

Connectors for use in d.c. low-frequency analogue and digital high-speed data applications —

**Part 4-104: Printed board connectors
with assessed quality — Detail
specification for two-part modular
connectors, basic grid of 2,0 mm,
with terminations on a multiple grid
of 0,5 mm**

The European Standard EN 61076-4-104:1999 has the status of a
British Standard

ICS 31.220.10

National foreword

This British Standard is the English language version of EN 61076-4-104:1999. It is identical with IEC 61076-4-104:1999. The UK participation in its preparation was entrusted by Technical Committee EPL/48, Electromechanical components for electronic equipment, to Subcommittee EPL/48/2, Connectors for electronic equipment, 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;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary. From 1 January 1997, all IEC publications have the number 60000 added to the old number. For instance, IEC 27-1 has been renumbered as IEC 60027-1. For a period of time during the change over from one numbering system to the other, publications may contain identifiers from both systems.

Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue. A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 66, an inside back cover and a back cover. This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Electrotechnical Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 August 1999

© BSI 03-2000

ISBN 0 580 32660 8

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
National foreword	Inside front cover
Foreword	2
Text of EN 61076-4-104	7

Connectors for use in d.c. low-frequency analogue and
digital high speed data applications
Part 4-104: Printed board connectors with assessed quality
Detail specification for two-part modular connectors,
basic grid of 2,0 mm, with terminations on a
multiple grid of 0,5 mm

(IEC 61076-4-104:1999)

Connecteurs pour applications analogiques en
courant continu et à basse fréquence et pour
applications numériques utilisant des débits
élevés pour le transfert des données

Partie 4-104: Connecteurs pour cartes
imprimées sous assurance de la qualité
Spécification particulière pour modules de
connecteurs en deux parties, au pas de base
de 2,0 mm avec des connexions au pas
multiple de 0,5 mm

(CEI 61076-4-104:1999)

Steckverbinder für Gleichspannungs-
und Niederfrequenzanwendungen sowie
digitale Anwendungen mit hoher
Übertragungsrate

Teil 4-104: Steckverbinder für gedruckte
Schaltungen mit bewerteter Qualität
Bauartspezifikation für indirekte,
modulare Steckverbinder, Raster 2,0 mm,
mit Anschlüssen für das Vielfache des
Rasters 0,5 mm

(IEC 61076-4-104:1999)

This European Standard was approved by CENELEC on 1999-04-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and 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

The text of document 48B/745/FDIS, future edition 1 of IEC 61076-4-104, 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 61076-4-104 on 1999-04-01.

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) 2000-01-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2002-04-01

Annexes designated “normative” are part of the body of the standard.

In this standard, Annex ZA is normative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61076-4-104:1999 was approved by CENELEC as a European Standard without any modification.

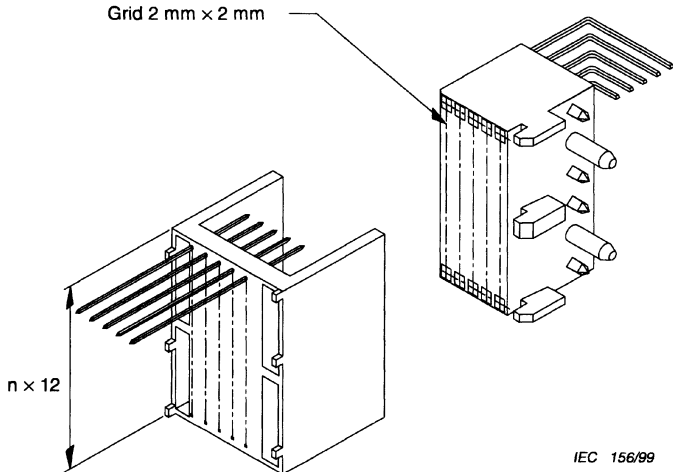
Contents

	Page
Foreword	2
1 General data	8
1.1 Recommended method of mounting	8
1.1.1 Minimum and maximum number of contact cavities	8
1.2 Ratings and characteristics	8
1.3 Normative references	8
1.4 Marking	9
1.5 IEC type designation	10
1.6 Ordering information	10
2 Technical information	10
2.1 Definitions	10
2.2 Survey of styles and variants	11
2.3 Information on application	12
2.3.1 Complete connectors (pairs)	12
2.3.2 Fixed board connectors	12
2.3.3 Free board connectors	13
2.3.4 Accessories	13
2.3.5 Shielding and grounding	14
2.3.6 Basic types of termination	14
2.4 Contact arrangements	14
3 Dimensional information	15
3.1 General	15
3.2 Isometric view and common features	15
3.2.1 Isometric view	16
3.2.2 Reference system	16
3.2.3 Height dimensions	17
3.2.4 Width dimensions	18
3.2.5 Depth dimensions	20
3.3 Engagement (mating) information	21
3.3.1 Engaging (mating) direction	21
3.3.2 Permissible displacement perpendicular to the engaging (mating) direction	22
3.3.3 Inclination	22
3.4 Fixed board connectors	23
3.4.1 Fixed board connector module, housing dimensions	23
3.4.2 Fixed board connector module dimensions	25
3.4.3 Terminations	27
3.5 Free board connectors	27
3.5.1 Free board connector module, housing dimensions	27
3.5.2 Free board connector module dimensions	28

