INTERNATIONAL STANDARD

IEC 60297-3-103

First edition
2004-08

Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series –

Part 3-103: Keying and alignment pin

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International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

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MECHANICAL STRUCTURES FOR ELECTRONIC EQUIPMENT – DIMENSIONS OF MECHANICAL STRUCTURES OF THE 482,6 mm (19 in) SERIES –

Part 3-103: Keying and alignment pin

FOREWORD

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International Standard IEC 60297-3-103 has been prepared by subcommittee 48D: Mechanical structures for electronic equipment, of IEC technical committee 48: Electro-mechanical components and mechanical structures for electronic equipment.

This standard cancels and replaces IEC 60297-5-104 and 60297-5-105.

The text of this standard is based on following documents:

FDIS	Report on voting
48D/301/FDIS	48D/308/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The IEC 60297-3 series consists of the following parts, under the general title *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series*

Part 3-101: Subracks and associated plug-in units

Part 3-102: Injector/extractor handle

Part 3-103: Keying and alignment pin

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual edition of this standard may be issued at a later date.

INTRODUCTION

The “Dimensions of mechanical structures of the 482,6 mm (19 in) standards are defined in IEC 60297. To the original IEC 60297-3:1988 publication was added Amendment 1:1995. The additional requirements were published in IEC 60297-4:1995 with Amendment 1:1999.

The extended requirements were published in the IEC 60297-5-1XX series (2001). Responding to market requirements and for more clarity it became necessary to merge and technically enhance these standard “parts” into 3 “new” standards for subracks and associated plug-in units. This “merged” standard series now defined as IEC 60297-3-101, IEC 60297-3-102 and IEC 60297-3-103 explains its relationship to the previous “fragmented” IEC 60297-X standards, see Figure 1.

The nomenclature of these new standards has been revised. The relationship to IEC 60297-1 (Part 1: Panels and Racks) has been maintained. The relationship to IEC 60297-2 (Part 2: Cabinets and pitches of rack structures) has been maintained. The relationship to IEC 61587-1 (Part 1: Climatic, mechanical tests and safety aspects for cabinets, racks, subracks and chassis) and IEC TS 61587-3 (Part 3: Electromagnetic shielding performance tests for cabinets, racks and subracks) has been added.

IEC 60297-3-103 defines only the interface dimensions for an alignment pin and a keying device which are additional to those defined in IEC 60297-3-101.

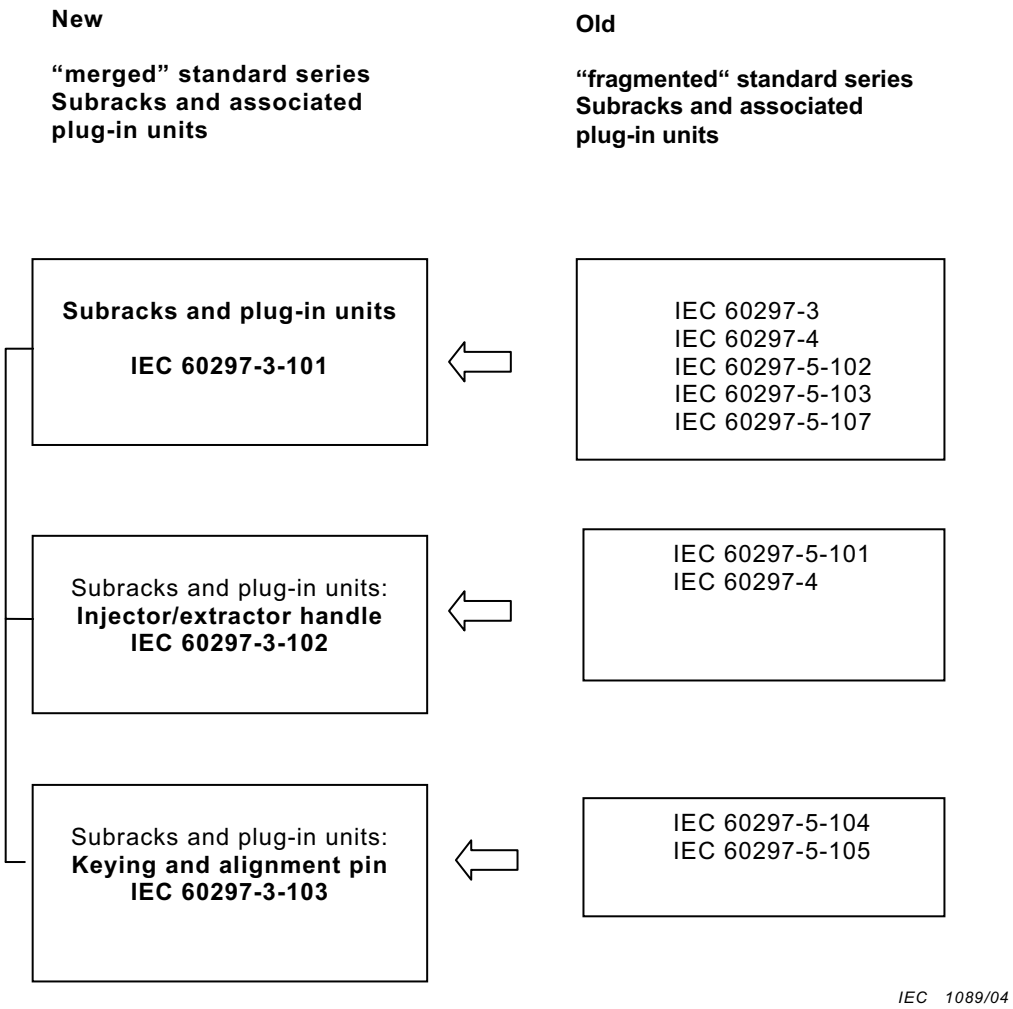


Figure 1 – Relationship between the new IEC 60297-3 series and the old IEC 60297 series

