

Lamp controlgear —

Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules

ICS 29.140.99

National foreword

This British Standard is the UK implementation of EN 61347-2-13:2006, incorporating corrigenda March 2009 and December 2010. It is identical with IEC 61347-2-13:2006.

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 CPL/34/3 can be obtained on request to its secretary.

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Amendments issued since publication

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31 March 2009	Correction to missing scientific symbols
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English version

**Lamp controlgear
Part 2-13: Particular requirements
for d.c. or a.c. supplied electronic controlgear
for LED modules
(IEC 61347-2-13:2006)**

Appareillages de lampes
Partie 2-13: Exigences particulières pour
les appareillages électroniques alimentés
en courant continu ou alternatif pour
les modules de DEL
(CEI 61347-2-13:2006)

Geräte für Lampen
Teil 2-13: Besondere Anforderungen an
gleich- oder wechselstromversorgte
elektronische Betriebsgeräte für
LED-Module
(IEC 61347-2-13:2006)

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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

Foreword

The text of document 34C/730/FDIS, future edition 1 of IEC 61347-2-13, 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 61347-2-13 on 2006-07-01.

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

In this standard, the following print types are used:

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

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) 2007-04-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2009-07-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61347-2-13:2006 was approved by CENELEC as a European Standard without any modification.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LAMP CONTROLGEAR –

Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules

FOREWORD

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International Standard IEC 61347-2-13 has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical committee 34: Lamps and related equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
34C/730/FDIS	34C/748/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This standard shall be used in conjunction with IEC 61347-1. It was established on the basis of the first (2000) edition of that standard.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this standard, the following print types are used:

- requirements: in roman type
- *test specifications: in italic type*
- notes: in small roman type

IEC 61347 consists of the following parts, under the general title *Lamp controlgear*:

- Part 1: General and safety requirements
- Part 2-1: Particular requirements for starting devices (other than glow starters)
- Part 2-2: Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps
- Part 2-3: Particular requirements for a.c. supplied electronic ballasts for fluorescent lamps
- Part 2-4: Particular requirements for d.c. supplied electronic ballasts for general lighting
- Part 2-5: Particular requirements for d.c. supplied electronic ballasts for public transport lighting
- Part 2-6: Particular requirements for d.c. supplied electronic ballasts for aircraft lighting
- Part 2-7: Particular requirements for d.c. supplied electronic ballasts for emergency lighting
- Part 2-8: Particular requirements for ballasts for fluorescent lamps
- Part 2-9: Particular requirements for ballasts for discharge lamps (excluding fluorescent lamps)
- Part 2-10: Particular requirements for electronic invertors and convertors for high-frequency operation of cold start tubular discharge lamps (neon tubes)
- Part 2-11: Particular requirements for miscellaneous electronic circuits used with luminaires
- Part 2-12: Particular requirements for d.c. or a.c. supplied electronic ballasts for discharge lamps (excluding fluorescent lamps)
- Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

This standard, and the parts which make up IEC 61347-1, 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 self-contained and therefore do not include references to each other.

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 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules

1 Scope

This part of IEC 61347 specifies particular safety requirements for electronic controlgear for use on d.c. supplies up to 250 V and a.c. supplies up to 1 000 V at 50 Hz or 60 Hz and at an output frequency which can deviate from the supply frequency, associated with LED modules.

Controlgear for LED modules specified in this standard are designed to provide constant voltage or current at SELV or SELV equivalent or higher voltages. Deviations from the pure voltage and current types do not exclude the gear from this standard.

The annexes of IEC 61347-1 which are applicable according to this Part 2-13 and using the word “lamp” are understood to also comprise LED modules.

Particular requirements for stationary independent SELV controlgear, which are part of the wiring in installations, are given in Annex I.

Performance requirements will be covered by IEC 62384¹.

Plug-in controlgear, being part of the luminaire, are covered as for built-in controlgear by the additional requirements of the luminaire standard.

2 Normative references

For the purpose of this Part 2 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:

IEC 60051 (all parts), *Direct acting indicating analogue electrical measuring instruments and their accessories*

IEC 60065:1985, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60083:2004, *Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC*

IEC 60085:2004, *Electrical insulation – Thermal classification*

IEC 60127 (all parts), *Miniature fuses*

¹ To be published.

IEC 60269-2:1986, *Low voltage fuses – Part 2: Supplementary requirements for fuses for use by authorised persons (fuses mainly for industrial application)*
Amendment 1 (1995)
Amendment 2 (2001)

IEC 60269-2-1:2004, *Low voltage fuses – Part 2-1: Supplementary requirements for fuses for use by authorised persons (fuses mainly for industrial application) – Sections I to VI: Examples of types of standardised fuses*

IEC 60269-3:1987, *Low-voltage fuses – Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications)*

IEC 60269-3-1:2004, *Low-voltage fuses – Part 3-1: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications) – Sections I to IV: Examples of types of standardised fuses*

IEC 60317-0-1:1997, *Specifications for particular types of winding wires – Part 0-1: General requirements – Enamelled round copper wire*

IEC 60384-14:2005, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

IEC 60417-DB:2002², *Graphical symbols for use on equipment*

IEC 60454 (all parts):, *Specifications for pressure-sensitive adhesive tapes for electrical purposes*

IEC 60598-1:2003, *Luminaires – Part 1: General requirements and tests*

IEC 60598-2-6, *Luminaires – Part 2: Particular requirements – Section 6: Luminaires with built-in transformers for filament lamps*

IEC 60906 (all parts), *IEC system of plugs and socket-outlets for household and similar purposes*

IEC 60906-1:1986, *IEC system of plugs and socket-outlets for household and similar purposes – Part 1: Plugs and socket-outlets 16 A 250 V a.c.*

IEC 60950-1:2005, *Information technology equipment – Safety – Part 1: General requirements*

IEC 61347-1:2000, *Lamp controlgear – Part 1: General and safety requirements*
Amendment 1:2003

IEC 61558-1:1998, *Safety of power transformers, power supply units and similar – Part 1: General requirements and tests*

² “DB” refers to the IEC on-line database.

