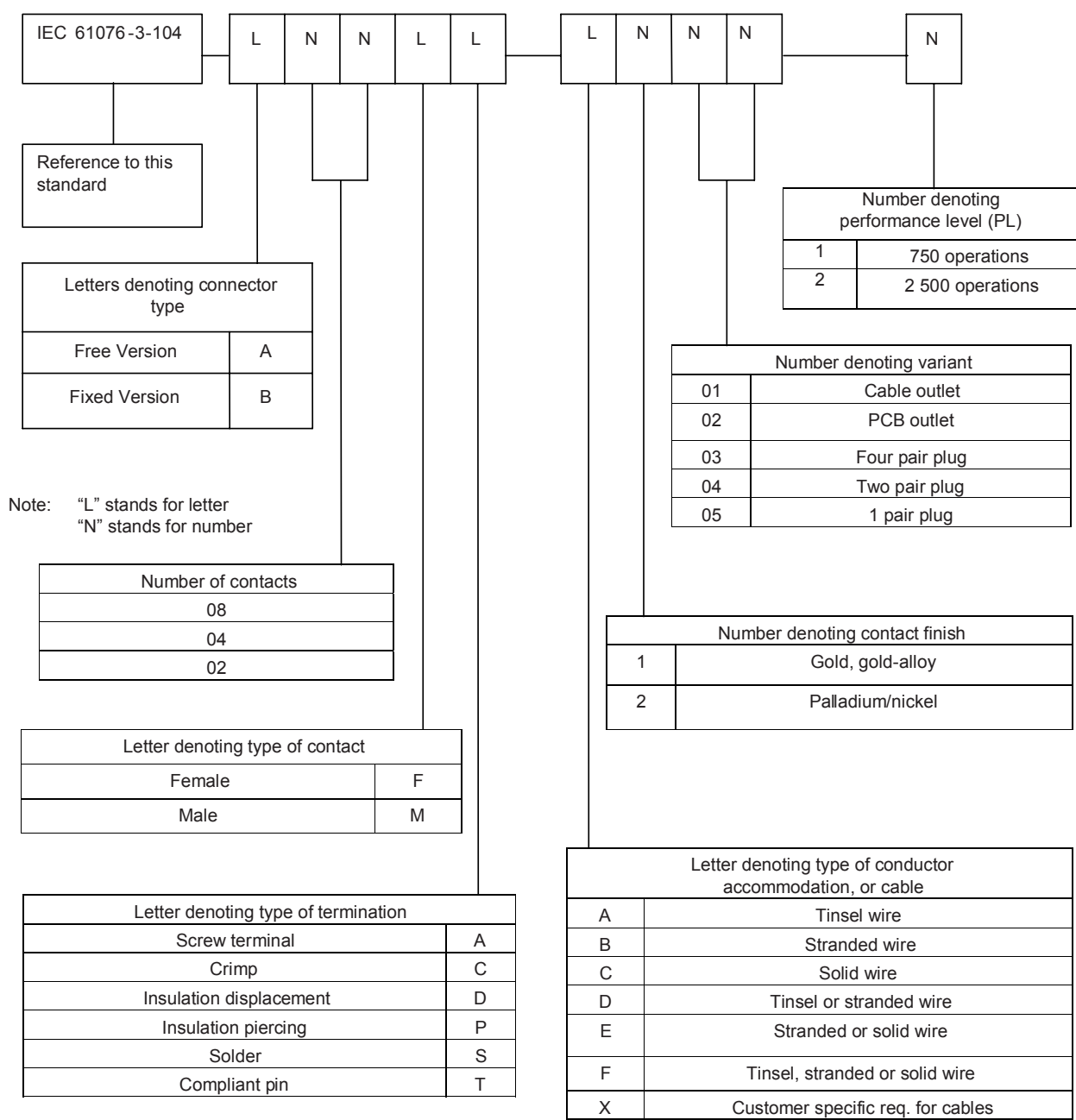


Figure 1 – IEC type designation

2.5 Isometric views and common features

2.5.1 Fixed connector

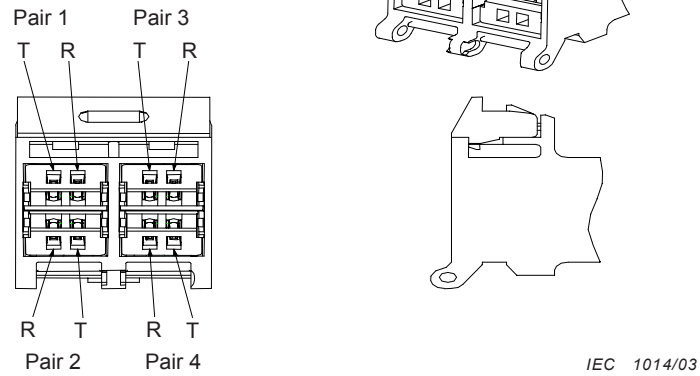


Figure 2 – Fixed connector

2.5.2 Free connector

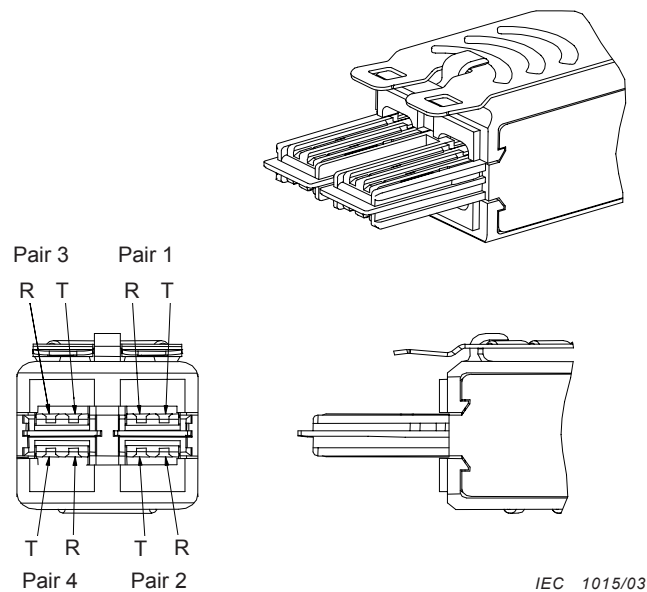


Figure 3 – Free connector

3 Dimensional information

3.1 General

Original dimensions are in millimetres except where noted.