MECHANICAL STRUCTURES FOR ELECTRONIC EQUIPMENT – DIMENSIONS OF MECHANICAL STRUCTURES OF THE 482,6 mm (19 in) SERIES –

Part 3-103: Keying and alignment pin

1 Scope and object

This part of IEC 60297 covers only the additional interface dimensions for an alignment pin and a keying device used with subracks and plug-in units according to IEC 60297-3-101. This standard may also be used in conjunction with IEC 60297-3-102.

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 60297-3-101, *Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 3-101: Subracks and associated plug-in units*

IEC 60297-3-102, *Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 3-102: Injector/extractor handle*

IEC 60917-1:1998, *Modular order for the development of mechanical structures for electronic equipment practices*

3 Terms and definitions

For the purposes of this part of IEC 60297, the terms and definitions given in IEC 60917-1 apply.

4 Arrangement overview: Keying of plug-in units in a subrack

4.1 General

This method of keying will prevent misarrangement of board type plug-in units into subracks.

The keys shall be snap-in mounted for the purpose of change and/or retrofit in accordance to the application order.

The keying feature needs the special retainer on the plug-in unit as well as on the subrack guiderail, as shown by Figures 2 to 7.

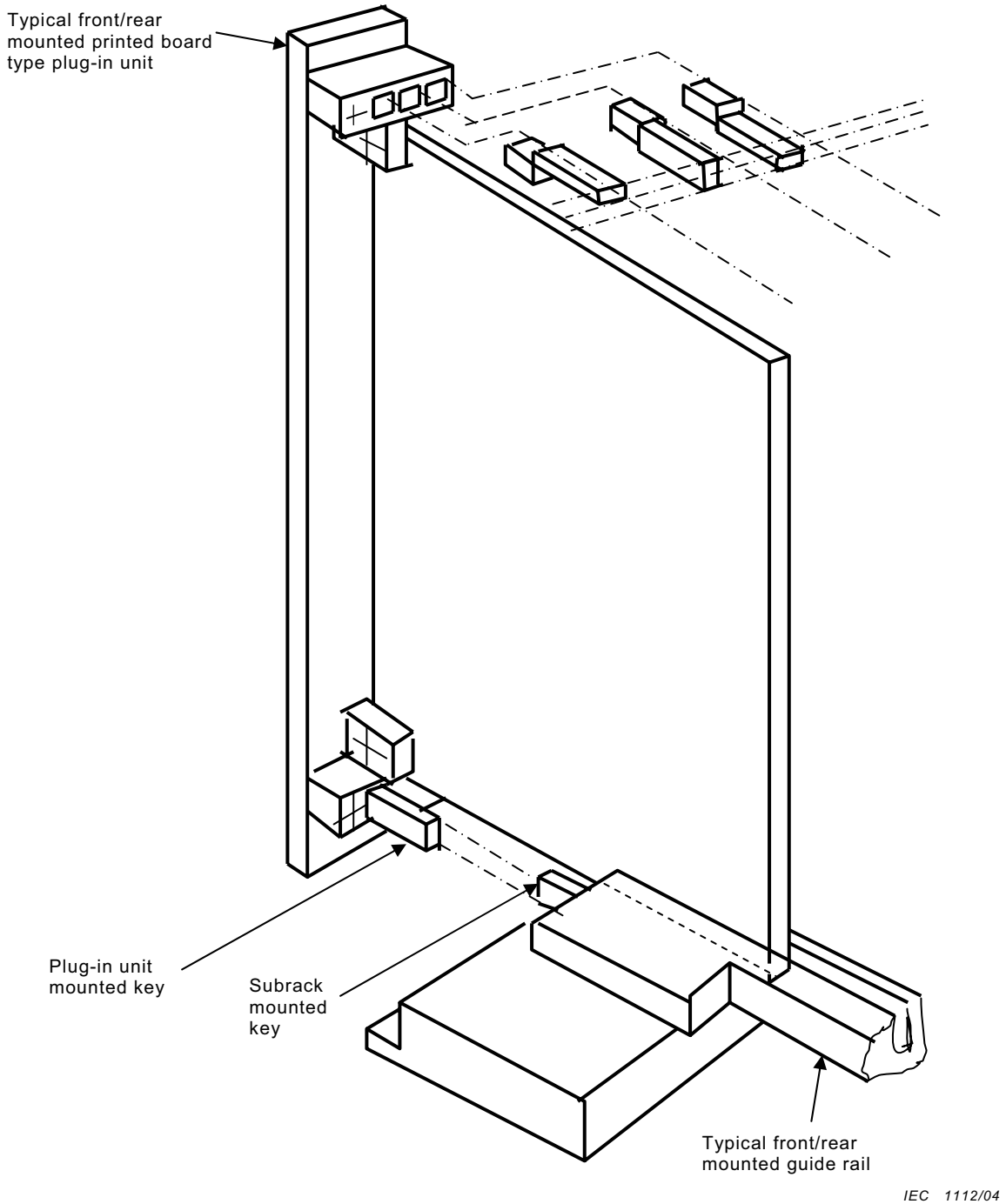
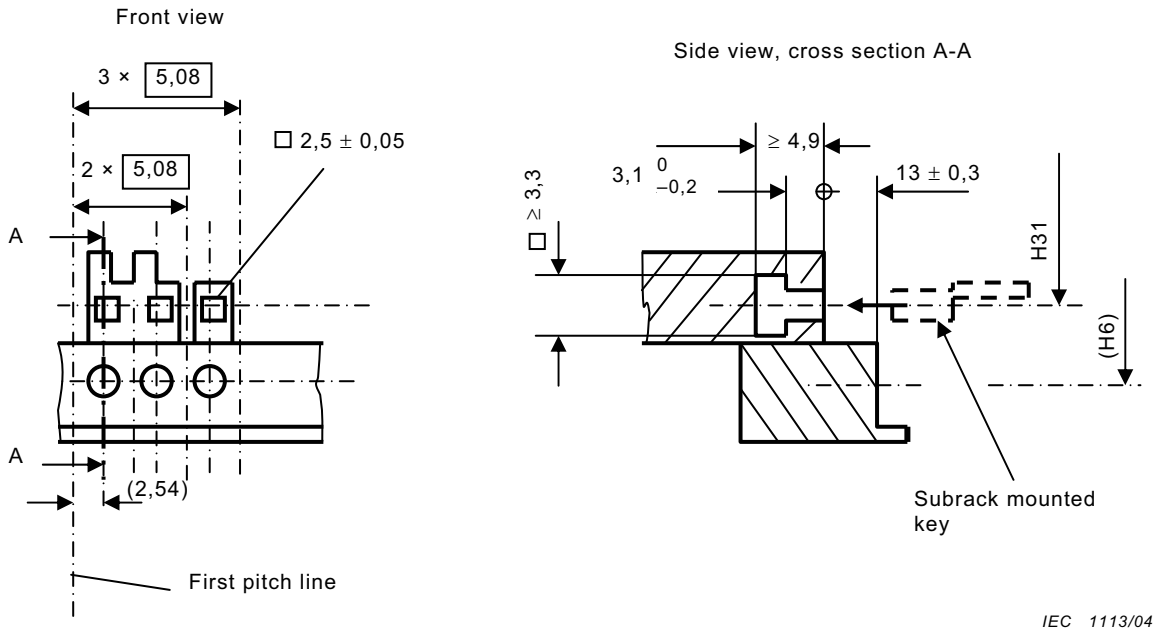


