

INTERNATIONAL STANDARD

IEC
60297-5-105

First edition
2001-01

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

Part 5-105: Subracks and associated plug-in units – Alignment and/or earth pin

*Structures mécaniques pour équipement électronique –
Dimensions des structures mécaniques de la série
de 482,6 mm (19 in) –*

*Partie 5-105:
Bacs et blocs enfichables associés –
Broche d'alignement et/ou de terre*



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

**Part 5-105: Subracks and associated plug-in units –
Alignment and/or earth pin**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60297-5-105 has been prepared by subcommittee 48D: Mechanical structures for electronic equipment, of IEC technical committee 48: Electromechanical components and mechanical structures for electronic equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
48D/243/FDIS	48D/252/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 3.

IEC 60297-5 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 5-100, Subracks and associated plug-in units – Design overview

Part 5-101, Subracks and associated plug-in units – Injector/extractor handle

Part 5-102, Subracks and associated plug-in units – Electromagnetic shielding provision

Part 5-103, Subracks and associated plug-in units – Electrostatic discharge protection

Part 5-104, Subracks and associated plug-in units – Keying

Part 5-105, Subracks and associated plug-in units – Alignment and/or earth pin

Part 5-107, Subracks and associated plug-in units – Rear mounted plug-in units

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date, the publication will be

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

A bilingual version of this publication may be issued at a later date.

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Withdrawn

INTRODUCTION

This part of IEC 60297 is based on IEC 60297-3 (1984), its Amendment 1 (1992), and IEC 60297-4 (1995). It contains detail dimensions which ensure dimensional interchangeability of subracks and plug-in units, with alignment and/or earth pins where removable board type plug-in units require a method of aligning and/or earthing subrack front and/or rear mounted plug-in unit front panels (in the case of an earthing in, plugged-in condition) to the subrack chassis earth.

The basic function of the alignment and/or earth pin for the board type plug-in unit with front panel is to align the printed board type plug-in unit mounted connector prior to engagement with the subrack mounted connector, and to control electromagnetic shielding gasket pressure (see IEC 60297-5-102).

For the purpose of this standard, a minimum printed board type plug-in unit front panel with a width of four horizontal pitches (4HP) has been chosen. This is to permit the combination with plug-in unit keying (see IEC 60297-5-104) and/or plug-in unit injector/extractor handles (see IEC 60297-5-101).

Alignment of printed board type plug-in unit front panels of less than 4HP, box type plug-in unit front panels or filler panels, typically required when electromagnetic shielding gaskets are used, may use commercially available solutions designed within the rules of interchangeability, or other standardized methods.

A further function of the alignment and/or earth pin is to act as an earth contact between the subrack and the plug-in unit front panel using no retention screw (see IEC 60297-3). In such a case, the alignment and/or earth pin can act as an electrostatic discharge protection and/or a earth device (see IEC 61587-1).

This standard applies only to the mechanical structures for electronic equipment practices according to the IEC 60297 series.

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

Part 5-105: Subracks and associated plug-in units – Alignment and/or earth pin

1 Scope and object

This part of IEC 60297 covers extended features of an alignment and/or earth pin method added to board type plug-in units with front panels of a minimum width of four horizontal pitches (HP) and subracks according to IEC 60297-3, IEC 60297-4 and IEC 60297-5-107. The electrical test requirements are defined in IEC 61587-1. This alignment and/or earth pin feature will also counteract the pressure exerted by the plug-in unit and/or filler panel shielding gaskets as defined in IEC 60297-5-102. By implementing this extended feature in the subracks and plug-in units, a new subrack and plug-in unit type (incompatible with IEC 60297-3 and IEC 60297-4) is created.

The purpose of this standard is to specify dimensions which will ensure dimensional interchangeability of subracks and associated plug-in units using the extended function of an alignment and/or earth pin method added to IEC 60297-3, IEC 60297-4 and IEC 60297-5-107.

For mechanical and climatic tests refer to IEC 61587-1.

For electromagnetic shielding performance tests refer to IEC/TS 61587-3.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60297. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 60297 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

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

IEC 60297-4, *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 4: Subracks and associated plug-in units – Additional dimensions*¹

IEC 60297-5-100, *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 5-100: Subracks and associated plug-in units – Design overview*

IEC 60297-5-101, *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 5-101: Subracks and associated plug-in units – Injector/extractor handle*

¹ There is a consolidated edition 1.1 (1999) that includes IEC 60297-4 (1995) and its amendment 1 (1999).

