

Lamp controlgear —

Part 2-3: Particular requirements for a.c. supplied electronic ballasts for fluorescent lamps

ICS 29.140.99

National foreword

This British Standard is the UK implementation of EN 61347-2-3:2001+A2:2006, incorporating Corrigenda July 2003 and December 2010. It is identical with IEC 61347-2-3:2000 including amendment 1:2004 and amendment 2:2006. Together with BS EN 61347-1:2001 it supersedes BS EN 60928:1995 which will be withdrawn on 01 December 2006.

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 in the text by **A1** **A1**.

The UK participation in its preparation was entrusted by Technical Committee CPL/34, Lamps and related equipment, to Subcommittee CPL/34/3, Auxiliaries for lamps.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard, having been prepared under the direction of the Electrotechnical Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 May 2001

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Supersedes EN 60928:1995
Incorporating Corrigenda July 2003
and December 2010

English version

Lamp controlgear — Part 2-3: Particular requirements for a.c. supplied electronic ballasts for fluorescent lamps

(includes amendments A1:2004 and A2:2006)
(IEC 61347-2-3:2000 + A1:2004 + A2:2006)

Appareillages de lampes —
Partie 2-3: Prescriptions particulières
pour les ballasts électroniques alimentés
en courant alternatif pour lampes
fluorescentes
(inclut les amendements A1:2004 et A2:2006)
(CEI 61347-2-3:2000 + A1:2004 + A2:2006)

Geräte für Lampen —
Teil 2-3: Besondere Anforderungen an
wechselstromversorgte elektronische
Vorschaltgeräte für Leuchtstofflampen
(enthält Änderungen A1:2004 und A2:2006)
(IEC 61347-2-3:2000 + A1:2004 + A2:2006)

This amendment A2 modifies the European Standard EN 61347-2-3:2001; it was approved by CENELEC on 2000-11-01; amendment A1 was approved by CENELEC on 2006-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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.

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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

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BS EN 61347-2-3:2001+A2:2006 EN 61347-2-3:2001+A2:2006 (E)

Foreword

The text of document 34C/500/FDIS, future edition 1 of IEC 61347-2-3 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 EN 61347-2-3 on 2000-11-01.

This European Standard, together with EN 61347-1, supersedes EN 60928:1995.

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) 2001-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-12-01

This standard shall be used in conjunction with EN 61347-1.

NOTE In this standard, the following print types are used:

- requirements : in roman type;
- *test specifications: in italic type;*
- notes: in smaller type.

Annexes designated normative are part of the body of the standard. In this standard, Annexes A to J and ZA are normative. Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61347-2-3:2000 was approved by CENELEC as a European Standard without any modification.

Foreword to amendment A1

The text of document 34C/636/FDIS, future amendment 1 to IEC 61347-2-3:2000, 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 A1 to EN 61347-2-3:2001 on 2004-09-01.

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- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2007-09-01

Endorsement notice

The text of amendment 1:2004 to the International Standard IEC 61347-2-3:2000 was approved by CENELEC as an amendment to the European Standard without any modification.

Foreword to amendment A2

The text of document 34C/707/FDIS, future amendment 2 to IEC 61347-2-3:2000, 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 61347-2-3:2001 on 2006-02-01.

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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) 2006-11-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2009-02-01

Endorsement notice

The text of amendment 2:2006 to the International Standard IEC 61347-2-3:2000 was approved by CENELEC as an amendment to the European Standard without any modification.

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INTRODUCTION

This first edition of IEC 61347-2-3, published in conjunction with IEC 61347-1, represents an editorial review of IEC 60928. The formatting into separately published parts provides for ease of future amendments and revisions. Additional requirements will be added as and when a need for them is recognized.

This standard, and the parts which make up IEC 61347-2, in referring to any of the clauses of IEC 61347-1, specify the extent to which such a clause is applicable and the order in which the tests are to be performed; they also include additional requirements, as necessary. All parts which make up IEC 61347-2 are intended to be self-contained and, therefore, do not include references to each other. However, for the case of emergency lighting lamp controlgear, some cross-referencing has been necessary.

Where the requirements of any of the clauses of IEC 61347-1 are referred to in this standard by the phrase "The requirements of clause n of IEC 61347-1 apply", this phrase is interpreted as meaning that all requirements of the clause in question of part 1 apply, except any which are clearly inapplicable to the specific type of lamp controlgear covered by this particular part of IEC 61347-2.

LAMP CONTROLGEAR –

Part 2-3: Particular requirements for a.c. supplied electronic ballasts for fluorescent lamps

1 Scope

This part of IEC 61347 specifies particular safety requirements for electronic ballasts for use on a.c. supplies up to 1 000 V at 50 Hz or 60 Hz with operating frequencies deviating from the supply frequency, associated with fluorescent lamps as specified in IEC 60081 and IEC 60901, and other fluorescent lamps for high-frequency operation.

Particular requirements for electronic ballasts with means of protection against overheating are given in annex C.

Particular requirements for a.c./d.c. supplied electronic ballasts for maintained emergency lighting are given in annex J.

Performance requirements are the subject of IEC 60929.

2 Normative references

For the purpose of this part of IEC 61347, the normative references given in clause 2 of IEC 61347-1 which are mentioned in this standard apply, together with the following normative references.