Figure 2 – Keying of a plug-in unit in a subrack

4.2 Subrack interface dimensions for keying

All dimensions are in millimetres



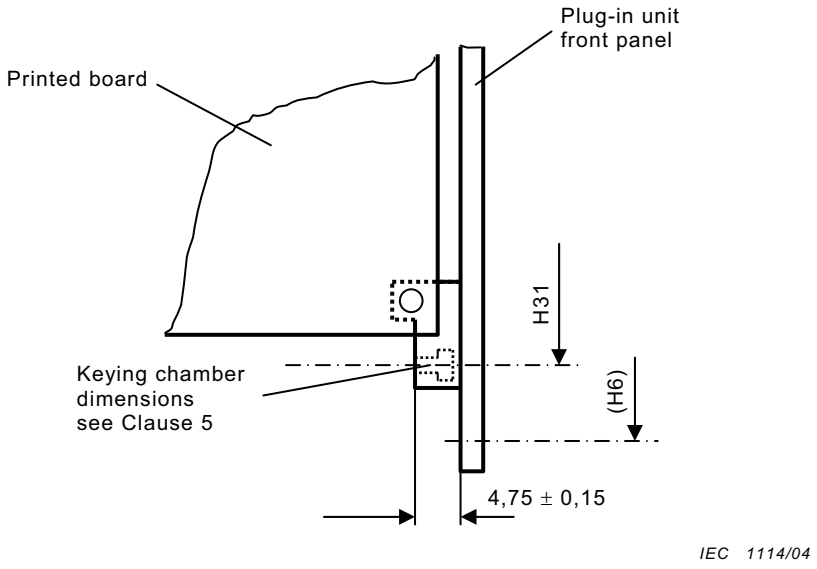
NOTE The two chamber solution may be used for box type plug-in units. The three chamber solution is suitable for printed board type plug-in units. Keying on the rear of the subrack is of mirror image.

For missing dimensions and those in brackets, see IEC 60297-3-101.

Figure 3 – Subrack interface dimensions for keying

4.3 Plug-in unit keying interface dimensions

All dimensions are in millimetres



NOTE For missing dimensions, see 4.2.

Figure 4 – Plug-in unit keying interface dimensions

4.4 Key dimensions

The key dimensions will allow the programming of four positions within a subrack mounting chamber. The key shall be designed for a selfretaining snap-in assembly.

The subrack mounting chambers are identified by letters. For a safe function on 3U subracks, the keying is recommended on the lower side only, whereas for 6U and 9U keying in both positions, on the upper and lower side, is necessary.

