

Specification for auxiliaries for lamps — Starting devices (other than glow starters) — Performance requirements

The European Standard EN 60927:1996, with the incorporation of amendments A1:1999 and A2:2004 has the status of a British Standard.

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Committees responsible for this British Standard

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- BEAMA Capacitor Manufacturers' Association
- British Lighting Association for the Preparation of Standards (BRITLAPS)
- British Sign Association
- Department of Trade and Industry (Consumer Safety Unit, CA Division)
- Institution of Lighting Engineers
- Lighting Industry Federation Ltd.
- London Transport
- Co-opted members

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National Foreword

This British Standard has been prepared by Subcommittee CPL/34/3 and is the English language version of EN 60927:1996 *Auxiliaries for lamps — Starting devices (other than glow starters) — Performance requirements*, including amendments A1:1999 and A2:2004, published by the European Committee for Electrotechnical Standardization (CENELEC). It is identical with IEC 60927:1996 including amendments 1:1999 and 2:2004, published by the International Electrotechnical Commission (IEC).

This British Standard supersedes BS EN 60927:1991 which will be withdrawn on 1 April 1997.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by **A1** **A1**. Changes introduced by CENELEC amendment A1:1999 to Annex ZA are also indicated by **A1** **A1**.

The following print types are used in this standard:

requirement proper	in roman type
test specification	in italic type
explanatory matter	in smaller roman type

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index” or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 27 and a back cover.

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Descriptors: Lighting equipment, discharge lamp, fluorescent lamp, tubular lamp, starting device, test

English version

Auxiliaries for lamps — Starting devices (other than glow starters) — Performance requirements

(includes amendments A1:1999 and A2:2004)

(IEC 60927:1996 + A1:1999 + A2:2004)

Appareils auxiliaires pour lampes
Dispositifs d'amorçage (autres que starters à
lueur) — Prescriptions de performance
(inclut les amendements A1:1999 et A2:2004)
(CEI 60927:1996 + A1:1999 + A2:2004)

Geräte für Lampen — Startgeräte (andere als
Glimmstarter) Anforderungen an die
Arbeitsweise
(enthält Änderungen A1:1999 und A2:2004)
(IEC 60927:1996 + A1:1999 + A2:2004)

This European Standard was approved by CENELEC on 1996-07-02; amendment A2 was approved by CENELEC on 2004-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The text of document 34C/330/FDIS, future amendment to IEC 927:1988, prepared by SC 34C, Auxiliaries for lamps, of IEC TC 34, Lamps and related equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as an amendment to EN 60927:1990 on 1996-07-02.

The text of this document, together with that of IEC 927:1988 and its amendments 1:1990 and 2:1995, was published by IEC as the second edition of IEC 927 in June 1996. According to a decision of principle taken by the Technical Board of CENELEC, the approval of this amendment has been converted into the approval of a new EN 60927.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-04-01

Annexes designated “normative” are part of the body of the standard.

In this standard, Annex A A and Annex ZA are normative and Annex B and Annex C are informative.

Annexes designated “informative” are given for information only.

Annex ZA has been added by CENELEC.

Foreword to amendment A1

The text of document 34C/476/FDIS, future amendment 1 to IEC 60927, prepared by SC 34C, Auxiliaries for lamps, of IEC 34, Lamps and related equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60927:1996 on 1999-12-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2000-09-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2006-12-01

Annexes designated “normative” are part of the body of the standard. In this standard, Annex ZA is normative. Annex ZA has been added by CENELEC.

Foreword to amendment A2

The text of document 34C/641/FDIS, future amendment 2 to IEC 60927:1996, prepared by SC 34C, Auxiliaries for lamps, of IEC TC 34, Lamps and related equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A2 to EN 60927:1996 on 2004-10-01.

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- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2005-07-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2011-10-01

Annex ZA has been added by CENELEC.

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Section 1. General requirements

1 Scope

This standard specifies performance requirements for starting devices (starters and ignitors) for tubular fluorescent and other discharge lamps for use on a.c. supplies up to 1 000 V at 50 Hz or 60 Hz, which produce starting pulses not greater than 5 kV. It should be read in conjunction with IEC 926.

A2 NOTE 1 All glow starters for fluorescent and other discharge lamps including thermal relay/cut-outs will be included in IEC 155.