3.2 Free connector (plug)

3.2.1 Free connector isometric views

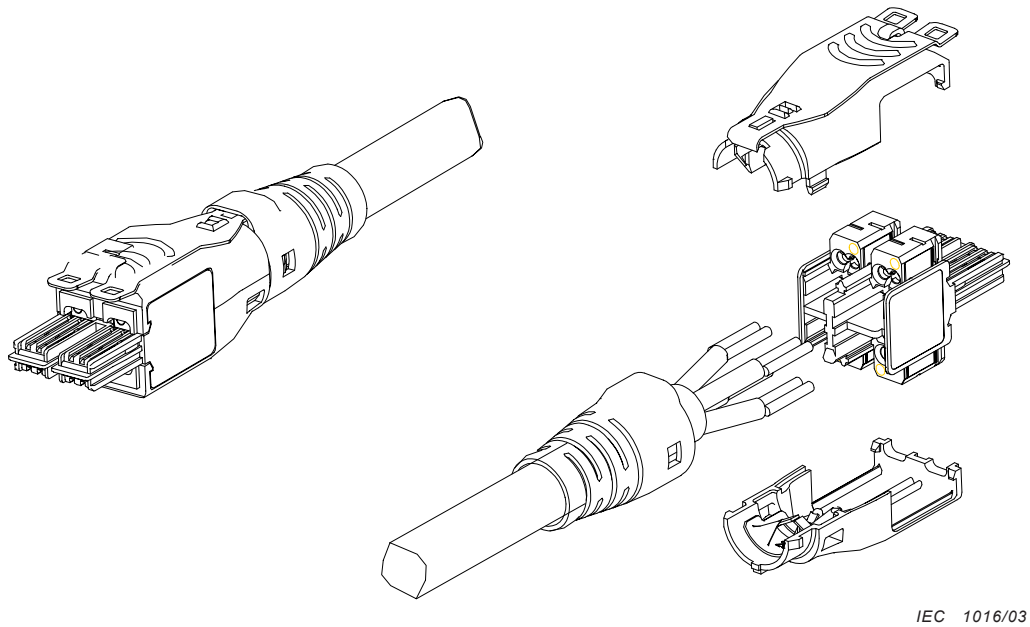


Figure 4 – Variant 03, 4-pair plug

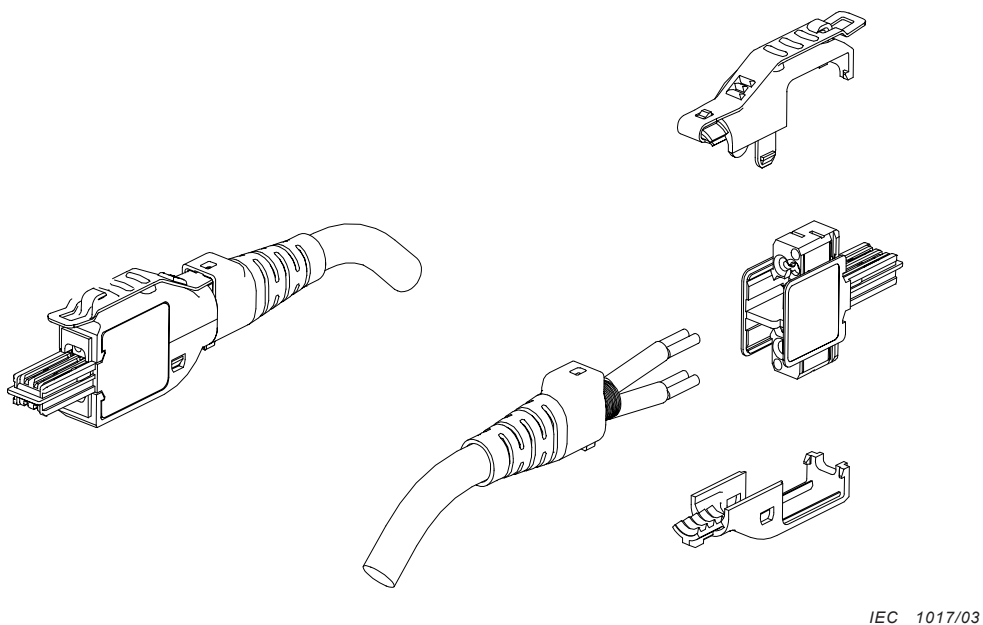
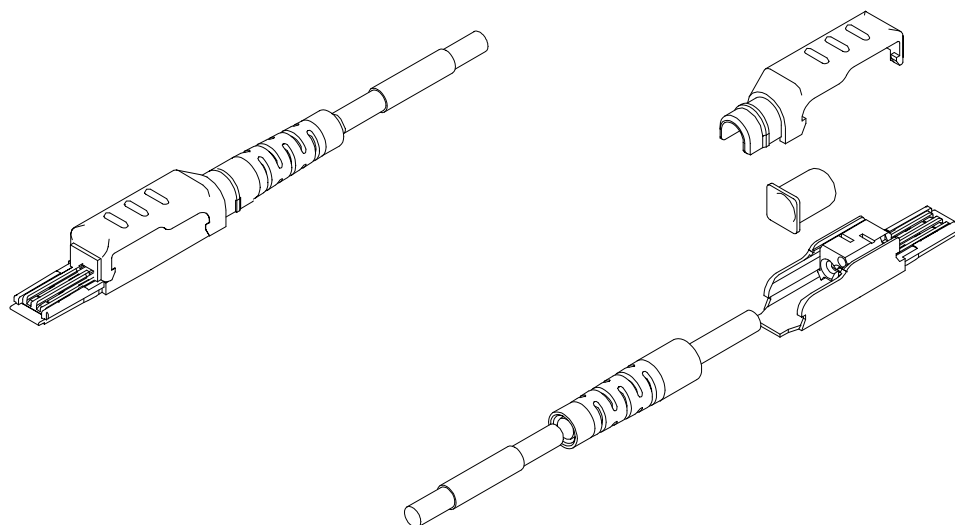