IEC 60297-5-102, *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 5-102: Subracks and associated plug-in units – Electromagnetic shielding provision*

IEC 60297-5-103, *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 5-103: Subracks and associated plug-in units – Electrostatic discharge protection*

IEC 60297-5-104, *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 5-104: Subracks and associated plug-in units – Keying*

IEC 60297-5-107, *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series – Part 5-107: Subracks and associated plug-in units – Rear mounted plug-in units*

IEC 60917-1, *Modular order for the development of mechanical structures for electronic equipment practices – Part 1: Generic standard*

IEC 61587-1, *Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 – Part 1: Climatic, mechanical tests and safety aspects for cabinets, racks, subracks and chassis*

IEC/TS 61587-3, *Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 – Part 3: Electromagnetic shielding performance tests for cabinets, racks and subracks*

3 Definitions

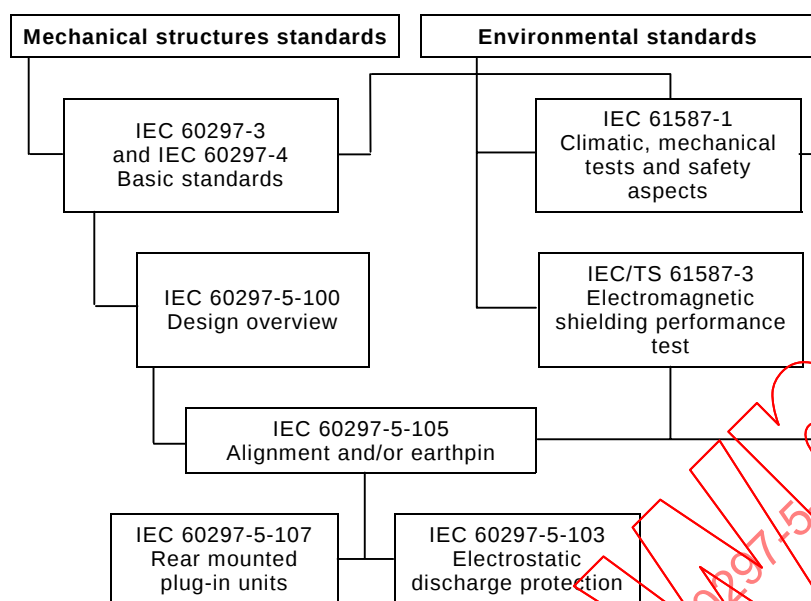
For the purpose of this part of IEC 60297, the definitions of IEC 60917-1 apply.

4 Extended features added to IEC 60297-3 and IEC 60297-4

This standard gives dimensions only where they differ from or supplement those to be found in IEC 60297-3 and 60297-4. The dimensions used in this standard shall take precedence over those of IEC 60297-3 and 60297-4 when conformance to this standard is claimed. Dimensions shown in brackets are for reference only and are found in the stated standards.