	Page		Page
3.5.3 Terminations	31	5.1.2 Mounting arrangement for dynamic stress tests	51
3.6 Accessories	31	5.1.3 Arrangement for testing static load, axial	51
3.6.1 Coding system, style YV	31	5.1.4 Wiring of specimens	51
3.6.2 Special contacts, styles ZX, ZY and ZZ	33	5.1.5 Arrangement for voltage proof	51
3.7 Mounting information for fixed board connectors	34	5.1.6 Arrangement for flammability (needle flame) test	52
3.7.1 Fixed board connector module housing, dimensions and positions of locating pegs, solder termination	34	5.2 Test schedule tables	52
3.7.2 Fixed board connector modules, signal and power contacts, solder termination	36	5.2.1 Basic test schedule	52
3.7.3 Fixed board connector module, special contacts, solder termination	38	5.2.2 Full test schedule	53
3.7.4 Fixed board connector modules, signal and power contacts, press-in termination	38	6 Quality assessment procedures	63
3.8 Mounting information for free board connectors	40	6.1 Qualification approval testing	63
3.8.1 Free board connector module housing, dimensions and position of location pegs and fixing studs	40	6.1.1 Method 1	63
3.8.2 Free board connector modules, signal and power contacts, solder termination	42	6.1.2 Method 2	63
3.8.3 Free board connector module, special contacts, solder termination	44	6.2 Quality conformance inspection	64
3.8.4 Free board connector modules, signal and power contacts, press-in termination	45	6.2.1 Lot-by-lot tests	64
3.9 Gauges	46	6.2.2 Periodic tests	65
3.9.1 Sizing gauges and retention force gauges	46	6.3 Delayed delivery, re-inspection	66
4 Characteristics	47	Annex ZA (normative) Normative references to international publications with their corresponding European publications	Inside back cover
4.1 Climatic categories	47	Figure 1 — Overall length(s) of complete connectors	13
4.2 Electrical	47	Figure 2 — Isometric view	16
4.2.1 Creepage and clearance distances	47	Figure 3 — Height dimensions	17
4.2.2 Voltage proof	47	Figure 4 — Width dimensions — Housing shape 1	18
4.2.3 Current carrying capacity	48	Figure 5 — Width dimensions — Housing shape 2	19
4.2.4 Initial contact resistance	48	Figure 6 — Depth dimensions	20
4.2.5 Initial insulation resistance	48	Figure 7 — Engaging (mating) direction	21
4.3 Mechanical	49	Figure 8 — Housing shapes 1 and 2	22
4.3.1 Mechanical operation	49	Figure 9 — Inclination	22
4.3.2 Insertion and withdrawal forces	49	Figure 10 — Dimensions of fixed connector module housings, styles AD, AE, DD, DE, GD and GE	23
4.3.3 Contact retention in insert	49	Figure 11 — Dimensions of fixed connector module housings, styles BD, BE, ED, EE, HD and HE	24
4.3.4 Static load, axial	49	Figure 12 — Dimensions of fixed signal connector module, style AE	25
5 Test schedule	49	Figure 13 — Dimensions of fixed power module, style DE	26
5.1 General	49	Figure 14 — Dimensions of fixed special connector module, style GD	27
5.1.1 Arrangement for contact resistance measurement	50		

	Page		Page
Figure 15 — Dimensions of free board connector module housings, styles PD, PE, RD, RE, TD and TE	28	Figure 35 — Mounting for free board connector module, special contacts, solder termination	44
Figure 16 — Position of contact point in the female contact area	29	Figure 36 — Recommended printed board layout for solder to board version, component side	44
Figure 17 — Dimensions of free signal connector module, style PE	29	Figure 37 — Mounting for free board connector module, signal and power contacts, press-in termination	45
Figure 18 — Dimensions of free power module, style RE	30	Figure 38 — Recommended printed board layout for press-in termination, component side	46
Figure 19 — Dimensions of free special connector module, style TD	30	Figure 39 — Sizing and retention force gauges	46
Figure 20 — Application of an optional coding system	31	Figure 40 — Current carrying capacity	48
Figure 21 — Example of contact sequencing versus optional coding	31	Figure 41 — Arrangement for contact resistance measurement	50
Figure 22 — Optional coding keys	32	Figure 42 — Arrangement for dynamic stress test	51
Figure 23 — Housing dimensions and positions of locating pegs for all module styles with solder terminations	34	Figure 43 — Arrangement for voltage proof test	51
Figure 24 — Recommended printed board layout for solder to board version, component side	35	Figure 44 — Arrangement for needle flame flammability test	52
Figure 25 — Dimensions of fixed connector modules, signal and power contacts with solder termination	36	Table 1 — Number of contact cavities	8
Figure 26 — Recommended printed board layout for solder to board version, component side	37	Table 2 — Styles and variants	12
Figure 27 — Dimensions of a fixed board connector module, special contacts, solder termination	38	Table 3 — Basic types of termination	14
Figure 28 — Recommended printed board layout for solder to board version, component side	38	Table 4 — Contact loading	15
Figure 29 — Dimensions of fixed board connector module, signal and power contacts, press-in termination	39	Table 5 — Contact level and rows	15
Figure 30 — Recommended printed board layout for press-in termination, component side	40	Table 6 — Isometric view and common features	15
Figure 31 — Mounting information of free board connector module housing, dimensions and position of locating pegs and fixing studs	41	Table 7 — Height dimensions	17
Figure 32 — Recommended printed board layout, component side	42	Table 8 — Width dimensions as in Figure 4 and Figure 5	18
Figure 33 — Mounting for free board connector module, signal and power contacts, solder termination	43	Table 9 — Depth dimensions	20
Figure 34 — Recommended printed board layout for solder to board version, component side	43	Table 10 — Contact length per contact level	21
		Table 11 — Fixed board connector module width dimensions	24
		Table 12 — Free connector dimensions of Figure 15	27
		Table 13 — Survey of special contacts, 4,8 mm diameter	33
		Table 14 — Fixed board connector, mounting width dimensions	35
		Table 15 — Solder post lengths	37
		Table 16 — Press-in post lengths (after assembly)	40
		Table 17 — Press-in hole dimensions	40
		Table 18 — Length of fixing studs and board milled-down dimensions	42