Figure 5 – Variant 04, 2-pair plug



IEC 1018/03

Figure 6 – Variant 05, 1-pair plug

3.2.2 **Free connector dimensions**

3.2.2.1 **Variant 03, 4-pair plug drawings**

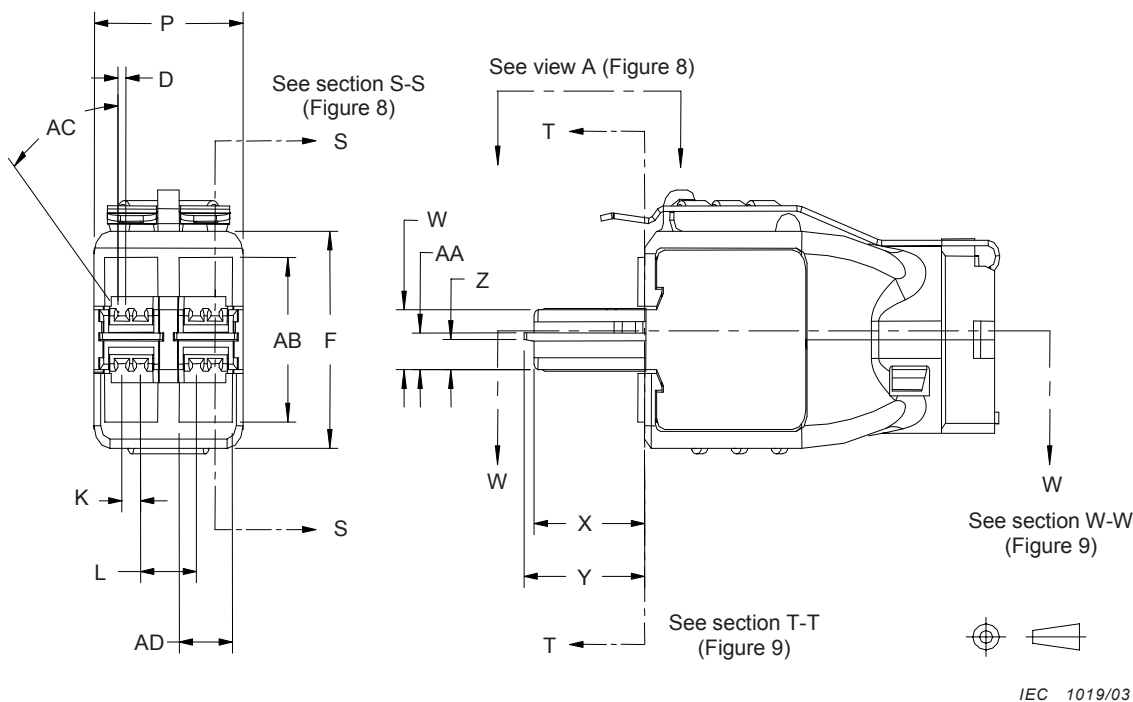


Figure 7 – Variant 03 drawing 1

Table 1 – Variant 03 drawing 1 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
D ¹	0,76	0,81	0,71
F	14,73	14,99	14,48
K	1,78	1,88	1,68
L	5,33	5,54	5,13
P	14,22	14,35	14,10
W	4,27	4,39	4,14
X	10,67	10,74	10,59
Y	11,86	11,91	11,81
Z	1,96	2,08	1,83
AA	2,59	2,72	2,46
AB	11,18	11,43	10,92
AC	45°	46°	44°
AD	5,08	5,21	4,95

¹ Dimension D is the same as ES in Figure 11 and GS in Figure 14.