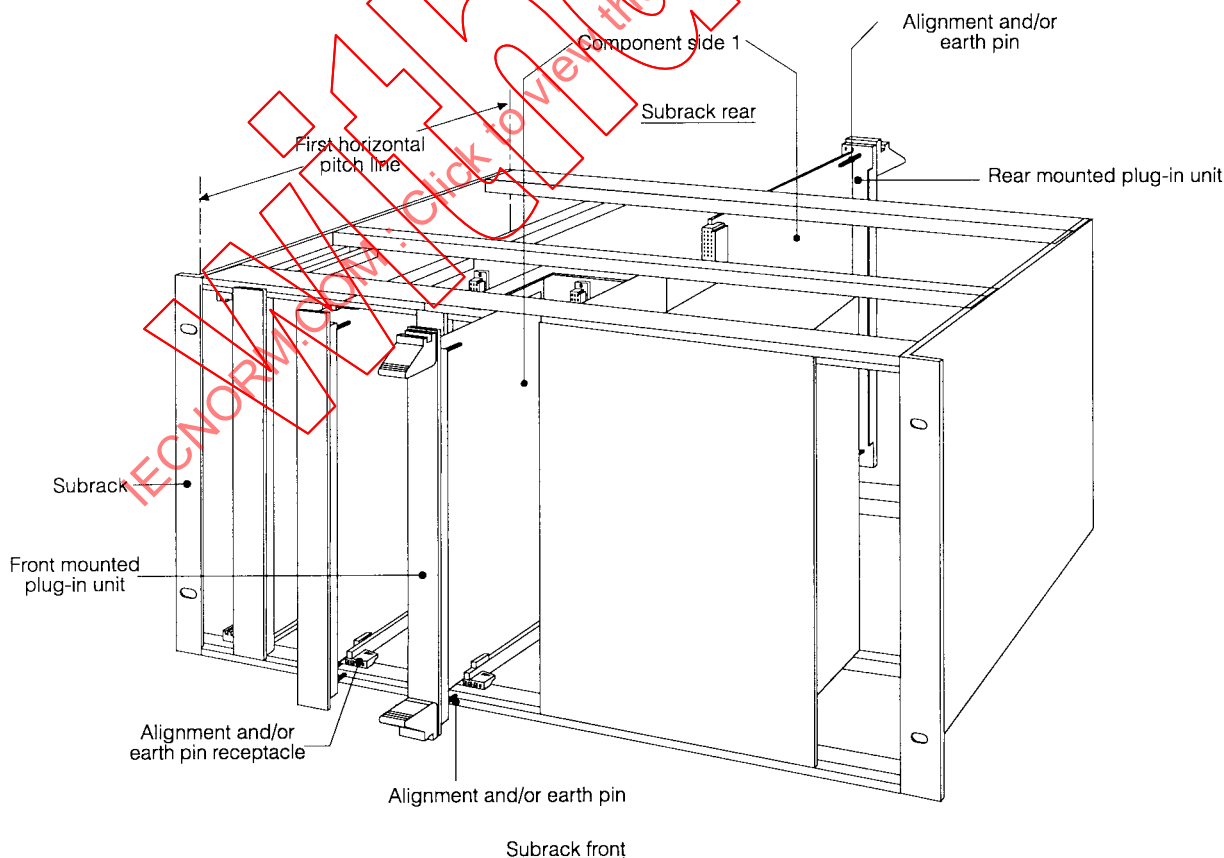
The drawings in this standard are not intended to indicate product design.

Extended feature	Basic standards	Extended standards	Environmental standard(s)
Alignment and/or earth pin	IEC 60297-3 IEC 60297-4	IEC 60297-5-102 IEC 60297-5-105 IEC 60297-5-107	IEC/TS 61587-3 IEC 61587-1



5 General equipment arrangement

Generally, these are subracks featuring front and/or rear subrack mounted board type plug-in units with alignment and/or earth pins.