All dimensions are in millimetres

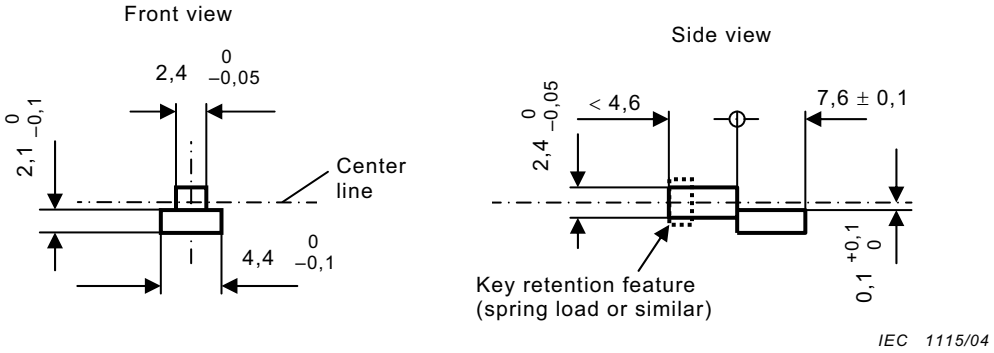
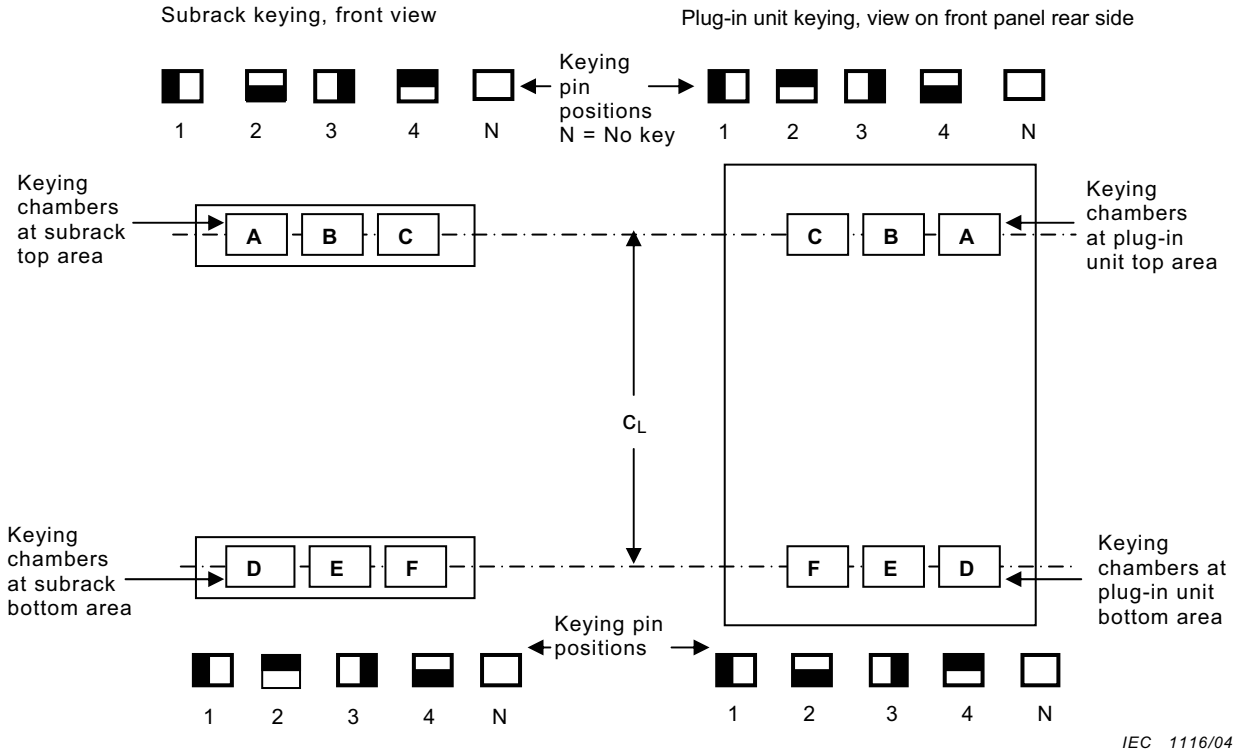


Figure 5 – Key dimensions

4.5 Programming of keys



NOTE The corresponding keying chambers on the subrack and the plug-in unit are indicated by the same letters. The numbering order of keying pins as shown was chosen with the purpose that the corresponding chambers with the same keying pin identification number will not block by inserting a plug-in unit. If corresponding chambers are fitted with different keying identification numbers, the plug-in unit will be blocked and cannot be inserted. On the rear of the subrack/plug-in unit the letters A, B, C will be on the bottom and D, E, F on the top. The order of letters on the rear is of mirror image.