	Page
Table 19 — Dimensions of gauges	47
Table 20 — Performance levels	47
Table 21 — Creepage and clearance distances	47
Table 22 — Initial contact resistance, maximum	48
Table 23 — Mechanical operations	49
Table 24 — Insertion and withdrawal forces	49
Table 25 — Number of test specimens	50
Table 26 — Test group P	53
Table 27 — Test group AP	54
Table 28 — Test group BP	57
Table 29 — Test group CP	59
Table 30 — Test group DP	60
Table 31 — Test group EP	61
Table 32 — Test group FP	62
Table 33 — Qualification approval testing, method 1	63
Table 34 — Lot-by-lot tests	64
Table 35 — Periodic tests	65
Table 36 — Re-inspection	66

IEC SC 48B: CONNECTORS Specification available from: IEC Central Office or from the addresses shown on the inside cover [Electronic components of assessed quality]	IEC 61076-4-104 QC 480301XX0005
DETAIL SPECIFICATION in accordance with IEC 61076-1:1995.	IEC 61076-4-001
See 3.2.1 for isometric view See 3.4, 3.5 and 3.6 for dimensions 	Two-part modular connectors , for printed boards and backplanes, basic grid 2,0 mm, with terminations on a multiple grid of 0,5 mm Stackable connector modules and multimodules with $n \times 12$ mm lengths and in four or more row configuration, with optional coding and special contacts Performance level(s): 1, 2 and 3 Assessment levels: A and G Combination of performance levels and assessment levels: 1G, 2A, 2G and 3A

Information on the availability of components qualified to this detail specification is given in the qualified products list.

1 General data

1.1 Recommended method of mounting

A complete connector consists of one or more connector modules or multimodules which are mounted stackable to each other, without the loss of contact positions.

Free board connector modules are mounted on the edge of the printed board and have female contacts with right-angle solder or press-in terminations.

Fixed connector modules are mounted on the backplane and have male contacts with straight solder or press-in terminations, with optional rear plug-up possibilities.

1.1.1 Minimum and maximum number of contact cavities

The connector modules and multimodules provide four or more rows, cavities for signal contacts that can be fully or partially loaded, cavities with power contacts that are always fully loaded.

The connector modules featuring cavities for special contacts are single-row, which can be individually loaded.

The possible number of contact cavities per connector module and multimodule are given in Table 1.

For contact arrangements, see 2.4.

Table 1 — Number of contact cavities

Description of cavities	Number of cavity rows	Number of contact cavities per module size				
		12 mm	24 mm	48 mm	96 mm	^a
signal	4	24	48	96	192	
signal	5	30	60	120	240	
power	4	8				
power	5	10				
special	1	1	2			
under preparation						

^a Larger (monobloc) module sizes are under consideration.

1.2 Ratings and characteristics

Rated voltage: 500 V r.m.s

Current rating at 70 °C: 1 A (all signal contacts)
2,75 A (all power contacts)

Insulation resistance: 5×10^3 MΩ min., initial

Climatic categories: PL1: 55/125/56
PL2: 25/125/21
PL3: 25/085/00

Printed board thickness: 1,4 mm min.

Contact spacing: 2,0 mm, based upon a multiple mounting and reference grid of 0,5 mm, according to IEC 60917

1.3 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61076. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 61076 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60068-1:1988, *Environmental testing — Part 1: General and guidance*.

IEC 60352-5:1995, *Solderless connections — Part 5: Solderless press-in connections. General requirements, test methods and practical guidance*.

IEC 60410:1973, *Sampling plans and procedures for inspection by attributes*.

IEC 60512-2:1985, *Electromechanical components for electronic equipment — Basic testing procedures and measuring methods — Part 2: General examination, electrical continuity and contact resistance tests, insulation tests and voltage stress tests*.

IEC 60512-3:1976, *Electromechanical components for electronic equipment — Basic testing procedures and measuring methods — Part 3: Current carrying capacity tests*.

IEC 60512-4:1976, *Electromechanical components for electronic equipment — Basic testing procedures and measuring methods — Part 4: Dynamic stress tests*.

IEC 60512-5:1992, *Electromechanical components for electronic equipment — Basic testing procedures and measuring methods — Part 5: Impact tests (free components), static load tests (fixed components), endurance tests and overload tests*.

IEC 60512-6:1984, *Electromechanical components for electronic equipment — Basic testing procedures and measuring methods — Part 6: Climatic tests and soldering tests*.

IEC 60512-7:1993, *Electromechanical components for electronic equipment — Basic testing procedures and measuring methods — Part 7: Mechanical operating tests and sealing tests*.

IEC 60512-8:1993, *Electromechanical components for electronic equipment — Basic testing procedures and measuring methods — Part 8: Connector tests (mechanical) and mechanical tests on contacts and terminations*.