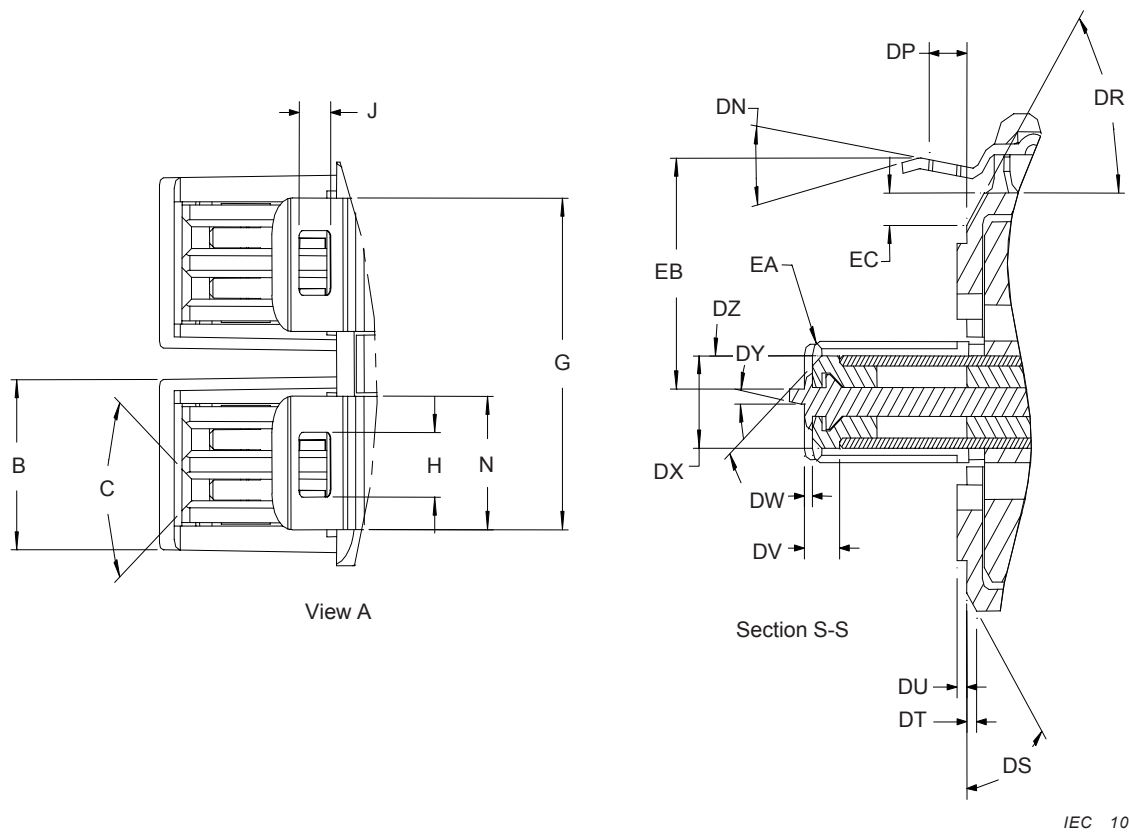


Figure 8 – Variant 03 drawing 2

Table 2 – Variant 03 drawing 2 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
B	5,99	6,05	5,94
C	60°	61°	59°
G	11,68	11,81	11,56
H	2,29	2,36	2,21
J	2,08	2,21	1,96
N	4,70	4,83	4,57
DN	15°	18°	12°
DP	2,57	2,69	2,44
DR	45°	46°	44°
DS	45°	46°	44°
DT	0,64	0,76	0,51
DU	0,64	0,76	0,51
DV	2,29	2,41	2,16
DW	0,51	0,64	0,38
DX	3,25	3,38	3,12
DY	7°	8°	6°
DZ	30°	31°	29°
EA	R 0,51	R 0,58	R 0,43
EB	8,13	8,26	8,00
EC	1,14	1,27	1,01

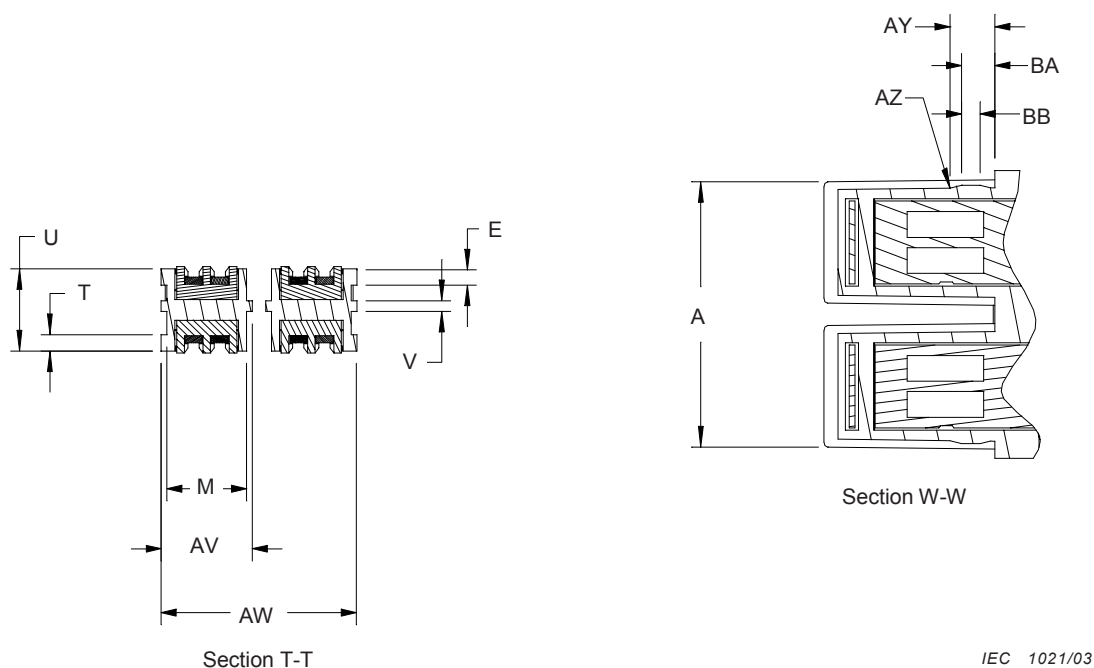


Figure 9 – Variant 03 drawing 3

Table 3 – 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
T	0,81	0,86	0,76
U	4,06	4,14	3,99
V	0,53	0,58	0,48
AV	6,20	6,25	6,15
AW	13,31	13,36	13,26
AY	3,05	3,12	2,97
AZ	R 2,03	R 2,11	R 1,96
BA	2,26	2,34	2,19
BB	1,27	1,52	1,19