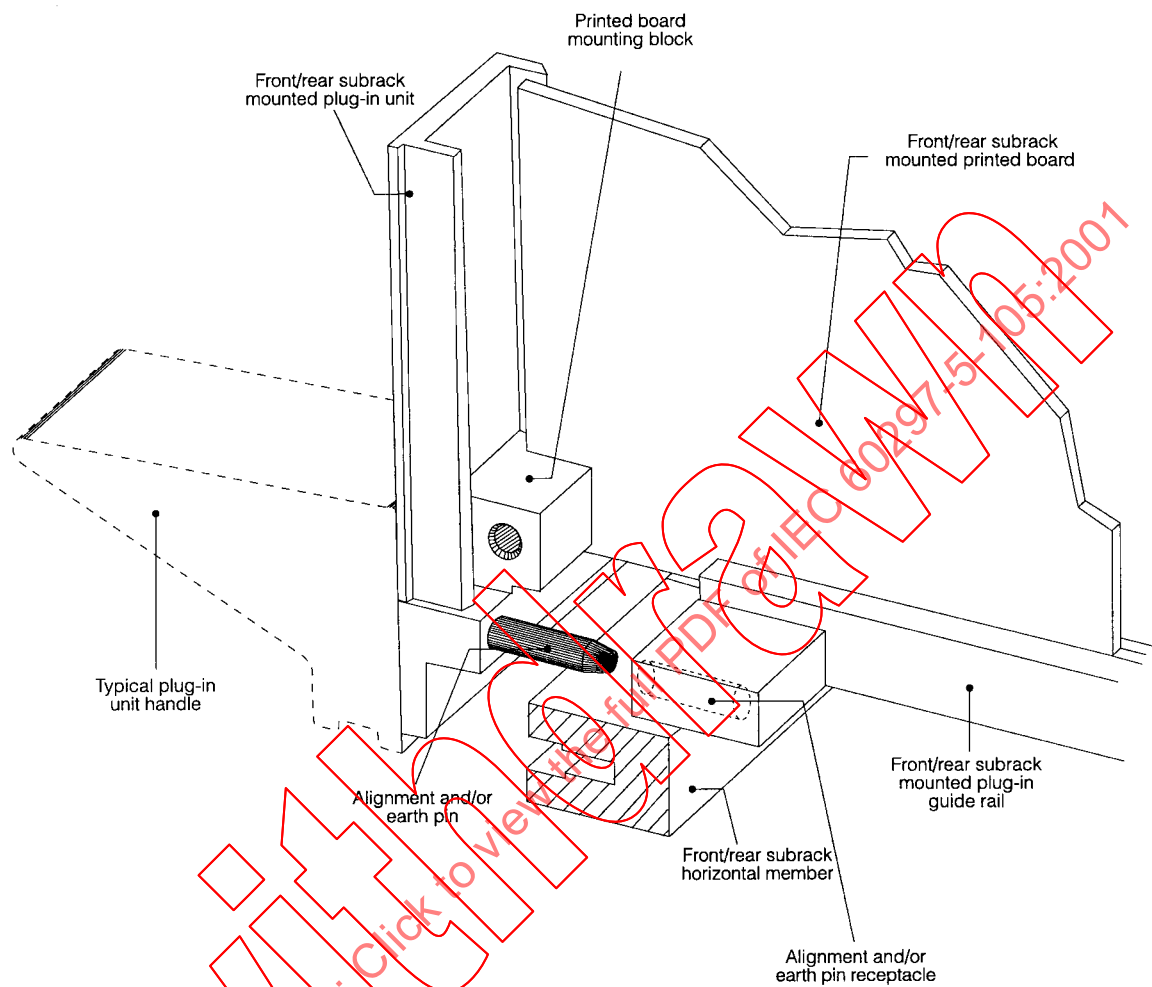


IEC 2838/2000

Figure 1 – General equipment arrangement – Typical 6U subrack with front and/or rear mounted board type plug-in units featured with alignment and/or earth pins

6 Detail equipment arrangement

The detail arrangement below points out the added alignment and/or earth pin feature of this standard.



IEC 2839/2000

Figure 2 – Design detail equipment arrangement

7 Alignment and/or earth pin for printed board type plug-in units $\geq 4\text{HP}$

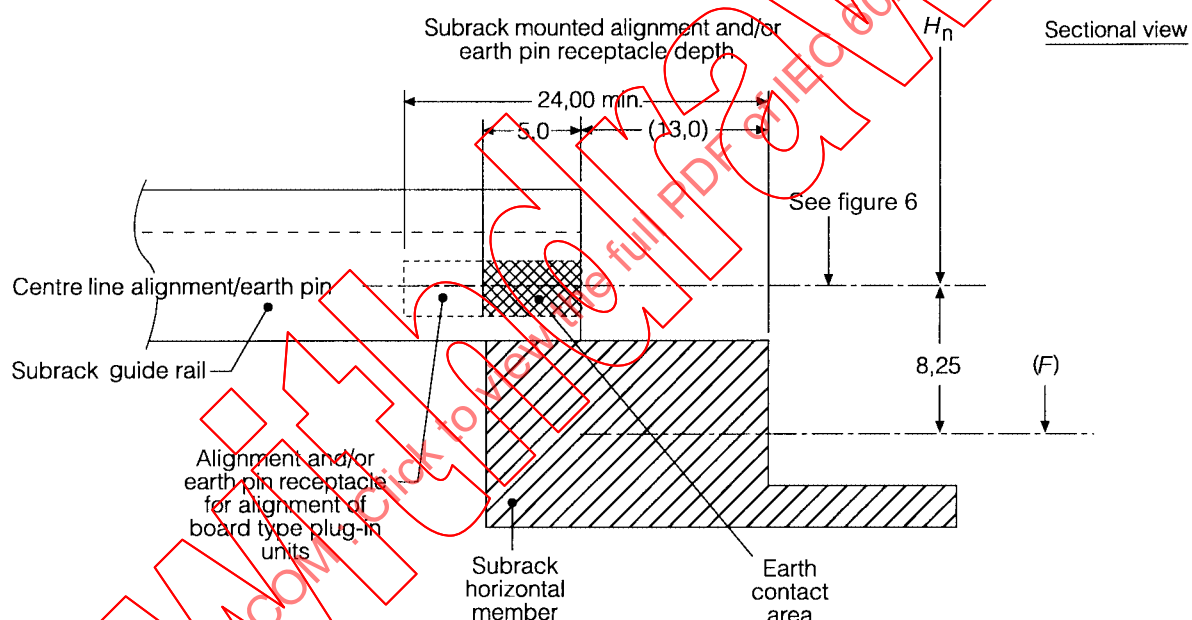
This type of alignment and/or earth pin is defined for subrack front/rear mounted board type plug-in units with a minimum width of 4HP.