IEC 60512-9:1992, *Electromechanical components for electronic equipment — Basic testing procedures and measuring methods — Part 9: Miscellaneous tests*.

IEC 60603-1:1991, *Connectors for frequencies below 3 MHz for use with printed boards — Part 1: Generic specification — General requirements and guide for the preparation of detail specifications, with assessed quality*

Amendment 1:1992

IEC 60917:1988, *Modular order for the development of mechanical structures for electronic equipment practices*.

IEC 60917-2-2:1994, *Modular order for the development of mechanical structures for electronic equipment practices — Part 2: Sectional specification — Interface coordination dimensions for the 25 mm equipment practice — Section 2: Detail specification — Dimensions for subracks, chassis, backplanes, front panels and plug-in units*.

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

IEC 61076-4:1995, *Connectors with assessed quality, for use in d.c., low-frequency analogue and in digital high speed data applications — Part 4: Sectional specification — Printed board connectors*.

IEC 61076-4-001:1996, *Connectors with assessed quality, for use in d.c., low-frequency analogue and in digital high speed data applications — Part 4: Printed board connectors — Section 001: Blank detail specification*.

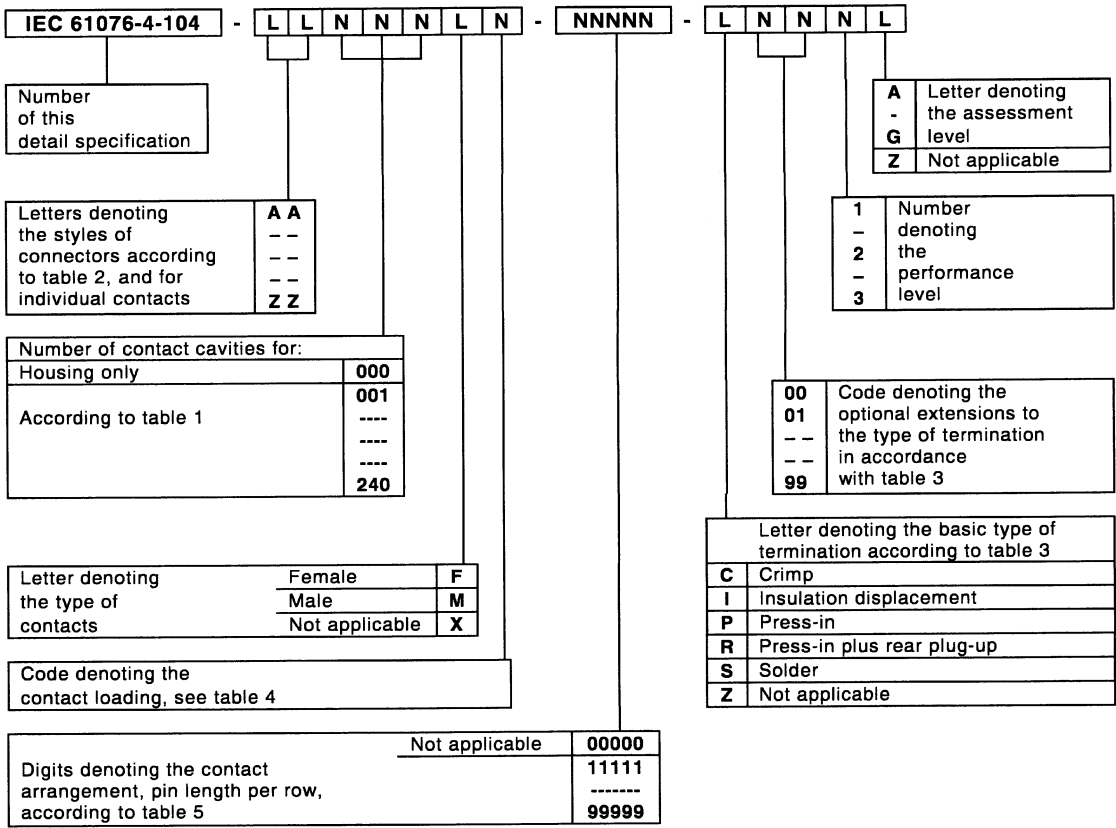
ISO 468:1982, *Surface roughness — Parameters, their values and general rules for specifying requirements*.

1.4 Marking

The marking of the connector and the packaging shall be in accordance with **2.6** of IEC 61076-4.

1.5 IEC type designation

This designation shall be derived in accordance with 2.5 of IEC 61076-4:



1.6 Ordering information

For ordering the connectors according to this detail specification, the type designation described in 1.5 shall be used.

Example: **IEC 61076-4-104-BD192M1-3111-P021A**

Fixed board connector module, housing shape 2, 192 contact cavities, 4-row, male signal contacts, fully loaded, row a: contact level 3; rows b, c and d: level 1; press-in terminations with length of 11,8 mm, performance level 1, assessment level A.