3.2.2.2 Variant 04, 2-pair plug drawings

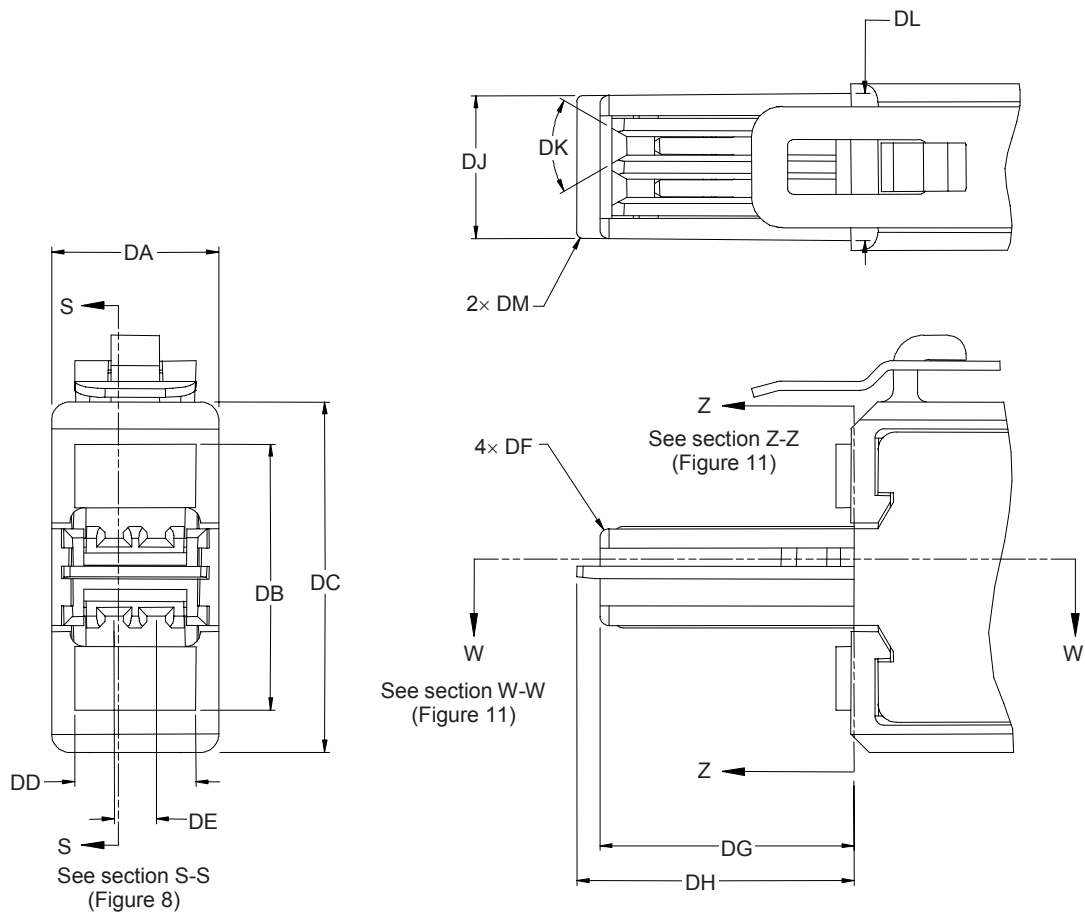
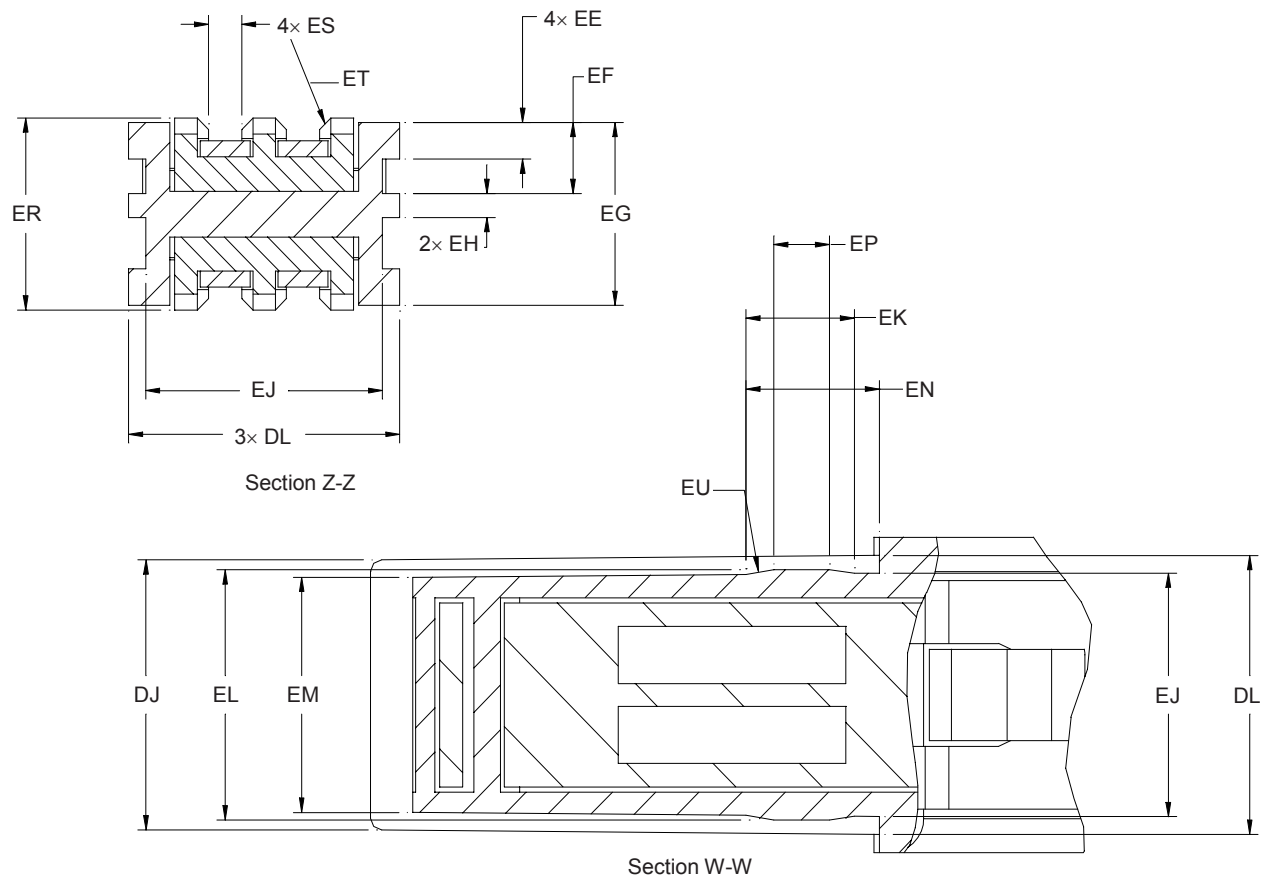


Figure 10 – Variant 04 drawing 1

Table 4 – Variant 04 drawing 1 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
DA	7,01	7,09	6,93
DB	11,18	11,43	10,92
DC	14,73	14,99	14,48
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	10,67	10,74	10,59
DH	11,86	11,91	11,81
DJ	5,99	6,05	5,94
DK	60°	61°	59°
DL	6,20	6,25	6,15
DM	0,25	0,30	0,20



IEC 1023/03

Figure 11 – Variant 04 drawing 2

Table 5 – Variant 04 drawing 2 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
EE	0,81	0,86	0,76
EF	1,57	1,65	1,50
EG	4,06	4,14	3,99
EH	0,53	0,58	0,48
EJ	5,41	5,46	5,36
EK	2,84	2,92	2,77
EL	5,64	5,69	5,61
EM	5,23	5,28	5,18
EN	3,35	3,43	3,28
EP	1,57	1,65	1,50
ER	4,27	4,39	4,14
ES ¹	0,76	0,81	0,71
ET	45°× 0,25	45°× 0,33	45°× 0,18
EU	R 2,03	R 2,16	R 1,91

