

Specification for

General requirements for luminaire supporting couplers for domestic, light industrial and commercial use

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- Electrical Power Engineers' Association
- Electricity Supply Industry in England and Wales
- Institution of Electrical Engineers
- Lighting Industry Federation Ltd.
- National Inspection Council for Electrical Installation Contracting

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Foreword

This British Standard has been prepared under the direction of the Power Electrical Engineering Standards Committee.

The growing use of luminaire supporting couplers (LSCs) in place of ceiling roses led to a request for standards to ensure the safety and interchangeability of such accessories. This standard has been based on drafts submitted by the Decorative Lighting Association and the Electrical Installation Equipment Manufacturers' Association, and gives general requirements for the construction of LSC plugs and LSC outlets with particular reference to safety.

A separate British Standard, BS 7001, specifies dimensions for interchangeability and safety of standardized LSC plugs and LSC outlets. BS 7001 calls up the general requirements given in this standard.

In the interests of interchangeability between LSCs made by different manufacturers, it is recommended that new designs should comply with BS 7001.

Product certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing surveillance, which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS EN ISO 9000.

Enquiries as to the availability of third party certification schemes may be forwarded by BSI to the Association of Certification Bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of Association members.

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 20, 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 British Standard specifies requirements for luminaire supporting couplers (LSCs) comprising LSC plugs and LSC outlets for use in final circuits rated at not more than 16 A, where the supply voltage does not exceed 250 V a.c. and the electrical load connected to any one LSC plug does not exceed 6 A.

The requirements specified in this standard have particular reference to safety in normal use.

LSC outlets are intended for use with cables complying with BS 6004 or BS 6007, having copper conductors.

LSC plugs which are not integral with a luminaire are intended for use with flexible cords complying with BS 6141 or BS 6500, having a cross-sectional area from 0.5 mm² to 1.0 mm².

The standard is applicable to LSCs intended for either:

- a) the mechanical and electrical connection and disconnection of luminaires suspended by flexible cords up to a maximum supported load of 5 kg; or
- b) the mechanical and electrical connection and disconnection and direct mechanical support of luminaires, i.e. other than by a flexible cord.

The standard is not applicable to LSC plugs and LSC outlets intended to be used on extra low voltage (ELV) supplies.

NOTE 1 LSC outlets complying with this standard may be regarded as lighting outlets in accordance with the provisions of Appendix 4 of the 15th edition of the Regulations for Electrical Installations¹⁾.

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Conditions of use

LSC plugs and LSC outlets shall be suitable for use under the following conditions:

- a) an ambient temperature having a peak value not exceeding 40 °C, with an average value not exceeding 35 °C in a period of 24 h, but not subject to exposure to direct radiation from the sun or any other source of heat likely to raise the temperature above the specified ambient temperature;

NOTE The effect of the heat generated by the luminaire may affect the ambient temperature local to the coupler but this is not included in the term "any other source of heat" [see c)].

- b) an ambient temperature having a value not less than – 5 °C;

- c) a temperature not exceeding 70 °C at the terminals of the LSC outlet including the effect of heat generated by the luminaire and the passage of current;

- d) an altitude not exceeding 2 000 m above sea level;

- e) an atmosphere not subject to excessive pollution by smoke, chemical fumes, salt laden spray, prolonged periods of high humidity or other abnormal conditions.

3 Definitions

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

3.1

luminaire supporting coupler (LSC)

a means, comprising an LSC outlet and an LSC plug, providing mechanical support for a luminaire and the electrical connection to and disconnection from a fixed wiring installation

3.2

LSC outlet

that part of an LSC which is intended for fixed mounting and for connection to a fixed wiring installation

3.3

surface-type LSC outlet

an LSC outlet provided with a seating surface such that when mounted as intended it projects wholly outside the surface on which it is mounted

3.4

flush-type LSC outlet

an LSC outlet intended for mounting with its base partially or completely recessed into a box or enclosure

3.5

LSC plug

that part of an LSC which is intended for the electrical connection of a luminaire to an LSC outlet

3.6

independent LSC plug

an LSC plug which is intended to be attached to the flexible cable or cord of a luminaire

3.7

rewireable independent LSC plug

an independent LSC plug for electrical connection to the flexible cable or cord of a luminaire without the use of special purpose tools

¹⁾ Published by the Institution of Electrical Engineers.

3.8**non-rewireable independent LSC plug**

an independent LSC plug that forms a constructional unit with the flexible cord such that the cord cannot be separated from the plug either by hand or by using tools without making the unit permanently useless

NOTE Assemblies having insulating materials moulded around pre-assembled parts or an enclosure of insulating material formed by parts welded or bonded together are examples.