Figure 6 – Programming of keys

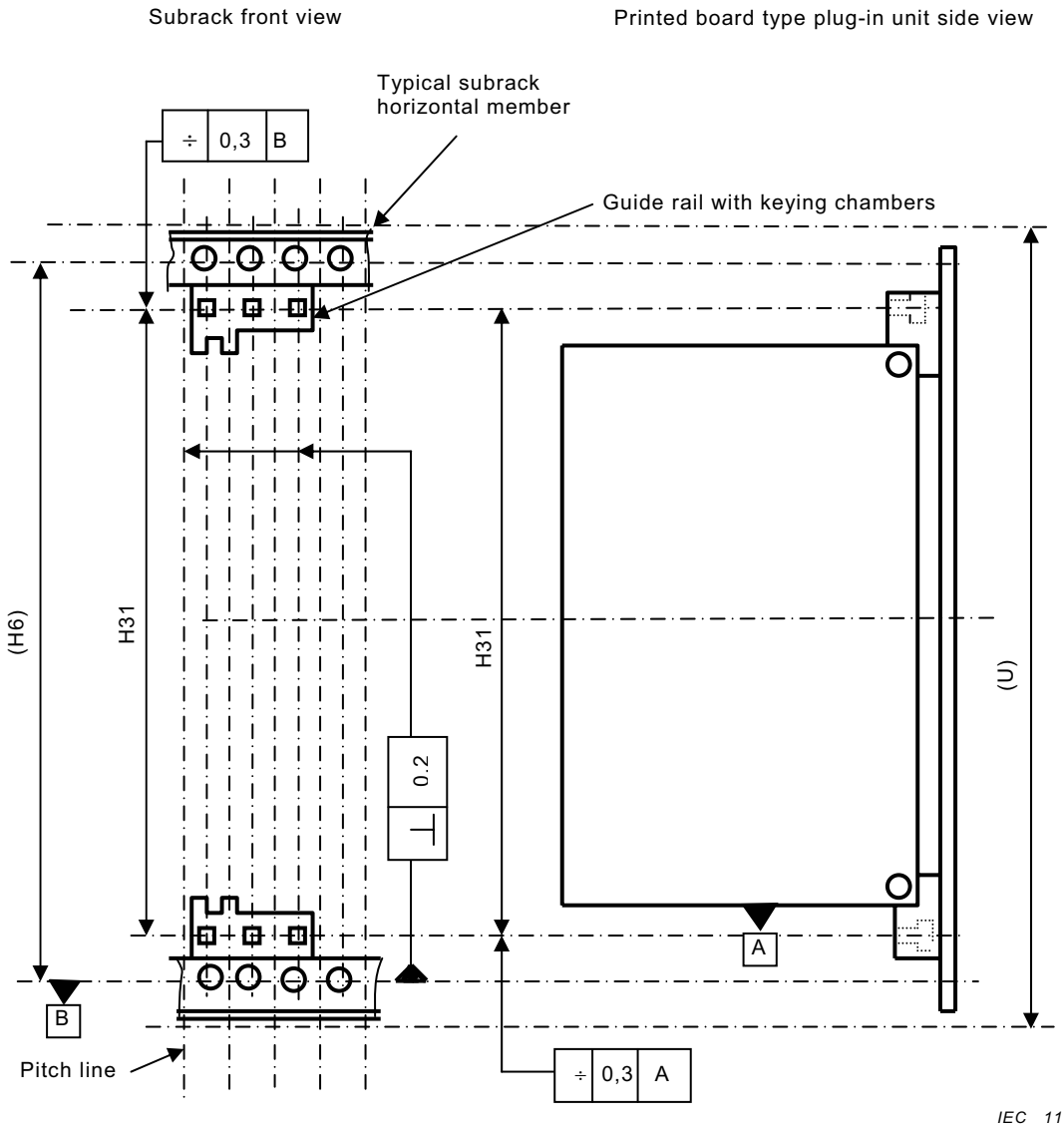
4.6 Keying chamber inspection dimensions

Table 1 – Subrack and plug-in unit keying chamber inspection dimensions

All dimensions are in millimetres

(U)	3	6	9
H31 ± 0,3	106	239,35	372,7

All dimensions are in millimetres



For dimensions in brackets and missing dimensions, see IEC 60297-3-101.

NOTE The guide rail on the rear of the subrack is of mirror image.

Figure 7 – Front and/or rear subrack and plug-in unit keying chamber inspection dimensions

5 Arrangement overview: alignment and/or electrical contact of a plug-in unit to a subrack

5.1 General

The features of this alignment and/or electrical contact will be used: for the alignment of front panels in a controlled distance within a subrack (e.g. for the use of shielding gaskets, see IEC 60297-3-101) or as an advanced contact to the receptacle in the subrack. See Figures 8 to 10.