¹ Dimension ES is the same as D in Figure 7 and GS in Figure 14

3.2.2.3 Variant 05, 1-pair plug drawings

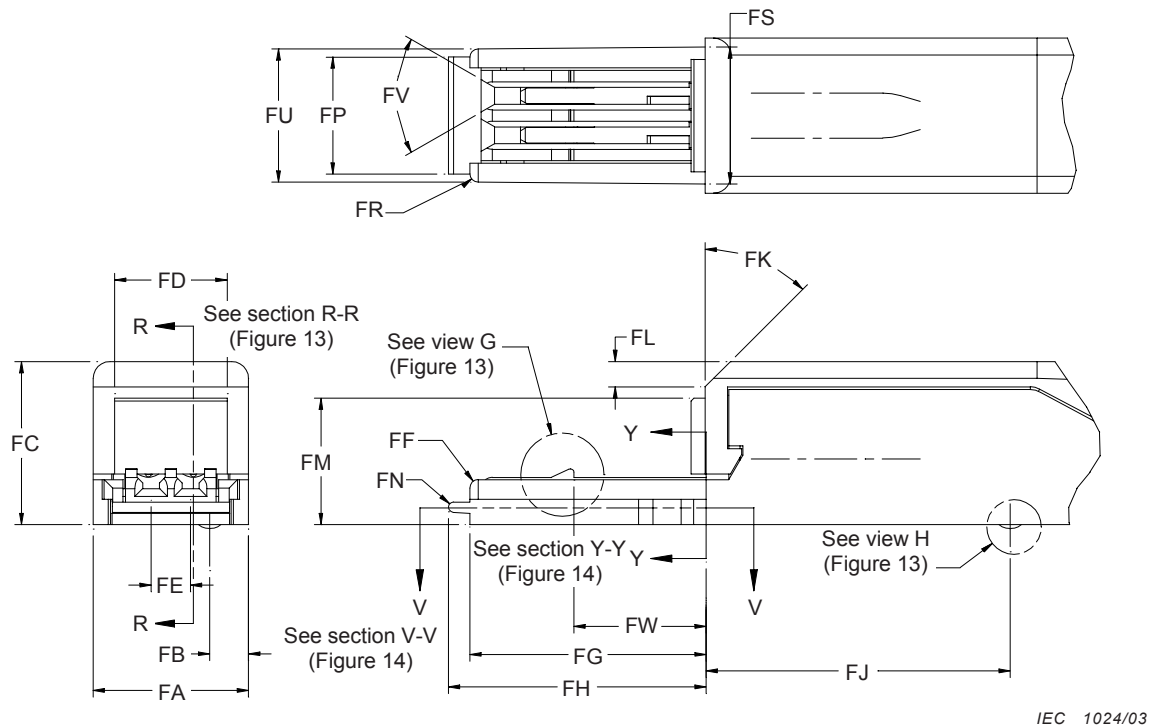
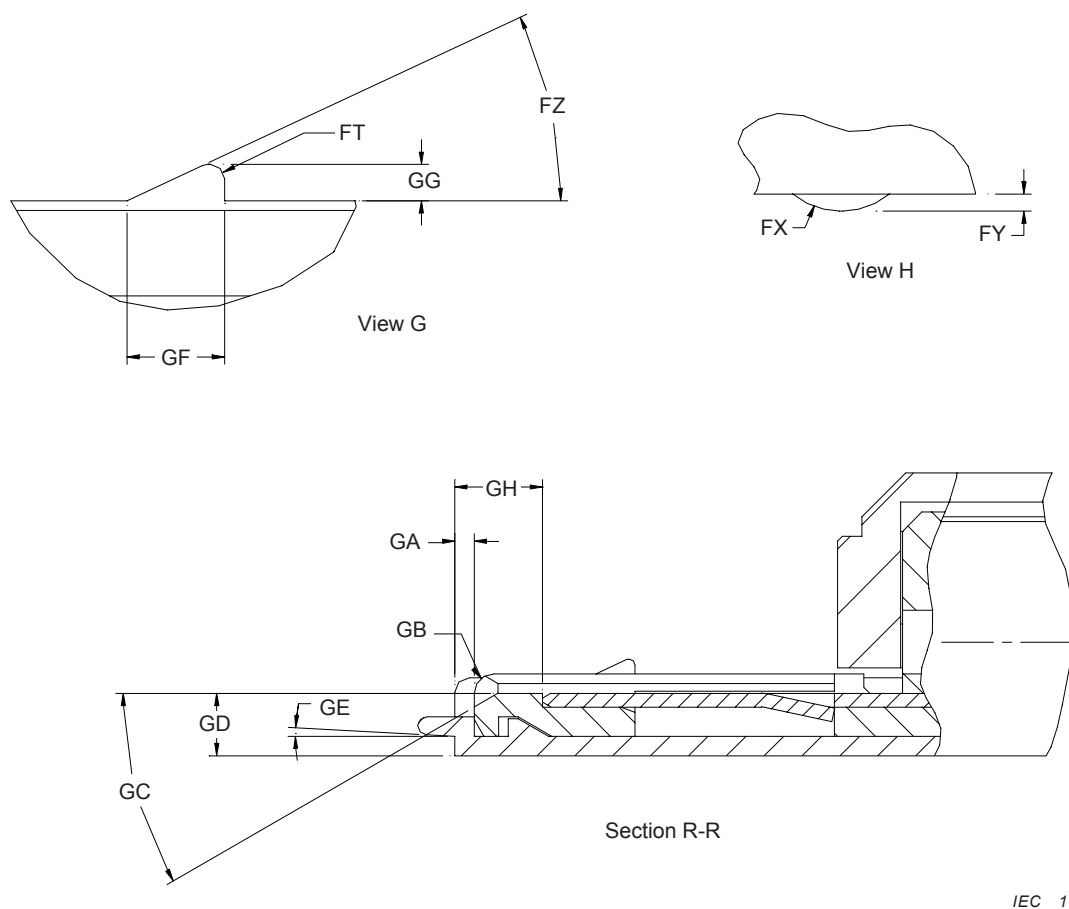


Figure 12 – Variant 05 drawing 1

Table 6 – Variant 05 drawing 1 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
FA	7,01	7,09	6,93
FB	1,75	1,83	1,67
FC	7,37	7,45	7,29
FD	5,08	5,16	5,00
FE	1,78	1,86	1,70
FF	R 0,38	R 0,46	R 0,30
FG	10,67	10,74	10,59
FH	12,01	12,07	11,96
FJ	13,72	13,80	13,64
FK	45°	46°	44°
FL	1,14	1,22	1,06
FM	5,72	5,80	5,64
FN	R 0,23	R 0,31	R 0,15
FP	5,29	5,37	5,21
FR	R 0,38	R 0,46	R 0,30
FS	6,20	6,28	6,12
FU	6,02	6,10	5,94
FV	60,00	61	59
FW	2,34	2,46	2,21