2 Technical information

2.1 Definitions

For the purpose of this part of IEC 61076, the following definitions apply in addition to the definitions given in IEC 61076-4:

chess pattern

contact arrangement where the loaded and unloaded positions alternate in rows and columns, like the fields on a chessboard

coding key

device which engages with a keyway which, when mounted, prevents the improper mating (engagement) of the connector halves at a distance less than the specified minimum contact range

connector module

part containing all features of a complete connector which can be mounted in lengthwise series to form a connector with a larger number of contact positions

contact levels

contacts may be provided with different mating lengths, which feature different point of mating per specified contact length

contact range

minimum to maximum distance between the reference planes of the fixed and free connectors, within which the specified contact resistance is met

contact sequence

sequence in which contacts with a different mating length are mating, with the purpose to provide stepped insertion forces and/or stepped electrical continuity (e.g. first make/last break)

first make/last break contacts

contacts which provide different contact levels and sequencing, so that during connector module engaging (insertion), at least one contact of the higher level shall connect before any contact of a lower contact level; whilst during connector module disengaging (withdrawal), at least one contact of the higher level will not disconnect before any contact of a lower contact level

fixing studs

posts which form a part of the plastic housing of the connector which fit into corresponding holes in the printed board to provide mechanical attachment to the board, which for example may be deformed by applying a heated toolhead

location pegs

posts, protruding from the connector housing, fitting into corresponding holes in the printed board or backplane, preventing a wrong assembly and giving an accurate position

multimodule

connector module with a multiple length of the smallest module

rear plug-up

connecting of the free connector to termination posts of the fixed board connector, which protrude from the backplane or the printed board

rear shroud

connector housing, mounted at the rear side of a backplane or printed board, using protruding termination posts to form a fixed board connector thus providing rear plug-up connection

special contacts

contacts suitable for high current, high frequency, filter or fibre-optic applications, with a basic diameter of 4,8 mm

stackable

way of mounting whereby connectors are positioned side-by-side or in end-to-end lengthwise series, preferably without loss of contact positions

2.2 Survey of styles and variants

Styles are only defined as being styles of connector modules. Complete connectors can be composed in many different ways, taking into account the information in 2.3 about the application.

The different styles are listed in Table 2.

Table 2 — Styles and variants

Connector description	Number of contact rows:	Style reference letter						Connector description	Style reference letter		
		Housing shape 1			Housing shape 2				4	5	a
		4	5	a	4	5	a				
Fixed board module, signal contacts		AD	AE		BD	BE		Free board module, signal contacts	PD	PE	
Fixed board module, power contacts		DD	DE		ED	EE		Free board module, power contacts	RD	RE	
Fixed board module, special contacts		GD	GE ^b		HD	HE ^b		Free board module, special contacts	TD	TE ^b	
Other styles under consideration								Other styles under consideration			
Coding system		YV						Individual special contacts	ZX ZY ZZ	Power R.F. F.O.	
^a Under consideration											
^b For information only											

2.3 Information on application

This specification features a modular system of several styles conforming to Table 2, in a configuration of four or more rows of contacts.

These styles contain modules and multimodules for signal contacts, power contacts and special contacts. The modules have a basic length of 12 mm, multimodules a length of a multiple of 12 mm. Every style of module has all the features of a complete connector and can be used on its own. An optional coding set may be mounted into the connector modules.

2.3.1 Complete connectors (pairs)

A complete connector is composed of one or more connector modules or multimodules which are mounted end-to-end stackable. All styles of modules can be aligned at random, given that similar row configurations and fixed modules of one housing shape are used.

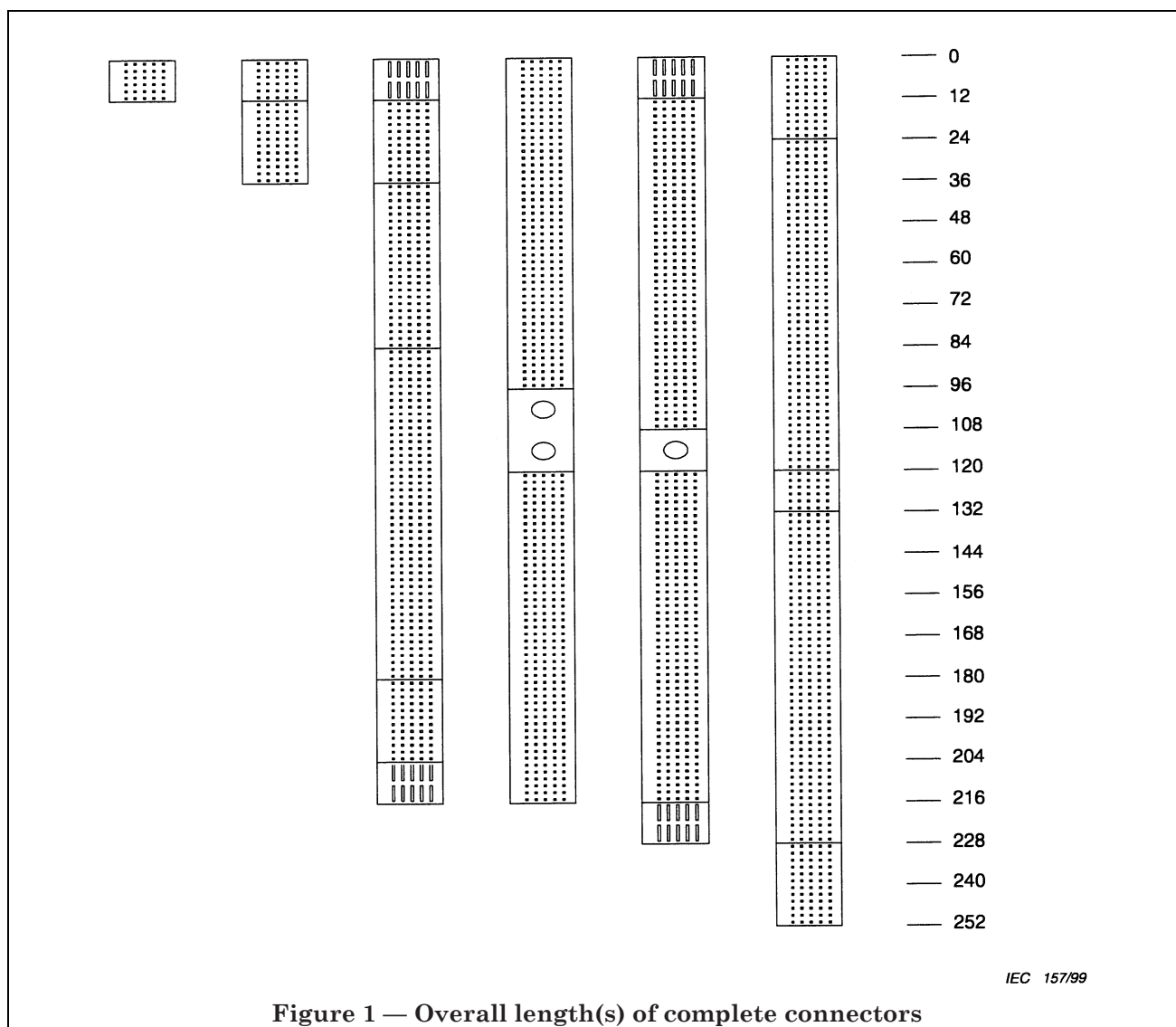
For examples see Figure 1.

