

Specification for

# Junction boxes for use in electrical installations with rated voltages not exceeding 250 V

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- Ministry of Defence
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- National Economic Development Office\*
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The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this British Standard:

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- Electrical Installation Equipment Manufacturers' Association (BEAMA)
- Electrical Power Engineers' Association
- Electricity Consultative Councils
- Fire Offices Committee
- Lighting Industry Federation Ltd
- National Inspection Council for Electrical Installation Contracting

This British Standard, having been prepared under the direction of the Power Electrical Engineering Standards Committee, was published under the authority of the Board of BSI and comes into effect on 29 July 1983

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The following BSI references relate to the work on this standard:  
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## Foreword

This British Standard has been prepared under the direction of the Power Electrical Engineering Standards Committee. This is the first British Standard specifically for junction boxes: previously, BS 5733 has been used.

This new standard is effective from the day of publication, but to allow manufacturers time to design and introduce any necessary changes, BS 5733 will continue to be an equally applicable standard for junction boxes until 29 July 1984.

Compliance with the Electrical Equipment (Safety) Regulations: 1975 will generally be assured if equipment complies with the requirements of BS 6220. For more precise details about the relevance of British Standards to the Regulations, reference should be made to the "Administrative Guidance on the Electrical Equipment (Safety) Regulations 1975" as amended by the "Electrical Equipment (Safety) (Amendment) Regulations 1976", available from HMSO.

*Certification.* Attention is drawn to the certification facilities described on the inside back cover of this standard.

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.

## Section 1. General

### 1 Scope

This British Standard specifies requirements for junction boxes of surface- or flush-mounting types for use in fixed wiring installations in a.c. and d.c. circuits where the rated voltage does not exceed 250 V and where the conductors are not subject to mechanical tension in normal use. It covers junction boxes having fixed terminals with capacity for the connection of PVC-insulated and sheathed cables complying with the requirements of BS 6004, and having copper conductors of cross-sectional area up to and including 10 mm<sup>2</sup>.

This standard does not apply to junction boxes for use in conditions where special protection against the ingress of dust or moisture is required.

### 2 References

The titles of the standards publications referred to in this standard are listed on the page 14.

### 3 Definitions

For the purposes of this British Standard the following definitions apply.

#### 3.1

##### **junction box**

an enclosure having fixed terminals for the purpose of connecting together electrical conductors

#### 3.2

##### **surface-type junction box**

a junction box provided with a seating surface for mounting on a wall or other flat surface

#### 3.3

##### **flush-type junction box**

a junction box consisting of a frontplate, terminals and associated box, intended to be recessed into a wall or other flat surface, so that the back of the frontplate is flush with the surface of the wall, etc. into which it is mounted

#### 3.4

##### **terminal**

an assembly, including one or more screws or similar threaded devices, for connecting conductors of electric cables

#### 3.5

##### **pillar-type terminal**

a terminal in which the conductor is inserted into a hole or cavity, where it is clamped by the screw or screws. The clamping pressure may be applied directly by the end of the screw or through an intermediate clamping member to which pressure is applied by the end of the screw

#### 3.6

##### **terminal housing**

that part of the junction box which provides location and separation of the terminals and which may or may not be an integral part of the base or cover

#### 3.7

##### **accessible external surfaces**

all surfaces that can be touched by test finger I of BS 3042 when the junction box is properly wired and installed as in normal service

#### 3.8

##### **protective conductor**

a conductor used for some measures of protection against electric shock and intended for connecting together any of the following parts:

- a) exposed conductive parts;
- b) extraneous conductive parts;
- c) the main earthing terminal;
- d) earth electrode(s);
- e) the earthed point of the source, or an artificial neutral.

#### 3.9

##### **type test**

a test of one or more junction boxes to show that all junction boxes, made to the same specification and having the same essential details, would pass an identical test

## 4 Service conditions

Junction boxes shall be suitable for use under the following conditions of service:

- a) an ambient temperature in the range – 15 °C to + 40 °C, the average value over 24 h not exceeding + 35 °C;
- b) a situation not subject to exposure to direct radiation from the sun or other source of heat likely to raise temperatures above the limits specified in a);
- c) an altitude not exceeding 2 000 m above sea level;
- d) an atmosphere not subject to excessive pollution by smoke, chemical fumes, salt-laden spray, prolonged periods of high humidity or other abnormal conditions.