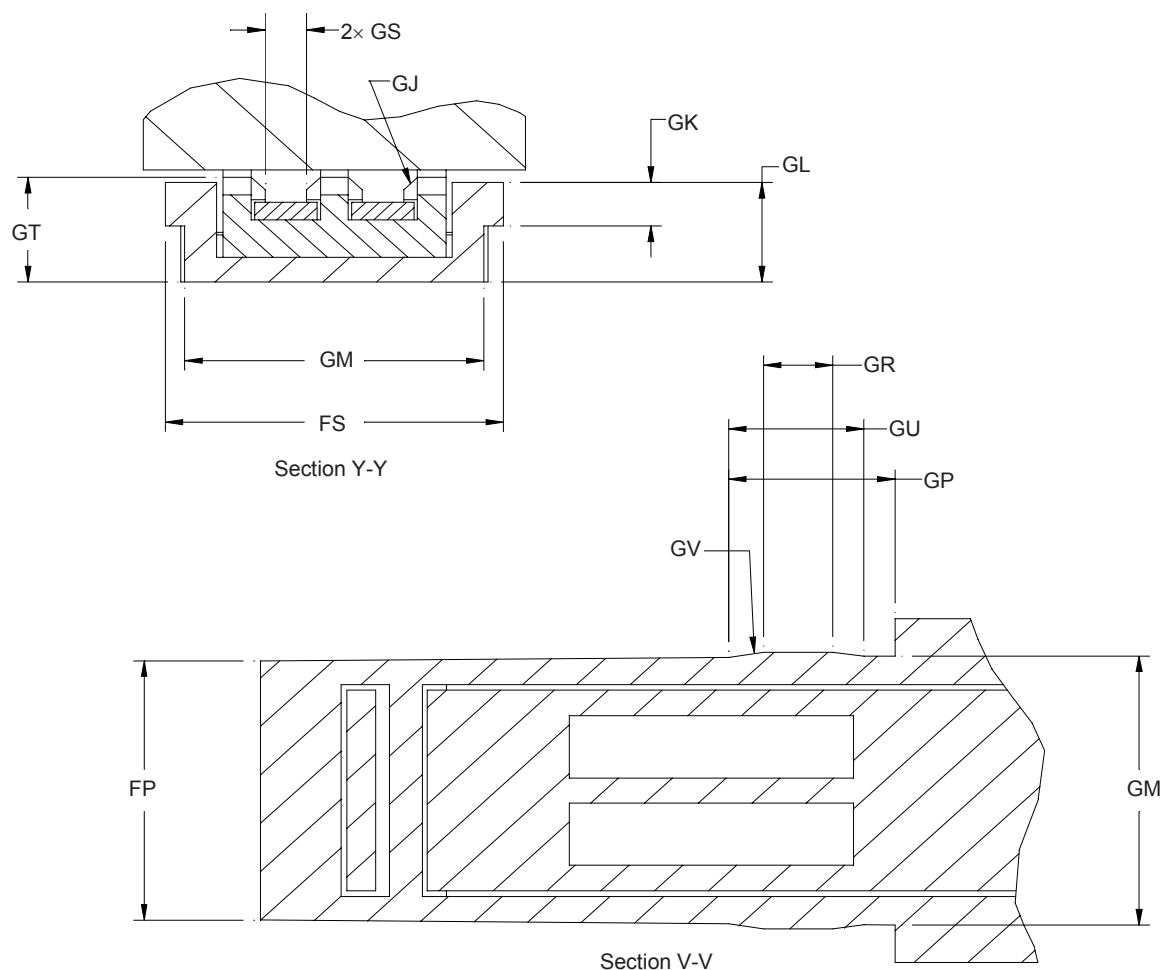
IEC 1025/03

Figure 13 – Variant 05 drawing 2

Table 7 – Variant 05 drawing 2 dimensions

Dimensions in millimetres			
	Nominal	Maximum	Minimum
FT	R 0,15	R 0,23	R 0,07
FX	R 0,76	R 0,84	R 0,68
FY	0,18	0,26	0,10
FZ	25°	26°	24°
GA	0,51	0,59	0,43
GB	R 0,51	R 0,59	R 0,43
GC	30°	31°	29°
GD	1,63	1,71	1,55
GE	3°	4°	2°
GF	1,02	1,10	0,94
GG	0,38°	0,46°	0,30°
GH	2,29	2,37	2,21

3.2.2.4 1-pair plug drawing 3 (see Table 8 for dimensions)



IEC 1026/03

Figure 14 – Variant 05 drawing 3

Table 8 – Variant 05 drawing 3 dimensions

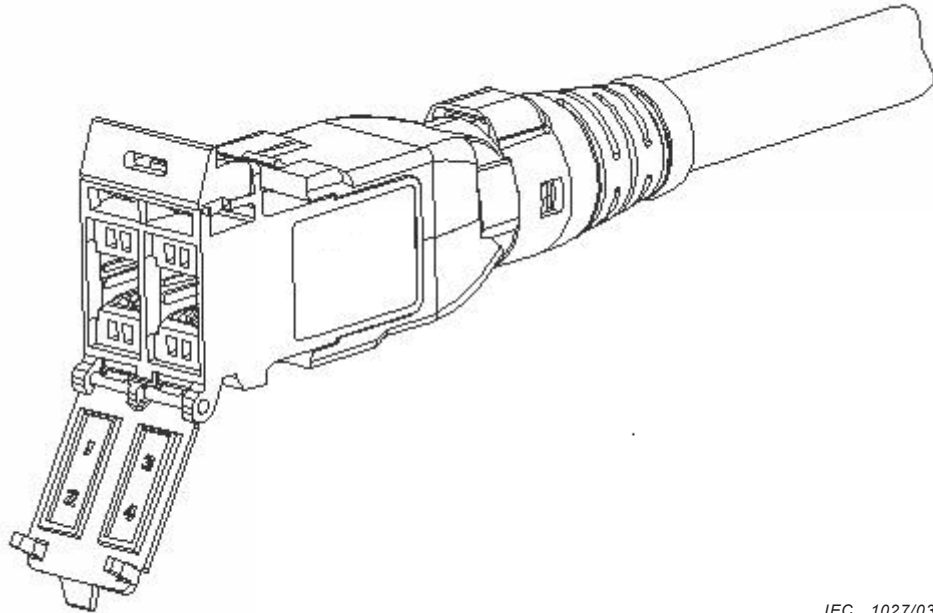
Dimensions in millimetres

	Nominal	Maximum	Minimum
GJ	45°× 0,25	45°× 0,33	45°× 0,18
GK	0,89	0,97	0,81
GL	2,41	2,54	2,29
GM	5,49	5,57	5,41
GP	3,35	3,43	3,28
GR	1,57	1,65	1,50
GS	0,76	0,81	0,71
GT	2,13	2,21	2,05
GU	2,84	2,92	2,77
GV	R 2,03	R 2,11	R 1,96

NOTE Dimension GS is the same as D in Figure 7 and ES in Figure 11.