The function of this standardized alignment and/or earth pin is to align the printed board front panel and filler panels with electromagnetic shielding provision within the horizontal pitch lines (HP) of the subrack, to improve the alignment of the printed board type plug-in unit vertically prior to plug-in unit connector engagement in the subrack, and to provide for an earth connection between the plug-in unit front panel and the subrack, in plugged-in condition.

7.1 Alignment and/or earth pin receptacle position in the subrack guide for printed board type plug-in units $\geq 4\text{HP}$

H_n is the centre line of the alignment/earth pin and the alignment/earth pin receptacle. See table 1.

() See IEC 60297-3, IEC 60297-4 and IEC 60297-5-104.



IEC 2840/2000

Dimensions in millimetres

Figure 3 – Alignment and/or earth pin receptacle position in the subrack front/rear mounted guide rails

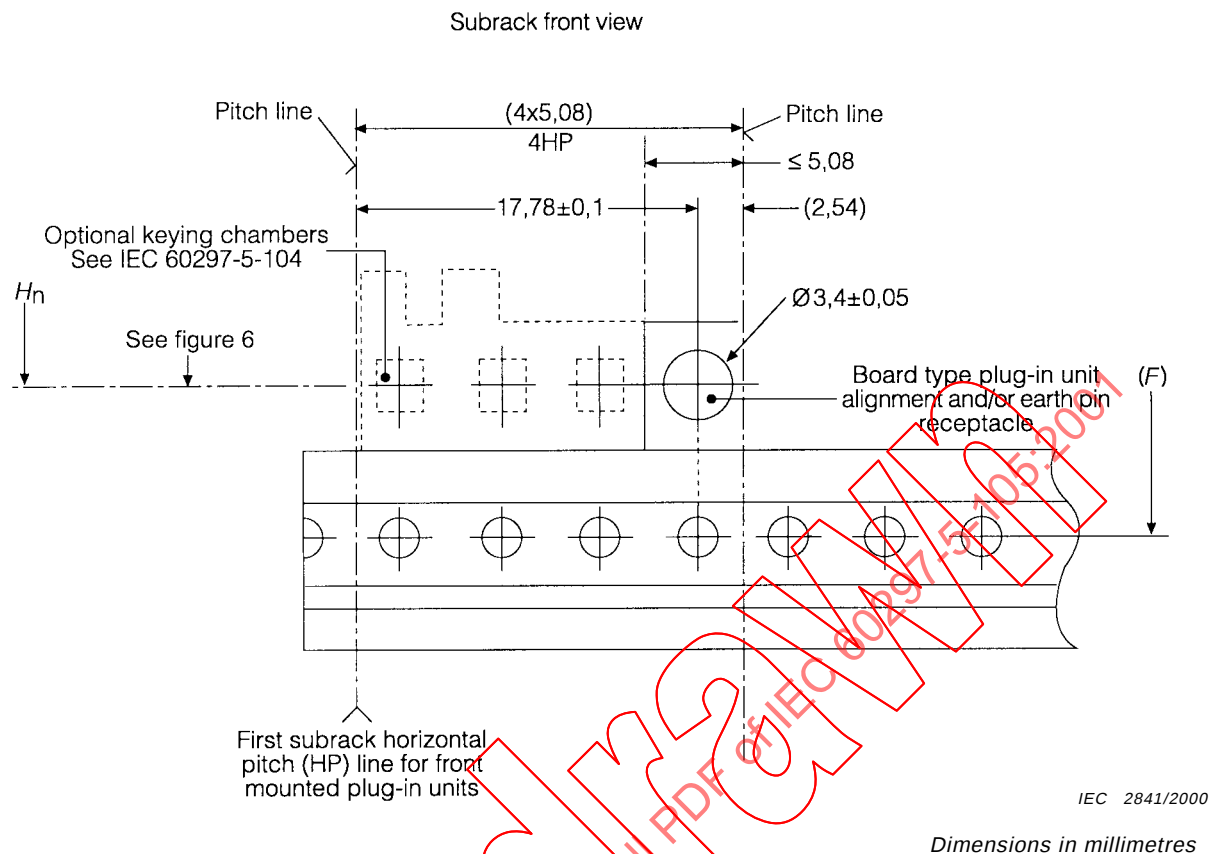


Figure 4 – Subrack alignment and/or earth pin receptacle position for subrack front mounted plug-in units

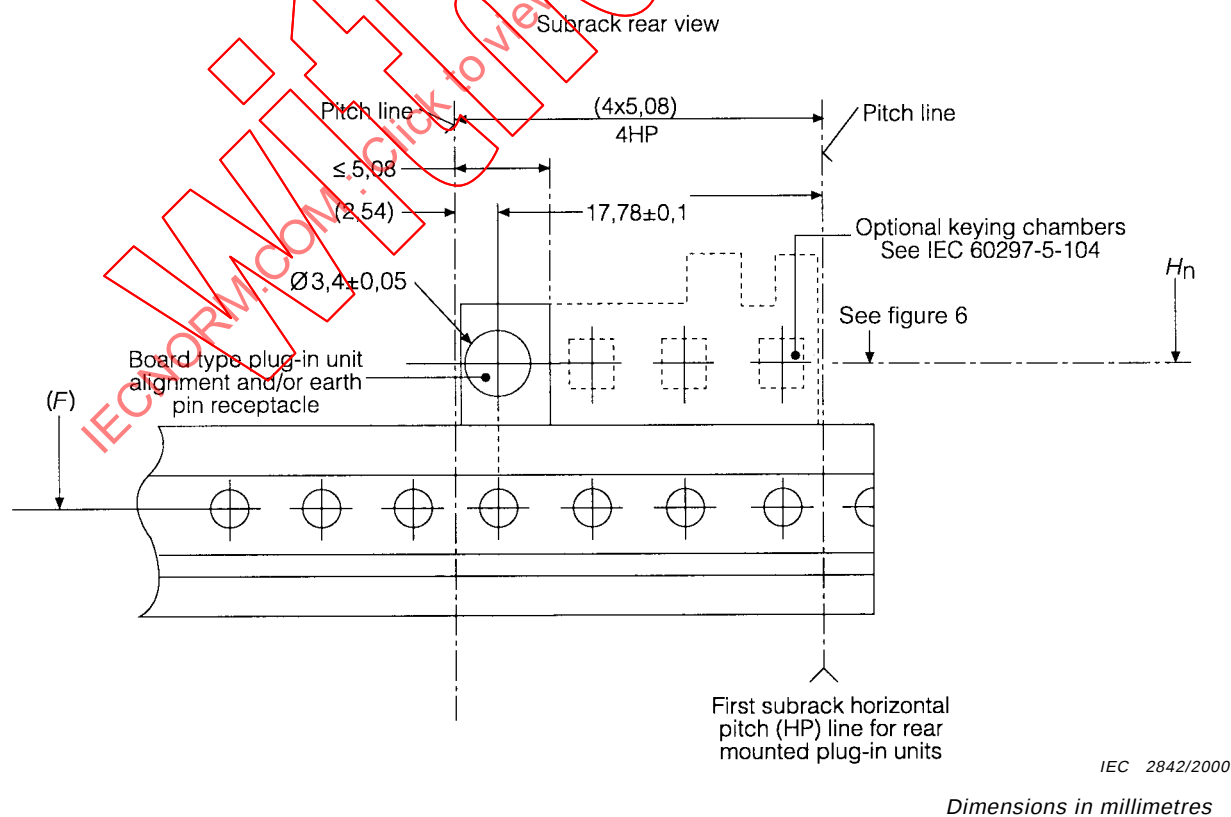


Figure 5 – Subrack alignment and/or earth pin receptacle position for subrack rear mounted plug-in units