IEC 60598-2-22, *Luminaires – Part 2-22: Particular requirements – Luminaires for emergency lighting*

IEC 61347-1, *Lamp controlgear – Part 1: General and safety requirements*

IEC 61347-2-7, *Lamp controlgear – Part 2-7: Particular requirements for d.c. supplied electronic ballasts for emergency lighting*¹⁾

3 Definitions

For the purpose of this part of IEC 61347, the definitions of clause 3 of IEC 61347-1 apply, together with the following:

3.1

a.c. supplied electronic ballast

mains-supplied a.c. to a.c. inverter including stabilizing elements for starting and operating one or more $\overline{A_2}$ fluorescent lamps $\overline{A_2}$, generally at high frequency.

¹⁾ To be published.

A₂ 3.2 A₂
maximum value of lamp power (of a controllable ballast)

lamp power (light output) which complies with 8.1 of IEC 60929, unless otherwise declared by the manufacturer or responsible vendor

A₂ 3.3 A₂
maximum allowed peak voltage

highest permitted peak voltage across any insulation under open-circuit condition and any normal and abnormal operating conditions. The maximum peak voltage is related to the declared r.m.s. working voltage; see table 1

A₂ 3.4 A₂
minimum value of lamp power (of a controllable ballast)

lowest percentage of the lamp power defined in 3.3 declared by the manufacturer or responsible vendor

A₂ 3.5 A₂
a.c./d.c. supplied electronic ballast for maintained emergency lighting

Mains/battery-supplied a.c./d.c. to a.c. inverter including stabilizing elements for starting and operating one or more A₂ fluorescent lamps A₂, generally at high frequency for emergency lighting.

A₂ 3.6 A₂
cathode dummy resistor

cathode substitution resistor as specified on the relevant lamp data sheet of IEC 60081 or IEC 60901 or as declared by the relevant lamp manufacturer or by the responsible vendor

4 General requirements

The requirements of clause 4 of IEC 61347-1 apply, together with the following additional requirement:

A₂ A.C./d.c. A₂ electronic ballasts for emergency lighting shall comply with the requirements of annex J.

5 General notes on tests

The requirements of clause 5 of 61347-1 apply together with the following additional requirement:

Number of specimens

The following number of specimens shall be submitted for testing:

- A₁ – one unit for the tests of clause 6 to 12 and 15 to 22; A₁
- one unit for the test of clause 14 (additional units or components, where necessary, may be required in consultation with the manufacturer).

Tests to meet the safety requirements for a.c./d.c. supplied electronic ballasts for emergency lighting are made under the conditions specified in annex J.

6 Classification

The requirements of clause 6 of IEC 61347-1 apply.

7 Marking

Ballasts which form an integral part of the luminaire need not be marked.

7.1 Mandatory markings

 In accordance with the requirements of 7.2 of IEC 61347-1, ballasts, other than integral ballasts, shall be clearly and durably marked with the following mandatory markings:

- a) items a), b), c), d), e), k) and l) of 7.1 of IEC 61347-1, together with
- b) the symbol for earthing as applicable;
- c) for controllable ballasts, the control terminals shall be identified;
- d) a declaration of the maximum working voltage (r.m.s.) according to 15.2 between
 - output terminals
 - any output terminal and earth.

Marking for each of these two values shall be in steps of 10 V when the working voltage is equal to, or less than, 500 V, and in steps of 50 V when the working voltage is higher than 500 V. The marking of maximum working voltage is referenced in two situations, the maximum between output terminals and the maximum between any output terminal and earth. It is acceptable for only the higher of these two voltages to be marked.

Marking shall be U-OUT=...V.. 

7.2 Information to be provided, if applicable

In addition to the above mandatory markings, the following information, if applicable, shall be given either on the ballast, or be made available in the manufacturer's catalogue or similar:

- items h), i), and j) given in 7.1 of IEC 61347-1.

8 Protection against accidental contact with live parts

The requirements of clause 10 of IEC 61347-1 apply.

9 Terminals

The requirements of clause 8 of IEC 61347-1 apply.

10 Provisions for earthing

The requirements of clause 9 of IEC 61347-1 apply.

11 Moisture resistance and insulation

The requirements of clause 11 of IEC 61347-1 apply together with the following additional requirements:

The leakage current that may occur from contact with fluorescent lamps operated at high frequency from a.c. supplied electronic ballasts shall not exceed the values in figure 2 when measured in accordance with annex I. The values are in r.m.s. values.

The limits of leakage current values for frequencies between the values shown in figure 2 should be obtained by calculation according to the formula in the figure (under consideration).

NOTE Limits of leakage current values for frequencies above $\sqrt{A_2}$ 50 kHz $\sqrt{A_2}$ are under consideration.

Compliance with these requirements is checked in accordance with annex I.

12 Electric strength

The requirements of clause 12 of IEC 61347-1 apply.

13 Thermal endurance test for windings

The requirements of clause 13 of IEC 61347-1 do not apply.

14 Fault conditions

The requirements of clause 14 of IEC 61347-1 apply.

15 Protection of associated components

15.1

Under conditions of normal operation, verified with dummy cathode resistors inserted and conditions of abnormal operation, as specified in clause 16, the voltage at the output terminals shall at no time exceed the maximum permitted peak value specified in table 1.

Table 1 – Relation between r.m.s. working voltage and maximum peak voltage

Voltage at output terminals	
RMS working voltage V	Maximum permitted peak voltage V
250	2 200
500	2 900
750	3 100
1 000	3 200
NOTE Linear interpolation between the given voltage steps is allowed.	