

Dimensions of mechanical structures of the 482.6 mm (19 in) series —

Part 3: Specification for subracks and associated plug-in units

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- British Telecommunications
- Electronic Components Industry Federation
- Electronic Engineering Association
- Ministry of Defence
- National Supervising Inspectorate
- Society of British Aerospace Companies Limited
- Telecommunication Engineering and Manufacturing Association (TEMA)

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National foreword

This Part of this British Standard has been prepared under the direction of the Electronic Components Standards Committee. It is identical with IEC Publication 297-3:1984 “*Dimensions of mechanical structures of the 482.6 mm (19 in) series — Part 3: Subracks and associated plug-in units*” published by the International Electrotechnical Commission (IEC).

Terminology and conventions. The text of the international standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

The comma has been used in the figures as a decimal marker. In British Standards it is current practice to use a full point on the baseline as a decimal marker.

For the purposes of this Part of BS 5954, clauses 1 and 2 should be regarded as constituting the scope of the standard.

Cross-references

International standard	Corresponding British Standard
IEC 297:1975	BS 5954:1980 Specification for dimensions of panels and racks for electronic equipment (Identical)
ISO/R 1101/1	BS 308 Engineering drawing practice Part 3:1972 Geometrical tolerancing (Technically equivalent)

NOTE IEC 297:1975 is currently being revised as IEC 297-1. When it is published, BS 5954:1980 will be revised as BS 5954-1. Until that time BS 5954:1980 remains current.

The Technical Committee has reviewed the provisions of IEC 249-2, IEC 603-1 and IEC 603-2 to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard. A related British Standard for IEC 249-2 is BS 4584-2.

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, pages 1 to 14, 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.

1 Scope

This standard covers the basic dimensions of a modular range of subracks for mounting in equipment according to IEC Publication 297¹⁾, together with the basic dimensions of a compatible range of plug-in units and printed boards.

This standard covers also the connector-dependent dimensions to be used when two-part connector types according to IEC Publication 603-2 are mounted on subracks and plug-in units. It specifies also the standard positions of free connectors such that plug-in units are mechanically interchangeable in subracks with corresponding fixed connector positions.

Subsequent appendices will give the dimensions of associated plug-in units using suitable connectors standardized or to be standardized by the IEC, together with applicable detail dimensions of the subracks.

This standard should be used in conjunction with the following IEC publications:

Publications Nos. 249-2 (1970): Base Materials for Printed Circuits, Part 2: Specifications.

297 (1975): Dimensions of Panels and Racks.

603-1 (1981): Connectors for Frequencies below 3 MHz for Use with Printed Boards, Part 1: General Rules and Guide for the Preparation of Detail Specifications.

603-2 (1980): Part 2: Two-part Connectors for Printed Boards, for Basic Grid of 2.54 mm (0.1 in), with Common Mounting Features.

2 Object

The purpose of this standard is the specification of dimensions which will ensure the mechanical interchangeability of subracks and of plug-in units. The drawings contained in this standard are not intended to indicate details of design.

3 General arrangement

The subracks may be mounted, one above another or in combination with suitable instruments and panels (which also conform to the panel dimensions given in IEC Publication 297) in equipment complying with the rack dimensions given in IEC Publication 297.

4 Subrack description

For the purpose of this standard, a typical subrack comprises horizontal members, secured between two side plates as shown in Figure 2. The side plates have right-angled flanges equivalent to the extremities of the panels shown in IEC Publication 297.

5 Plug-in unit description

A plug-in unit can be of various types as shown in Figure 1, Figure 3 and Figure 4. It usually consists of a printed board assembly with or without connector(s), handle(s), ejector(s), front panel, rear panel, mounting rails and covers. A plug-in unit can itself house a plurality of different types of plug-in units.

6 Subrack basic dimensions (Figure 2)

NOTE 1 81 × 5.08 mm (0.200 in) is permissible for case mounting or for use with telescopic slides.

NOTE 2 In designing to this dimension, it should be noted that the distance between rack verticals specified in IEC Publication 297 is 450 mm (17.717 in) minimum. Earlier racks could have an aperture of 447.7 mm (17.626 in) minimum as specified in IEC Publication 297 (first edition).

NOTE 3 Clearance for PB coding, ejectors, etc.

NOTE 4 The guidance dimension H_g shall be derived from the printed board height H_b according to Clause 7. Adequate engagement and interchangeability shall be maintained between plug-in units and guide rails.

NOTE 5 The position of the centreline of the first printed board will depend on the connector chosen. The dimension A is stated in the connector appendix sheet. The dimension 3.27 mm (0.129 in) is preferred unless found to be impracticable.

NOTE 6 Side plates may be extended by 60 mm (2.362 in) beyond the rear attachment plane. The rear edge of a non-extended side plate need not coincide with the rear attachment plane.

NOTE 7 D_c and C dimensions and tolerances are dependent on the chosen connector, see Clause 8.

NOTE 8 The detail shown in Item Z for recessed panels is preferred for future designs. Item Y shown in Figure 3, should be considered when designing the horizontal members.

NOTE 9 The range of four depths stated are those which are preferred. If necessary, manufacturers can increase the depth in increments of 60 mm (2.362 in). D_s is a preferred dimension for the depth of subracks when subracks are supplied without mounting brackets for PB-connectors.

NOTE 10 The manufacturers of subracks shall define the fastening dimensions and tolerances so that they are compatible with the dimensions of the plug-in units shown in Figure 3 and Figure 4, such that interchangeability is guaranteed.

NOTE 11 The width of the guide slot shall accommodate a 1.6 ± 0.2 mm (0.063 ± 0.008 in) thick printed board in accordance with IEC Publication 249-2: Base Materials for Printed Circuits, Part 2: Specifications.

¹⁾ When revised, IEC Publication 297 (second edition, 1975) will become IEC Publication 297-1: Dimensions of Mechanical Structures of the 482.6 mm (19 in) Series, Part 1: Panels and Racks.

Table I — Subrack basic dimensions

Dimensions in millimetres — Inches in brackets

$n \times U$ see note 12	2U	3U	4U	5U	6U	7U	8U	9U	10U	11U	12U
H_S minimum	67,55 (2,660)	112,00 (4,410)	156,45 (6,160)	200,90 (7,910)	245,35 (9,660)	289,80 (11,410)	334,25 (13,160)	378,70 (14,910)	423,15 (16,660)	467,60 (18,410)	512,05 (20,160)
$D_S \pm 0,5$ (0,020)	1	112,24 (4,419)									
	2	172,24 (6,781)									
See note 9	3	232,24 (9,143)									
	4	292,24 (11,506)									