## 5 Classification

A junction box shall be classified according to:

- a) the number of terminals as declared by the manufacturer;
- b) the nominal conductor capacity of the terminals, as declared by the manufacturer, which shall be one of the capacities shown in column 1 of Table 2;
- c) the method of mounting (e.g. surface or flush).

## 6 Marking

**6.1** All junction boxes shall be durably and legibly marked with the following:

- a) the number of this British Standard, i.e. BS 6220<sup>1)</sup>;
- b) the name or trade mark of the manufacturer or responsible vendor;
- c) the nominal conductor capacity of the terminals, i.e. “ $n \text{ mm}^2$ ” or “ $n$ ” □ where  $n$  is the conductor size in  $\text{mm}^2$ ;
- d) the rated voltage, e.g. “250 V”.

Compliance shall be checked by inspection.

**6.2** Any terminal intended exclusively for the use of a protective conductor shall be indicated by the symbol  $\perp$ . Compliance shall be checked by inspection.

**6.3** The durability of the marking shall be such that, after the test specified in **6.4**, the marking shall be easily legible; it shall not be possible easily to remove any marking plates and they shall show no curling.

**NOTE** In considering the durability of the marking, the effect of normal use should be taken into account. Thus, for example, marking by means of paint on parts that are likely to be cleaned frequently, may not be considered to be durable.

**6.4** Rub the marking by hand for 15 s with a piece of cloth soaked in water and again for 15 s with a piece of cloth soaked in petroleum spirit.

**NOTE** A revision of this test is under consideration.

## Section 2. Dimensions and performance requirements

### 7 General

**7.1 Design and construction.** Junction boxes shall be so designed and constructed that in normal use they function reliably and cause no danger to persons or surroundings when installed in the proper manner.

Products purporting to comply with this standard shall be capable of meeting all the relevant requirements and tests specified therein.

**NOTE** Where the standard is used for the purpose of granting nationally recognized certification marks, the designs or constructions, to which the tests specified cannot be precisely applied but which give an equivalent degree of safety and durability of safety, may be regarded as complying with the requirements of this standard, subject to the findings of a special investigation by the authority granting the certification mark and pending the issue of an amendment or extension to this standard.

**7.2 General requirements for type tests.** All tests specified in section 2 shall be type tests and shall be carried out in the order shown within a), b), c) and d) below.

Unless otherwise specified in the relevant clause, samples shall be tested as in normal use and at an ambient temperature of  $20 \pm 5^\circ\text{C}$ .

Inspections and tests shall be carried out on a total of 12 samples divided into groups as follows:

- a) three samples for the tests specified in clauses **8**, **13**, **10**, **6** and **17**;
- b) three samples for the tests specified in **14.2.2**, clause **11**, **12.2.1**, clause **15** and **6.4**;
- c) three samples for the tests specified in **12.1**, **12.2.2** and **14.2.1**;
- d) three samples for the tests specified in clause **16**.

Junction boxes shall be deemed to comply with this standard if no sample fails in the complete series of tests specified in groups a) to d) inclusive.

Alternatively, if one sample fails in the complete series of tests, specified in groups a) to d) inclusive, and this sample can be shown to be not representative of normal production or design, then a separate set of three samples shall be submitted to the test or tests in that particular group. If there is no failure in this re-test then junction boxes of that type shall be deemed to comply with this standard.

<sup>1)</sup> Marking BS 6220 on or in relation to a product is a claim by the manufacturer that the product has been manufactured in accordance with the requirements of the standard. The accuracy of such a claim is therefore solely the manufacturer's responsibility. Enquiries as to the availability of third party certification to support such claims should be addressed to the Director, Quality Assurance Division, British Standards Institution, Maylands Avenue, Hemel Hempstead, Herts HP2 4SQ in the case of certification marks administered by BSI or to the appropriate authority for other certification marks.