NOTE 2 There are regional standards regarding the regulation of EMC, requirements for end-products like luminaires and independent control gear. In a luminaire, the control gear is dominant in this respect. Control gear, together with other components, should comply with these standards. **A2**

1.1 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this international standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this international standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid international standards.

IEC 81:1984, Tubular fluorescent lamps for general lighting service.

IEC 155:1983, Starters for tubular fluorescent lamps.

IEC 192:1973, Low pressure sodium vapour lamps.

A1

IEC 60598-1:1996, Luminaires — Part 1: General requirements and tests. **A1**

Amendment 1 (1993)

IEC 662:1980, High pressure sodium vapour lamps.

IEC 921:1988, Ballast for tubular lamps: Performance requirements.

IEC 922:1989, Ballasts for discharge lamps (excluding tubular fluorescent lamps): General and safety requirements.

IEC 923, Ballasts for discharge lamps (excluding tubular fluorescent lamps): Performance requirements.

IEC 926:1988, Starting devices (other than glow starters): General and safety requirements.

A1

IEC 61167:1992, Metal halide lamps. **A1**

A2 **A2**

2 Definitions

The definitions of IEC 926 apply, together with the following:

2.1

starter with mechanical switching element

a starter which provides cathode pre-heating current and lamp starting pulse(s) by mechanical means (e.g. thermal or magnetic)

2.2

starter with electronic switching element

a starter which provides cathode pre-heating current and lamp starting voltage(s) or pulse(s) by electronic means and contains no moving parts

2.3

deactivated lamp

a lamp in which one or both cathodes are deprived of emitting material but neither of which is broken

2.4

non re-opening level

a reduced level of voltage and/or current at which a starting device must not re-operate after the completion of the starting cycle, and the lamp is operating normally

2.5

maximum abnormal current

the value of continuous r.m.s. current through the ballast which shall not be exceeded at the end of the starting cycle when the circuit is in an abnormal condition (e.g. deactivated lamp, or lamp that has been removed)

2.6

starting aid

a starting aid can be either a conductive strip affixed to the outer surface of a lamp, or a conductive plate which is placed within an appropriate distance from a lamp

a starting aid can only be effective when it has an adequate potential difference from one end of the lamp

2.7

maximum case temperature ($t_c + X$) under abnormal conditions

maximum allowable case temperature of the ignitor under abnormal conditions with metal halide lamps. The value of ($t_c + X$) is declared by the manufacturer

3 General requirements for tests

3.1 Only requirements for type tests are included.

Unless otherwise specified, the tests shall be made at an ambient temperature between 10 °C and 30 °C.

The tests shall be carried out in the order of the clauses of this standard.

The following numbers of samples shall be submitted:

— six samples of starters as defined in 2.1 and 2.2;

$\overline{A_1}$
— four samples of ignitors (where appropriate, together with those circuit components which are necessary to carry out the tests). $\overline{A_1}$

3.2 Supply voltage

The total harmonic content of the supply voltage shall not exceed 3 %, the harmonic content being defined as the root-mean-square (r.m.s.) summation of the individual harmonic components, using the fundamental as 100 %.

Care shall be taken that this applies under all conditions that occur during the measurement.

NOTE This implies that the source of supply will have sufficient power and that the supply circuit has sufficiently low impedance at supply frequency and impulse frequency compared with the ballast impedance. The correct impedance at impulse frequency can be obtained by connecting a 2 μ F (approximately) capacitor in parallel with the source.

3.3 All starting devices specified in this standard shall meet the requirements of IEC 926.

$\overline{A_1}$

3.4 All starting devices specified in this standard shall meet the requirements of IEC 61547.

NOTE The requirements for starting devices are under consideration in IEC 61547. $\overline{A_1}$

4 Marking

The marking requirements of IEC 926 shall apply, together with the following, to be either clearly marked on the starting device or made available in the manufacturer's catalogue, or the like.

- The manufacturer shall declare the type of switching element as defined in 2.1 and 2.2.
- The manufacturer shall declare the maximum load capacitance for satisfactory operation of the ignitor.
- The manufacturer shall declare the allowable maximum case temperature under abnormal conditions ($t_c + X$) of the ignitor.