3.9**component LSC plug**

an LSC plug manufactured as a separate item and intended to form part of the body of a luminaire after incorporation in the luminaire by a luminaire manufacturer

3.10**integral LSC plug**

an LSC plug manufactured as an integral part of the body of a luminaire

3.11**terminal**

a component including screws or other devices for connecting electrical conductors

3.12**supply terminals**

terminals intended to accommodate conductors of the fixed wiring

3.13**loop terminal**

a supply terminal intended solely for the interconnection of live conductors

3.14**live parts**

current carrying parts and those metal parts connected to or in contact with them during normal use

NOTE Earthing terminals are not considered to be current carrying parts.

3.15**decorative cover**

an optional component which may be mechanically attached to an LSC outlet to provide cosmetic decoration when a luminaire is not connected

3.16**touchable surface**

any surface which can be touched by Test finger 1 of BS 3042 after removal of any part which can be removed without use of tools

3.17**type test**

a test, or series of tests, conducted on a sample, consisting of one or more similar items, to determine whether or not an LSC, LSC outlet or LSC plug, manufactured to the same design as the sample, is capable of complying with the requirements of the specification

4 General requirements

LSC plugs and LSC outlets shall be so designed and constructed that, in normal use, they function reliably and without danger to persons or surroundings, and are capable of meeting all the relevant requirements and tests specified in this standard.

NOTE Where tolerances are not specified in this standard the values are to be regarded as nominal.

5 Requirements for type testing

5.1 A manufacturer or responsible vendor who claims compliance with this standard shall submit a representative sample to the relevant tests of this standard in the order specified in **5.3**. All tests are type tests.

The tests may be made by the manufacturer, or the responsible vendor, or may be made on his behalf by a competent testing laboratory or certification authority. The results of such tests shall be recorded and retained for reference and inspection.

Where an LSC plug or LSC outlet alone is submitted for test it shall be tested using a corresponding LSC outlet or LSC plug complying with this standard.

5.2 Unless otherwise specified in this standard, LSC plugs and LSC outlets shall be tested as delivered and installed, as in normal use, at an ambient temperature of 20 ± 5 °C.

The ambient temperature shall be measured at a distance of 1 m from the test specimen and in the same horizontal plane as the specimen.

Integral LSC plugs shall be tested when assembled or incorporated in the corresponding section of a luminaire.

5.3 A total sample of nine LSC plugs and/or LSC outlets shall be submitted to inspection and tests in the following order of clauses:

- a) three specimens: clauses **4** to **16** inclusive (inspection only);
- b) three specimens: clauses **11** to **22** inclusive, followed by a repeat test of clause **20** (general tests);
- c) three specimens: clauses **23** to **26** inclusive (material tests).

5.4 If no specimen fails in the tests specified in **5.3**, then products of that type shall be deemed to comply with this standard.

If one specimen fails in any individual test, or series of tests, specified in **5.3**, then products of that type shall be deemed to have failed to comply with this standard, unless it can be shown that the specimen was not representative of normal design or manufacture, in which case a separate set of three specimens shall be submitted to the relevant test, or series of tests, specified in **5.3**. If no specimen fails in this retest then products of that type shall be deemed to comply with this standard.

If more than one specimen fails in the tests specified in **5.3**, then products of that type shall be deemed not to comply with this standard.

6 Rating

LSC plugs and LSC outlets shall have a rated voltage of 250 V a.c. and a rated current not exceeding 6 A.

NOTE BS 7001 specifies that the rating of the LSC outlet shall be 6 A.

6.1 Compliance shall be checked by inspection of the marking and tests described in this standard.

7 Classification

LSC outlets shall be classified as follows.

- a) According to the position of mounting as:
 - 1) wall; or
 - 2) ceiling; or
 - 3) wall/ceiling.
- b) According to the method of mounting as:
 - 1) surface-type; or
 - 2) flush-type.
- c) According to the current-carrying terminal arrangements as:
 - 1) having provision for the connection of loop wiring;
 - 2) having no provision for the connection of loop wiring.

8 Marking and information

8.1 LSC outlets shall be marked with the following information:

- a) the name or trademark of the manufacturer or responsible vendor;

- b) the number of this British Standard, i.e. BS 6972²⁾;

NOTE If the LSC outlet complies with BS 7001, marking with BS 6972 may be omitted.

- c) the rated current;
- d) the rated voltage, i.e. 250 V;
- e) symbol for alternating current;
- f) terminal identification, i.e. line, neutral, earth, loop, etc.;
- g) maximum permissible supported load in kilograms;
- h) a symbol indicating that the outlet is intended to be used with luminaires.