3 Terms and definitions

For the purpose of this document, the definitions of Clause 3 of Part 1 apply, together with the following.

3.1

electronic controlgear for LED modules

unit inserted between the supply and one or more LED modules which serves to supply the LED module(s) with its (their) rated voltage or rated current. The unit may consist of one or more separate components and may include means for dimming, correcting the power factor and suppressing radio interference

3.2

d.c. or a.c. supplied controlgear

controlgear that includes stabilising elements for operating one or more LED module(s)

3.3

safety extra-low voltage (SELV)-equivalent controlgear (under consideration)

built-in or associated controlgear for operating one or more LED module(s) with an output voltage equivalent to SELV

NOTE For the purposes of this standard, SELV-equivalent controlgear, complying with 8.1 and 8.2 are deemed as giving protection against electric shock equivalent to SELV.

3.4

independent SELV controlgear

controlgear providing a SELV output isolated from the supply mains by means such as a safety isolating transformer, as specified in IEC 61558-1:1998

3.5

associated controlgear

controlgear designed to supply specific appliance(s) or equipment, incorporated or not incorporated

NOTE An example of an associated controlgear is an electronic controlgear within an emergency unit where it is assigned in a one-to-one relation to a battery driven ballast.

3.6

stationary controlgear

either a fixed controlgear or one which cannot be easily moved from one place to another

3.7

plug-in controlgear

controlgear incorporated in an enclosure provided with an integral plug as the means of connection of the electrical supply

3.8

rated output voltage for constant voltage controlgear

output voltage, at rated supply voltage, rated frequency and at rated output power, assigned to the controlgear

3.9

rated output current for constant current controlgear

output current, at rated supply voltage, rated frequency and at rated output power, assigned to the controlgear

3.10

light emitting diode

LED

solid state device embodying a p-n junction, emitting optical radiation when excited by an electric current

[IEC 60050(845), definition 845-04-40]

NOTE This definition is independent from the existence of enclosure(s) and of terminals.

3.11

LED module

unit supplied as a light source. In addition to one or more LEDs it may contain further components, e.g. optical, electrical, mechanical and/or electronic

3.12

maximum output voltage

maximum voltage which can occur between the output terminals for constant current control gear in any load condition

4 General requirements

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

- Independent SELV controlgear shall comply with the requirements of Annex I. This includes insulation resistance, electric strength, creepage distances and clearances of the outer case.
- controlgear which are not of the pure voltage and current types are tested according to the requirements of either a voltage source or a current source, whichever comes closer to the electrical behaviour of the controlgear.

5 General notes on tests

The requirements of Clause 5 of IEC 61347-1 apply, with the following additional requirement:

The following number of specimens shall be submitted for testing:

- one unit for the tests of Clauses 6 to 12 and 15 to 21;
- one unit for the tests of Clause 14 (additional units or components, where necessary, may be required in consultation with the manufacturer).

6 Classification

Controlgear are classified according to the method of installation given in Clause 6 of IEC 61347-1 and according to:

protection against electric shock:

- SELV-equivalent or isolating controlgear (this type of controlgear can be used instead of double-wound transformers with reinforced insulation; see IEC 60598-2-6 (to be read as for LED modules where lamps are mentioned));
- auto-wound controlgear;
- independent SELV controlgear.

7 Marking

7.1 Mandatory marking

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

- items a), b), c), d), e), f), k), l), and m) of 7.1 of IEC 61347-1 together with
- for constant voltage types: rated output voltage;
- for constant current types: rated output current and maximum output voltage;
- if applicable: an indication that the control gear is suitable for operation with LED modules only.

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 controlgear, or be made available in the manufacturer's catalogue or similar:

- items h), i), and j) of 7.1 of IEC 61347-1 together with
- mention whether the controlgear has mains-connected windings,
- mention that they are SELV-equivalent controlgear, if applicable.

8 Protection against accidental contact with live parts

NOTE The limits of the output voltage for SELV or SELV equivalent controlgear are in accordance with IEC 60364-4-41.

The requirements of Clause 10 of IEC 61347-1 apply, together with the following additional requirements:

8.1 For SELV-equivalent controlgear, the accessible parts shall be insulated from live parts by double or reinforced insulation.

Subclauses 8.6 and 13.1 of IEC 60065 apply.

8.2 Output circuits of SELV- or SELV equivalent control gear may have exposed terminals if

- the rated output voltage for constant voltage control gear or maximum output voltage for constant current control gear under load does not exceed 25 V r.m.s.;
- the no-load output voltage does not exceed 33 V r.m.s. and the peak does not exceed $33 \sqrt{2}$ V.

Compliance is checked by measuring the output voltage when steady conditions are established, the controlgear being connected to rated supply voltage and rated frequency. For the test under load, the controlgear is loaded with a resistance which would give rated output at rated output voltage.

For controlgear with more than one rated supply voltage, the requirement is applicable for each of the rated supply voltages.

Controlgear with a rated output voltage above 25 V shall have insulated terminals.