Information on the contact arrangement (see 2.4), the coding devices (see 2.3.4.2) and the contact sequencing and levels (see 3.3.1.1) should be taken into account.

2.3.2 Fixed board connectors

Fixed board connector modules with solder terminations fit only one way into the backplane or printed board. Location pegs which form a part of the plastic module housing together with the corresponding holes in the panel or board align modules and provide mechanical attachment to the printed board during the soldering process (see also 3.7.1).

For multimodules not all location pegs are required, only the two placed in the outermost positions. For modules with press-in termination, no locating pegs shall be present.



2.3.3 Free board connectors

Free board connector modules are provided with location pegs and optional fixing studs for fixation of the location in and strain relief to the printed board.

For dimensional information, see 3.8.1.

2.3.4 Accessories

2.3.4.1 Special contacts

Connector modules of several styles may be fitted with special contacts for high current, high frequency, filter or fibre-optic applications, see 3.7.3 and 3.8.3.

The reference dimension of the mounting cavity of these contacts is 4,8 mm.

IEC standards for these contacts are under consideration.

A referencing survey of special contacts is provided in Table 13.

2.3.4.2 Coding devices

For purposes of coding the connectors to be mated, a system of separate coding keys can be provided which has to be mounted into the fixed and the free board mounted connector modules.

For dimensional information, see 3.6.1.

2.3.5 Shielding and grounding

In regard to the possible application of the connector modules as described in this standard, in high speed applications, additional connector styles, which provide grounding contacts, are under consideration.

2.3.6 Basic types of termination

The basic types of termination are listed in Table 3. Dimensional information is given in 3.7 for fixed board connector modules, in 3.8 for free board mounted modules and in 3.6.2 for special contact connector modules. For termination details, see also Table 15, Table 16 and Table 17.

Table 3 — Basic types of termination

Letter and number denoting the type of termination			
Soldering	S01	S02	S03
	Termination for solder to printed board with a thickness according to Table 15	Termination for solder to printed board with a thickness according to Table 15	Termination for solder to printed board with a thickness according to Table 15
Press-in	P01	P02	P03
	Press-in termination for a compliance post length of 4,3 mm in a plated-through hole diameter of 0,65 mm – 0,80 mm	Press-in termination for a compliance post length of 11,8 mm in a plated-through hole diameter of 0,65 mm – 0,80 mm	Press-in termination for a compliance post length of 15,6 mm in a plated-through hole diameter of 0,65 mm – 0,80 mm
	P04	P05	P06
	Press-in termination for a compliance post length of 13,6 mm in a plated-through hole diameter of 0,65 mm – 0,80 mm	Press-in termination for a compliance post length of 17,0 mm in a plated-through hole diameter of 0,65 mm – 0,80 mm	Press-in termination for a compliance post length of 4,3 mm in a plated-through hole diameter of 0,52 mm – 0,57 mm
	P07	P08	P09
	Press-in termination for a compliance post length of 4,3 mm in a plated-through hole diameter of 0,57 mm – 0,65 mm	Press-in termination for a compliance post length of 2,9 mm in a plated-through hole diameter of 0,65 mm – 0,80 mm	Press-in termination for a compliance post length of 2,9 mm in a plated-through hole diameter of 0,52 mm – 0,57 mm
	P10		
	Press-in termination for a compliance post length of 2,9 mm in a plated-through hole diameter of 0,57 mm – 0,65 mm		
Not applicable	Z00		
	Connector housing without contacts		

2.4 Contact arrangements

Reference is made to the applicable designation of the contact arrangement in 1.5, in which the same number of digits have been reserved as there are signal contact rows, to indicate the loading pattern, per contact, per contact row and per contact level.

For more detailed information and explanation of the applicable digits, see following Table 4 and Table 5.