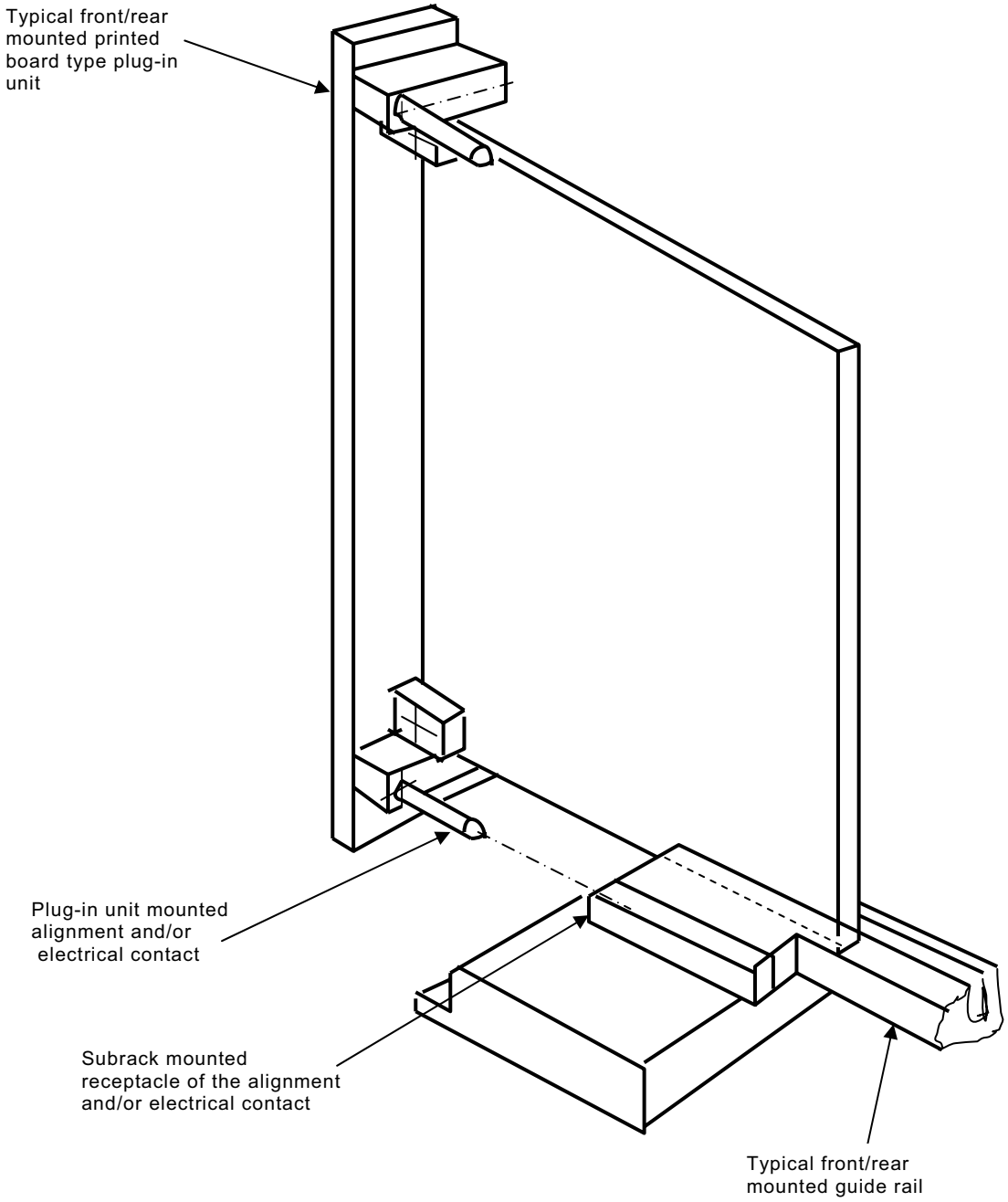
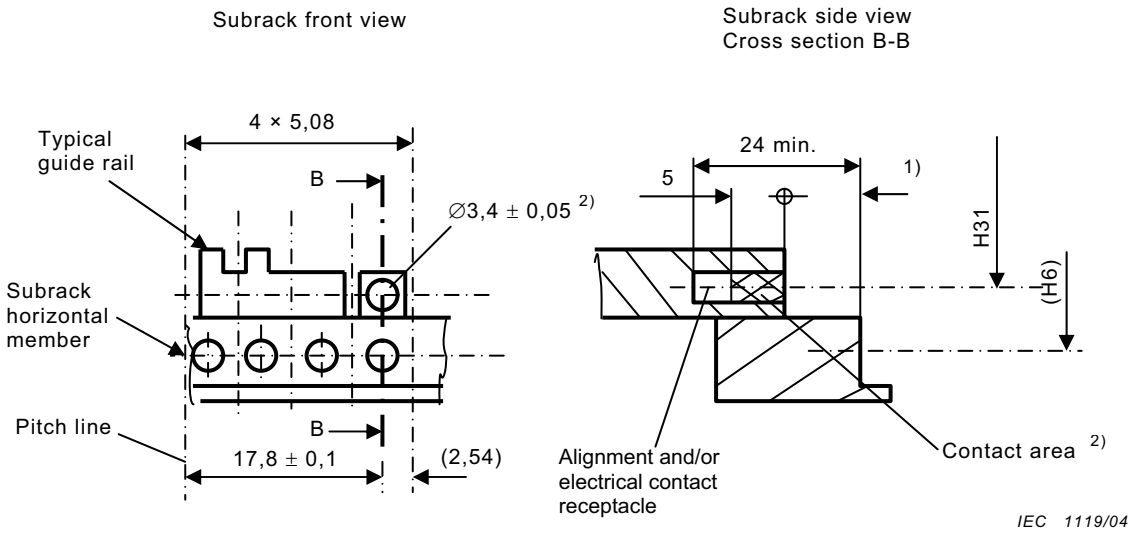


Figure 8 – Alignment and/or electrical contact of a plug-in unit to a subrack

5.2 Alignment and/or electrical contact receptacle in the subrack guide rail for printed board type plug-in units (width dimension ≥ 4 x 5,08 mm)

All dimensions are in millimetres



For dimensions in brackets and missing dimensions, see IEC 60297-3-101.

1) See 4.2.