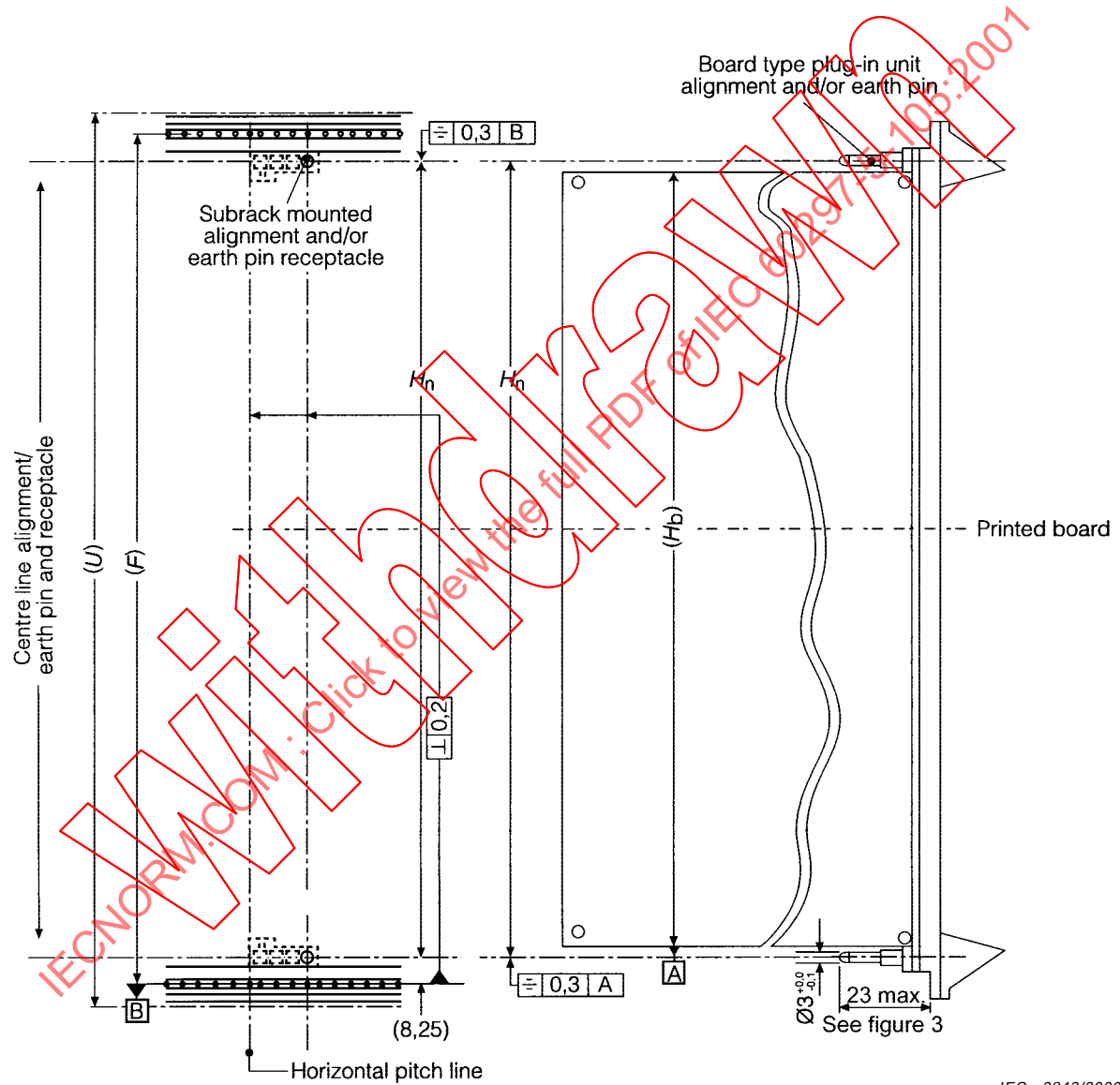
7.2 Alignment and/or earth pin and alignment/earth receptacle inspection dimensions

Table 1 – Subrack alignment and/or earth pin receptacle and printed board type plug-in unit alignment/earth pin inspection dimensions

Dimensions in millimetres

(U)	3	6	9
$H_n \pm 0,30$	106,00	239,35	372,70

() See IEC 60297-3 and IEC 60297-4.



IEC 2843/2000

Dimensions in millimetres

Figure 6 – Front and/or rear subrack and printed board type plug-in unit alignment and/or earth pin/receptacle inspection dimensions