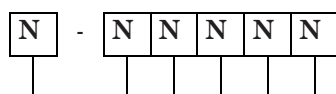


Table 4 — Contact loading

0	Not applicable
1	Fully loaded
2	All even contacts loaded
3	All odd contacts loaded
4	Chess pattern, even in row “a”
5	Chess pattern, odd in row “a”
6	Under preparation
7	
8	
9	

Table 5 — Contact level and rows

The number of digits used shall be equal to the number of “signal” or “special” cavity rows. Each digit shall represent the contact level number, according to Table 10, applicable to that row of contacts.
--

Example: 1 – 3111, fully loaded, four (4) rows of contacts, with contact level 3 in row a, contact level 1 in rows b, c and d.

3 Dimensional information

In order to facilitate comparison of various specifications, a uniform presentation of drawing information is used, as stated in clause 3 of IEC 61076-4-001.

3.1 General

All dimensions are given in millimetres, which are original. Drawings are shown in third 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.

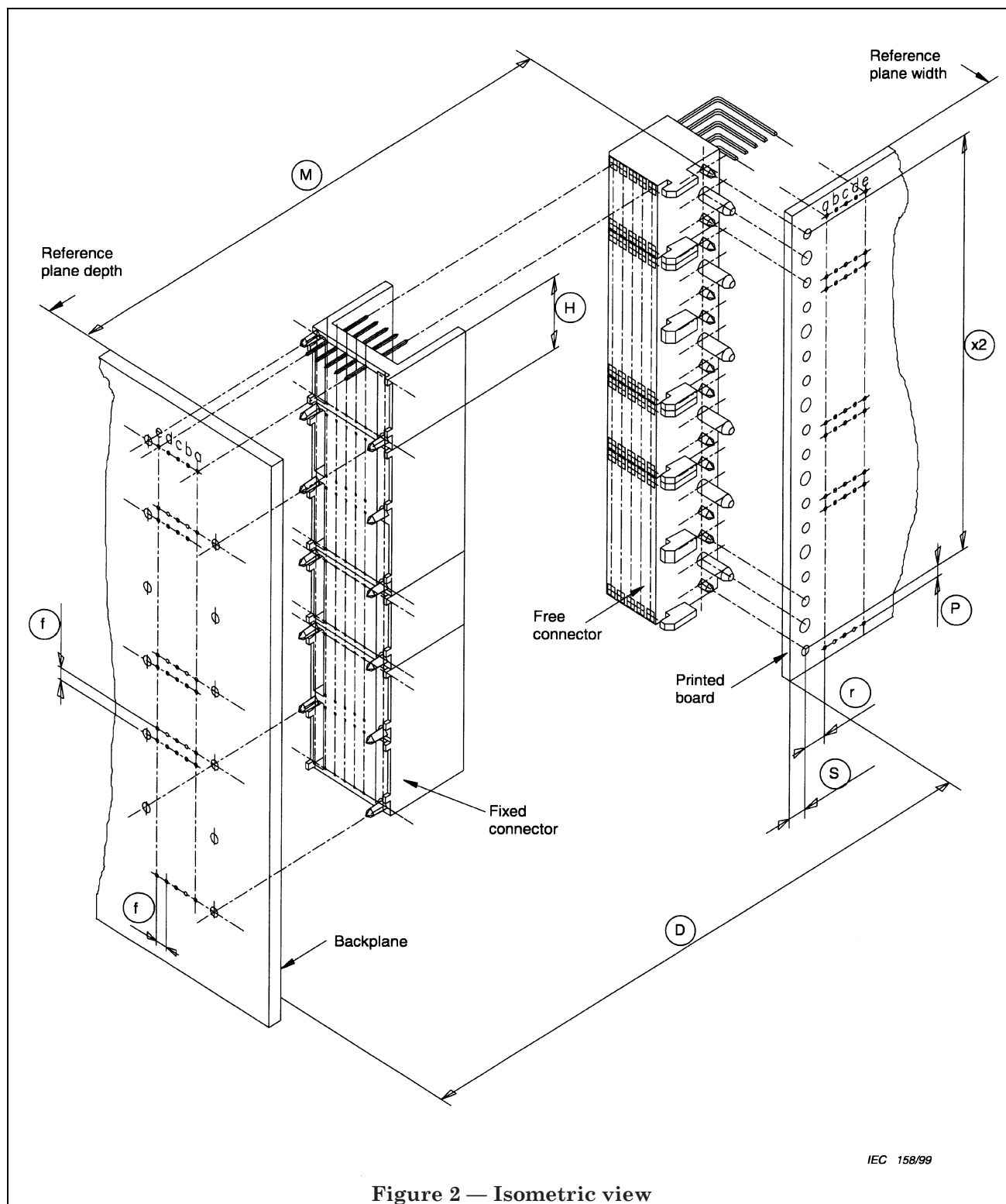
This clause of this standard contains all dimensional information, sequenced paragraphs 3.4 and 3.5 are providing stepped-down detailing so that basic dimensions have not been repeated.

3.2 Isometric view and common features (see Figure 2)

Table 6 — Isometric view and common features

Reference	Dimension	Feature description
H	$n \times 12,0$	Maximum height of fixed connector modules with $n = 1,2,4,8$, etc.
D	10,0	Depth co-ordination dimension: distance between the edge of the printed board and the backplane
M	13,00	Assembled depth, the distance between the mounting planes of the fixed and the free board connector module(s); the contact range “U” is given in 3.3.1
X2	$H - 4,0$	Distance between outermost location pegs of free board connector module(s)
f	2,0	Grid dimension of the terminations of the fixed board connector module(s)
p	1,0	Distance between the location pegs and the first(or last) hole location for termination of the free board mounted connector module(s)
r	4,0	Distance between the location pegs, fixing studs and the first row of termination holes of the free board mounted connector module(s)
s	3,0	Distance between the edge of the printed board and the mounting plane of the free board connector module(s)

3.2.1 Isometric view



3.2.2 Reference system

Co-ordination dimensions are (reference) dimensions without tolerances which indicate the boundary or centre line references in order to allow for (modular) arrangement.