3.3 Fixed connector (outlet)

3.3.1 Isometric views



IEC 1027/03

Figure 15 – Isometric view of variant 01 (cable outlet)

3.3.2 Variant 01 (cable outlet) drawings

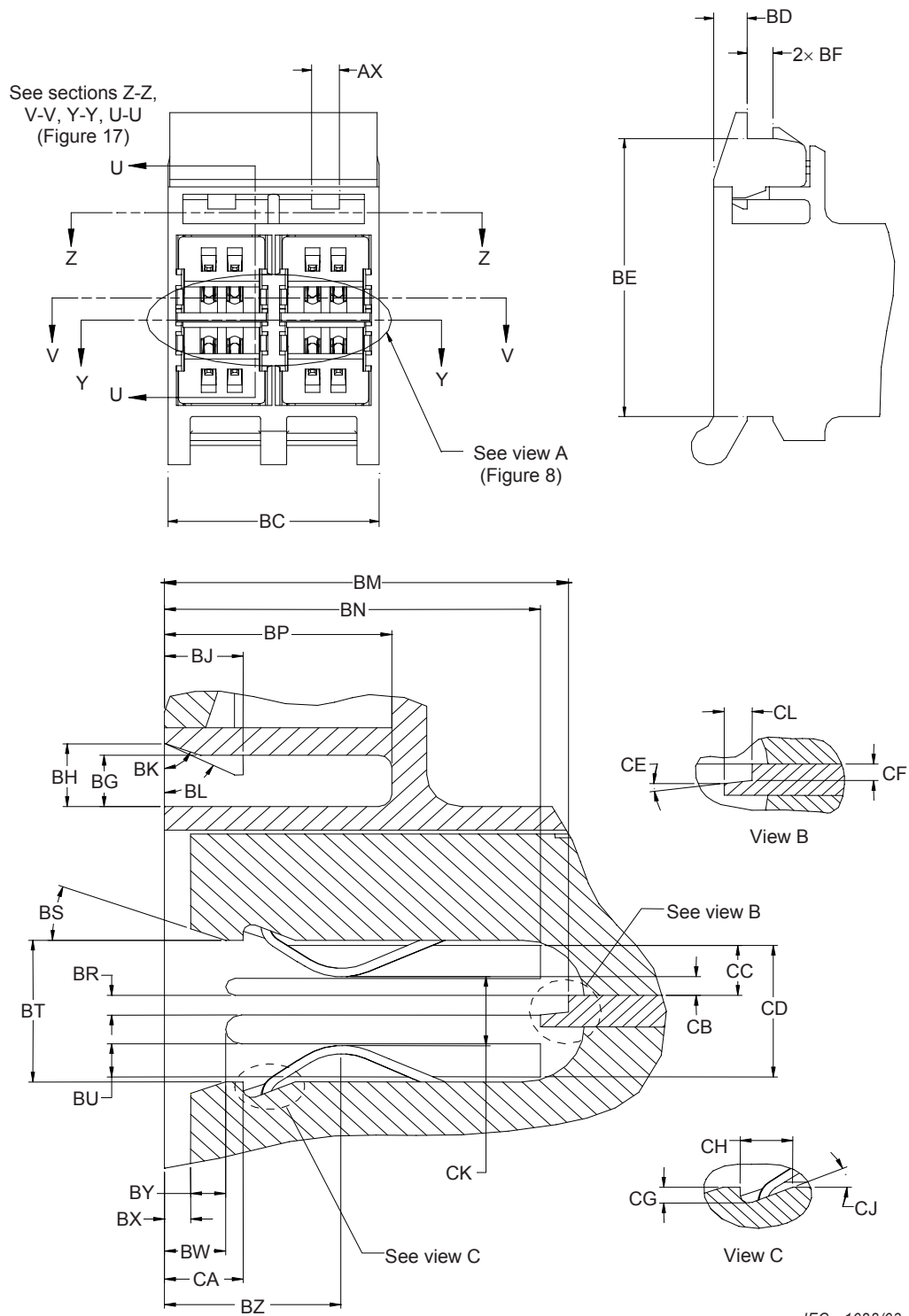


Figure 16 – Variant 01 cable outlet drawing 1

Table 9 – Variant 01 drawing 1 dimensions

Dimensions in millimetres

	Nominal	Maximum	Minimum
AX	1,91	2,03	1,78
BC	14,48	14,61	14,35
BD	2,29	2,41	2,16
BE	19,05	19,30	18,80
BF	1,78	1,85	1,70
BG	1,65	1,78	1,52
BH	2,03	2,16	1,91
BJ	2,29	2,36	2,21
BK	70°	71°	67°
BL	63°	66°	60°
BM	11,73	11,79	11,68
BN	10,92	11,00	10,85
BP	6,60	6,73	6,48
BR	0,64	0,71	0,61
BS	20°	23°	17°
BT	4,57	4,70	4,45
BU	1,07	1,12	1,02
BW	1,78	1,85	0,00
BX	0,76	0,90	0,64
BY	1,02	1,14	0,89
BZ	5,16	5,28	5,03
CA	2,29	2,36	2,21
CB	0,61	0,69	0,53
CC	1,61	1,66	1,56
CD	4,24	4,29	4,19
CE	7°	8°	6°
CF	0,51	0,56	0,46
CG	0,51	0,58	0,43
CH	1,52	1,65	1,40
CJ	23°	28°	18°
CK	2,21	2,34	2,08
CL	1,19	1,24	1,14