The marking specified in g) and h) shall be visible after installation but not necessarily after insertion of the LSC plug.

8.2 Independent LSC plugs shall be marked with the following information:

- a) the name or trademark of the manufacturer or responsible vendor;
- b) the number of this British Standard, i.e. BS 6972²⁾;

NOTE If the LSC plug complies with BS 7001, marking with BS 6972 may be omitted.

- c) the rated current,
- d) the rated voltage, i.e. 250 V;
- e) terminal identification, i.e. line, neutral, earth;
- f) maximum permissible supported load in kilograms;
- g) symbol indicating that the plug is only intended to be used with luminaires.

The marking specified in f) and g) shall be visible after the fitting of the flexible cord but not necessarily after insertion into the LSC outlet.

8.3 Adequate instructions shall be provided to advise the user of the necessity to fix the LSC outlet securely to the wall or ceiling in a manner which will be capable of supporting the maximum load for which the LSC outlet is designed.

LSC outlets and independent LSC plugs shall be provided with information warning the user that these products are intended only for the connection of luminaires.

Where it is necessary for safe operation that the user should be aware of any particular characteristics of the LSC plug or LSC outlet, the necessary information shall be given.

²⁾ Marking BS 6972 or BS 7001 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

The instructions and information referred to in this subclause shall be given by markings on the LSC plug or LSC outlet itself, or where this is not practicable, in a notice which accompanies it.

8.4 Where symbols are used they shall be as follows:

amperes	A
volts	V
alternating current	~
line	L
neutral	N
earth	
for luminaires only	

For the marking of rated current and rated voltage, figures may be used alone. The figure for rated current shall be placed before or above that for the rated voltage and separated from the latter by a line. Examples of typical markings are as follows:

6 A 250 V~ or 6/250~ or $\frac{6}{250}$ ~

8.5 Marking shall be easily legible and durable and shall not be placed on screws, washers, or other easily removable parts.

8.5.1 Compliance for legibility shall be by inspection, using normal or corrected vision without additional magnification. Compliance for durability shall be checked by rubbing the marking, by hand, for 15 s using a piece of cloth soaked in water and again for 15 s with a piece of cloth soaked in petroleum spirit. After this test the marking shall remain easily legible.

Petroleum spirit used for this test shall consist of a solvent hexane having a maximum aromatics content of 0.1 % by volume, a kauri-butanol value of 29, an initial boiling point of approximately 65 °C, a dry point of approximately 69 °C, and a relative density at 15/15 °C of approximately 0.68.

NOTE Relative density may be determined by the method described in BS 4714.

Marking made by engraving, moulding, or a similarly permanent process, is deemed to comply with the requirement for durability without testing.

9 Dimensions

LSC plugs and LSC outlets shall be so designed and dimensioned that they can be connected and disconnected, mechanically and electrically, without special preparation and without the use of tools other than those which may be required for operating special anti-theft devices.

9.1 Compliance shall be checked by inspection and manual test.

NOTE A standardized LSC is specified in BS 7001.

10 Creepage distances and clearances

Creepage distances and clearances shall be not less than the values shown in Table 1.

10.1 Compliance shall be checked by inspection and measurement.

11 Accessibility of live parts

LSC plugs and LSC outlets shall be so designed and constructed that when properly assembled and correctly wired, as in normal use, live parts are not accessible.

Where LSC plugs and LSC outlets incorporate parts which are intended to be removed without the use of a tool, compliance shall be checked before, during and after the removal of such parts.

LSC plugs and LSC outlets shall be so designed and constructed as to protect the user against accidental contact with live parts during insertion or withdrawal of plugs.

11.1 Compliance shall be checked by applying, with a force of 5 N, Test finger 1 of BS 3042 in a manner most likely to make contact with live parts. In applying the test a supply of 45 ± 5 V, in series with a suitable indicating lamp, shall be connected between the test finger and the relevant conducting parts of the LSC plug and/or LSC outlet.

12 Provision for earthing

12.1 All LSC outlets shall be provided with an earthing terminal, as specified in clause 14 and an earthing socket contact.

12.1.1 Compliance shall be checked by inspection.

12.2 Independent rewirable LSC plugs and component LSC plugs for incorporation into class I luminaires³⁾ shall be provided with an earthing contact to make electrical connection with a corresponding LSC outlet contact.

Component LSC plugs for incorporation into class II luminaires³⁾ shall have no provision for the connection of protective earthing to the luminaire.

³⁾ See BS 4533-101.