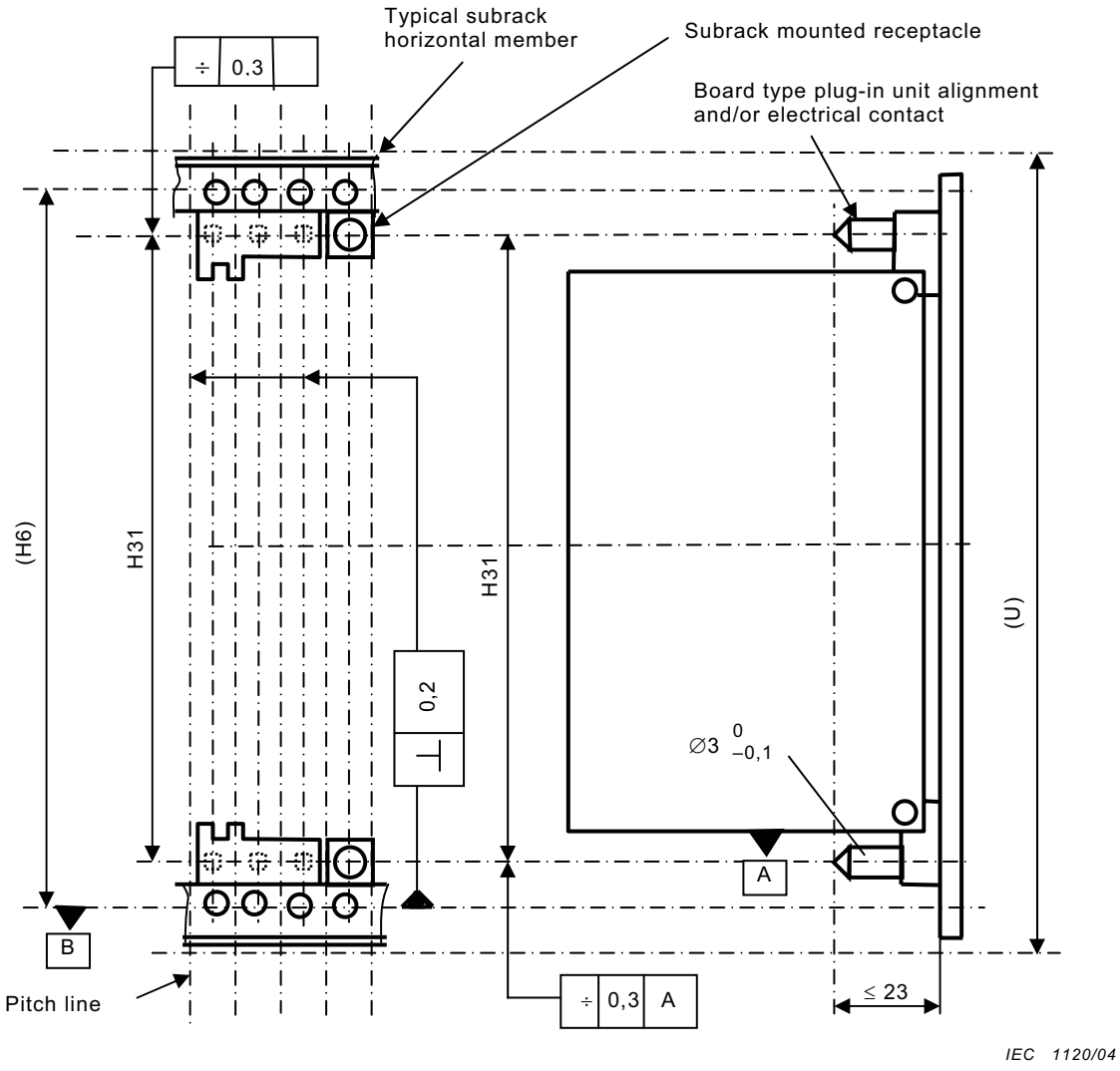
2) The alignment pin receptacle may be an integrated part of the guide rail. The dimension of the hole will provide the guidance for the alignment pin. Within the defined area of 5 mm an earth contact may be optionally used. The electrical contact shall interconnect the alignment pin to the chassis ground of the subrack.

NOTE The position of the receptacle on the rear of the subrack is of mirror image

Figure 9 – Alignment and/or electrical contact receptacle position in the subrack

5.3 Alignment and/or electrical contact interface inspection dimensions

All dimensions are in millimetres



For dimensions in brackets and missing dimensions, see IEC 60297-3-101. Dimension H31, see Table 1.

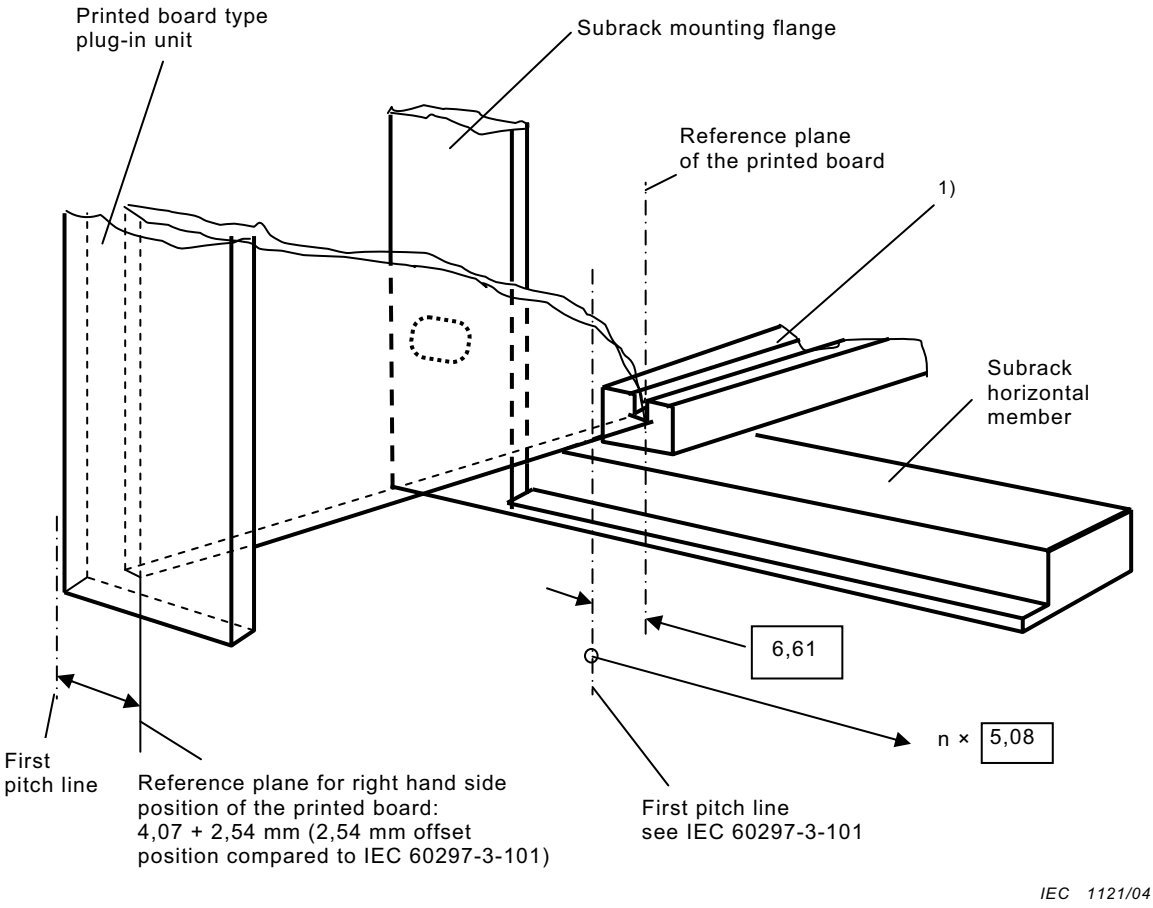
Figure 10 – Alignment and/or electrical contact interface inspection dimensions

