

Specification for

Photoelectric control units for road lighting

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- Association of Public Lighting Engineers*
- British Glass Industry Research Association
- British Railways Board*
- Cbmpe
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- Civil Aviation Authority
- Consumer Standards Advisory Committee of BSI*
- Department of Industry (National Physical Laboratory)
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- Department of Transport*
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- Engineering Equipment Users' Association
- Institute of Purchasing and Supply
- Institution of Electrical and Electronics Technicians Engineers Ltd.
- Institution of Electrical Engineers
- Lighting Industry Federation Ltd.*
- London Transport Executive
- National Illumination Committee of Great Britain
- Royal Institute of British Architects
- Society of British Gas Industries

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:

- Association of Control Manufacturers Tacma (BEAMA)
- Association of County Councils
- British Plastics Federation
- Decorative Lighting Association
- Department of Trade
- Electrical Contractors' Association
- Glass Manufacturers' Federation
- Health and Safety Executive
- Society of Glass Technology

This British Standard, having been prepared under the direction of the Electrical Illumination Standards Committee, was published under the authority of the Executive Board and comes into effect on 30 September 1980

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Foreword

This standard has been prepared under the direction of the Electrical Illumination Standards Committee.

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 standard specifies requirements for the safety and performance of:

- a) photoelectric control units (PECU);
- b) photocell sockets.

Both items are for use in switching road lighting lanterns, road traffic signs and other apparatus in response to variations in daylight. The PECU and sockets are for operation on supply voltages not exceeding 250 V to earth or between terminals, and for switching a current not exceeding 10 A.

2 References

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

3 Definitions

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

3.1

photoelectric control unit

a device which comprises a photoelectric sensor responding to variations in illuminance combined with means for switching an electric load

3.2

one-part control unit

a photoelectric control unit in which the photoelectric sensor and the load-switching means are housed in the same enclosure

3.3

two-part control unit

a photoelectric control unit in which the photoelectric sensor and the load switching means are housed in separate enclosures

3.4

detector

that part of a two-part control unit which contains the photoelectric sensor

3.5

switching unit

that part of a two-part control unit which contains the load-switching means

3.6

switch-on level

the illuminance at the photoelectric control unit which will cause it to change from the “off” to the “on” mode under standard test conditions

3.7

switch-off level

the illuminance at the photoelectric control unit that will cause it to change from the “on” to the “off” mode under standard test conditions

3.8

on/off ratio

the ratio of the measured switch-on level to the measured switch-off level

3.9

socket

a receptacle into which a one-part control unit may be inserted

4 General test requirements

4.1 Tests according to this standard are type tests.

NOTE The marking of BS 5972 on an article implies that one or more representative products have complied with all the type test requirements of the relevant section of this standard. It does not necessarily mean that every article so marked has been individually tested in accordance with every requirement of the standard (see clause 6).

4.2 Unless otherwise specified in this standard PECU and sockets shall be tested in an ambient temperature of 25 ± 5 °C and at the rated voltage. The PECU and sockets shall be tested “as delivered” and as installed in normal use. Unless otherwise specified in this standard the tests are made on a single sample which shall withstand all the relevant tests.

5 Classification

5.1 Classification according to type of protection against electrical shock

5.1.1 Class I PECU or socket. A PECU or socket having at least functional insulation throughout and provided with an earth lead, an earthing terminal or earthing contact, and, for PECU or sockets designed for connection by means of a flexible cable or cord, provided with either an appliance inlet with earthing contact, or a non-detachable flexible cable or cord with earthing conductor and a plug with an earthing contact.

5.1.2 Class II PECU or socket. A PECU or socket with double insulation and/or reinforced insulation throughout and without provision for earthing.

5.2 Classification according to degree of protection against ingress of dust and moisture. PECU and sockets may be classified in accordance with the “IP number” system of classification as specified in BS 5490.

6 Marking

6.1 General. The following information shall distinctly and durably be marked on the PECU and socket, as appropriate, in a position where it can be seen during maintenance. In the list below, B indicates both shall be marked and P that only PECU are so marked.

- a) Mark of origin. (This may take the form of a trade mark, manufacturer's identification mark, or the name of the responsible vendor.) (B)
- b) Manufacturer's model number or type reference. (B)
- c) Rated supply voltage (in V). (B)
- d) Switched voltage rating if different from above. (P)
- e) Rated current, i.e. 10 A. (B)
- f) Switch-on level (in lux). (P)
- g) Calendar and/or space for user to mark the year and month of installation. (P)

In addition PECU or sockets complying with this specification may, at the manufacturer's discretion, be marked with the number of this standard (i.e. BS 5972).

NOTE Marking BS 5972 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, 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.

6.2 Terminals. The terminals of a PECU or socket shall be marked to give a clear indication as to how they should be connected to ensure safe, satisfactory operation. Where terminals are marked with abbreviations the following symbols shall be used:

Line connection:	L
Neutral connection:	N
Load connection:	Lo
Cell connection:	C1 and C2

6.3 Test switch. Any test switch shall be clearly marked to indicate the switch position for automatic operation and for circuit testing.

The following symbols shall be used:

Switch position for testing circuit:	Test
Switching position for normal operation:	Auto

6.4 Orientation. If the detector has to be mounted with particular orientation it shall be clearly and suitably marked. All sockets shall be marked with a direction arrow as specified in clause 12.

6.5 Test for marking. The durability of the marking shall be checked by inspection and by trying to remove the marking by rubbing lightly for 15 s with a piece of cloth soaked with water and for a further 15 s with a piece of cloth soaked with petroleum spirit. The marking shall be legible after test.

6.6 Manufacturer's instructions. The manufacturer shall supply instructions which shall include:

- a) a wiring diagram;
- b) instructions regarding any limitations of use (e.g. temperature) which are not marked on the control;
- c) instructions on orientation of the photoelectric sensors (where applicable).

NOTE The direction arrow on sockets for one-part control units described in 12.1 is provided for sensors designed to operate at a particular orientation, e.g. an arrow pointing to north (see also C.5).

Section 2. Photoelectric control units

7 Construction

7.1 Mechanical strength. Photoelectric control units shall be of adequate mechanical strength and so constructed as to withstand such handling and vibration as may be expected in normal use.

Compliance shall be checked by the impact test described in 4.13 of BS 4533-101:1981. The test shall be applied using an impact energy of 0.50 Nm, with a spring compression of 20 mm.

7.2 Terminations. Terminals and supply connections shall comply with the requirements of section 14 or 15 of BS 4533-101.

Fixings of electrical conductors through insulation material liable to shrinkage shall comply with the requirements of 4.11.1 of BS 4533-101:1981.

Terminals for supply connection to a two-part control shall allow the connection of conductors having nominal cross-sectional areas of 1.0 mm² to 2.5 mm² in accordance with 5.2 of BS 4533-101:1981.

The detector of a two-part control unit shall be provided with a cable or cord not less than 500 mm in length. The insulation shall be capable of continuous usage at a temperature of 120 °C.

7.3 Test switches. Any test switch incorporated in parallel with the PECU contacts shall have a current rating of at least 10 A.