The data lines are indicated in the following clauses 3.2.3, 3.2.4 and 3.2.5.

3.2.3 Height dimensions

The height dimensions are shown in Table 7.

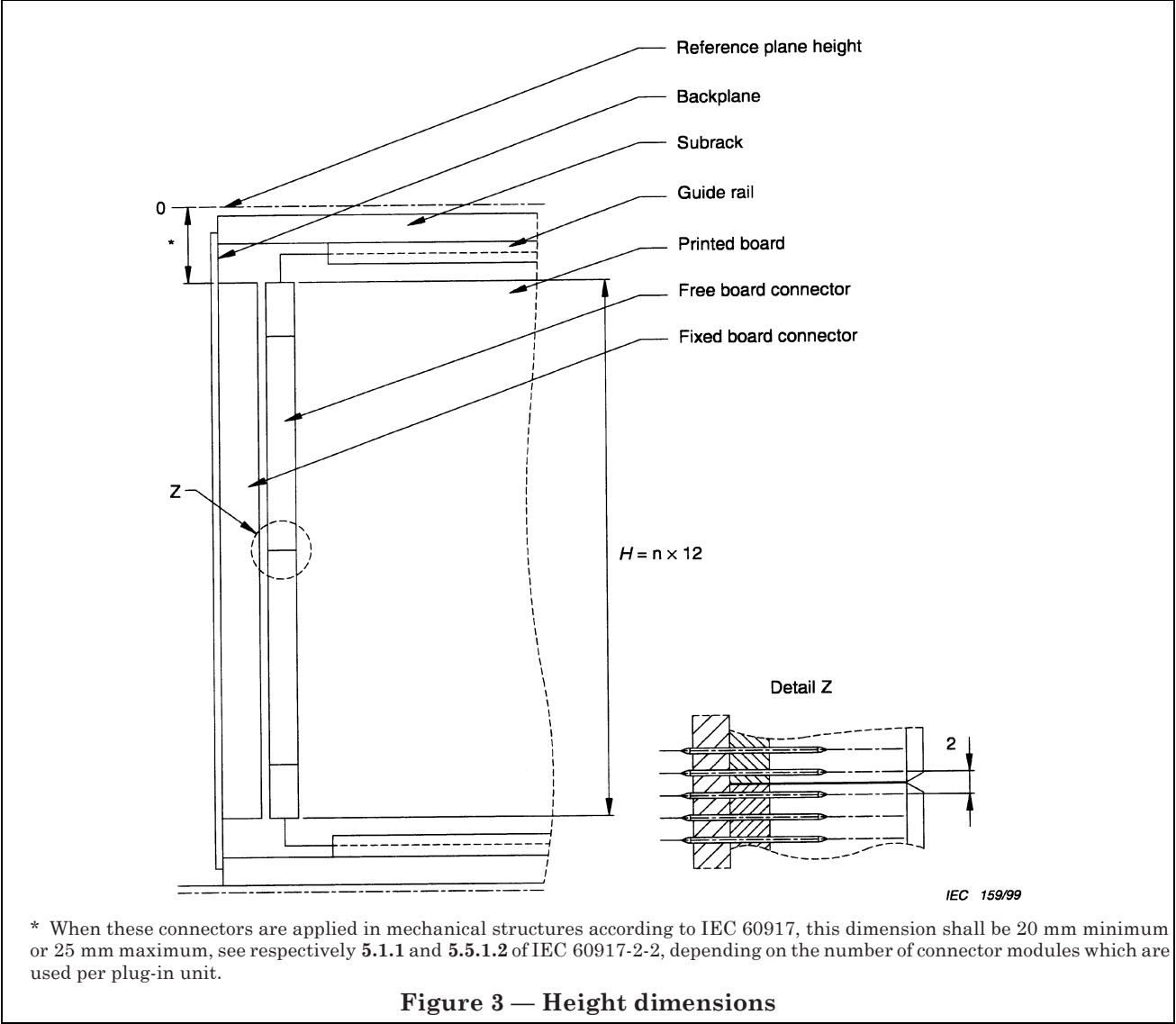


Table 7 — Height dimensions

Number of modules (n)	1	2	4	8	Under consideration
H = connector height in mm	12	24	48	96	

3.2.4 Width dimensions

Table 8 — Width dimensions as in Figure 4 and Figure 5

Fixed board connector		4-row		5-row		Under consideration
		Shape 1 (Figure 4)	Shape 2 (Figure 5)	Shape 1 (Figure 4)	Shape 2 (Figure 5)	
<i>B</i>	Minimum board to board dimension	14,00	16,00	16,00	18,00	
<i>B1</i>	Contour dimensions fixed board connector to the reference plane (width)	3,75	4,60	3,75	4,60	
<i>B2</i>	Width of optional coding	2,90				
<i>B3</i>	Offset of first contact row to the reference plane (width) in accordance with IEC 60917-2-2	1,50				
<i>f</i>	Spacing of the terminations	2,00				