6 Arrangement overview: Subrack guide rail and printed board, 2,54 mm offset of the printed board reference plane

6.1 General

The offset of the guide rail does not change the position in the subrack, but it shifts the grove for the printed board 2,54 mm to the right, as shown in Figures 11 to 13.

All dimensions are in millimetres

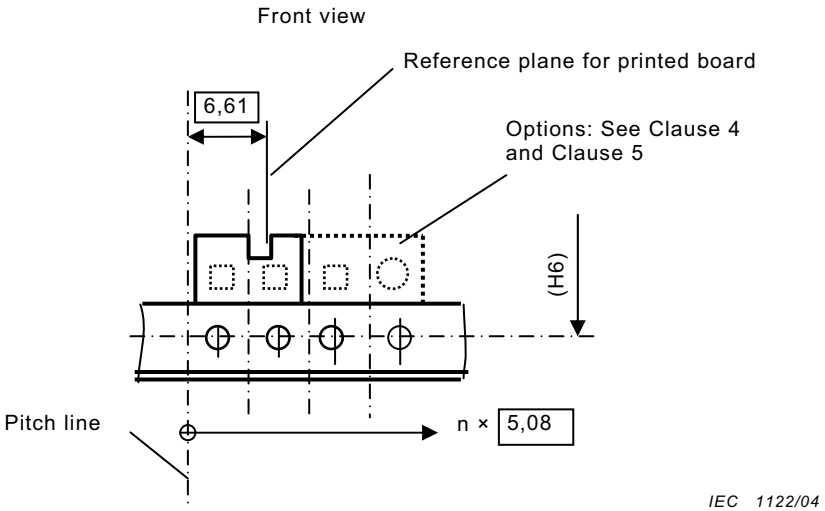


1) The position of the guide rail may be on any horizontal pitch. The combined use with guide rails as per IEC 60297-3-101 is possible.

Figure 11 – Subrack guide rail and printed board, 2,54 mm offset of the printed board reference plane

6.2 Dimensions of the subrack guide rail with 2,54 mm offset of the printed board reference plane

All dimensions are in millimetres



For dimensions in brackets and missing dimensions, see IEC 60297-3-101.

Rear mounted guide rail is of mirror image.

Figure 12 – Dimensions of the subrack guide rail with 2,54 mm offset of the printed board reference plane

6.3 Reference plane for printed boards with 2,54 mm offset position

All dimensions are in millimetres

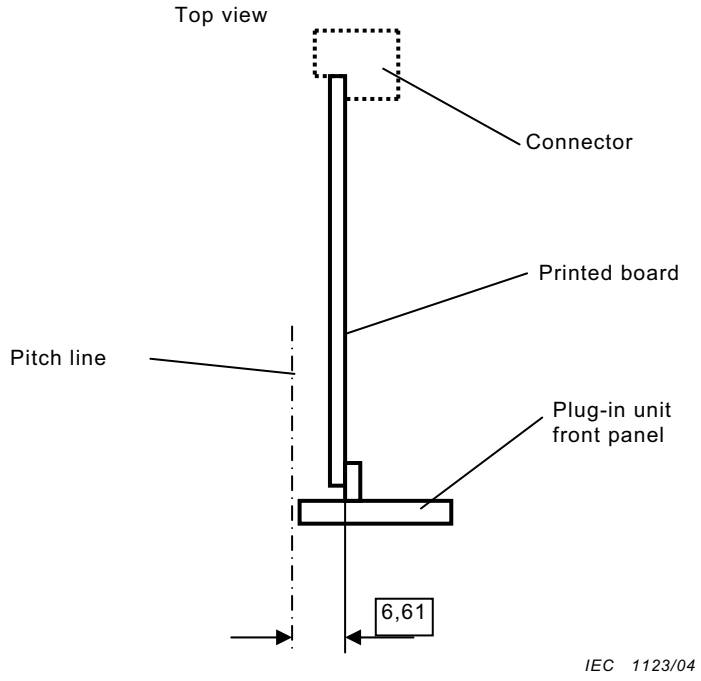


Figure 13 – Reference plane for printed boards with 2,54 mm offset position

7 Dimensions used in the figures

Height

U: Coordination height unit of 44,45 mm (1,75 inch). See IEC 60297-1.

H6: Mounting center distance for plug-in units, front panels backplanes and connector supports.

H31: Vertical positioning centers for alignment pins and keys.

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