

INTERNATIONAL STANDARD

NORME INTERNATIONALE



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

**Appareillage de lampes –
Partie 2-13: Exigences particulières pour les appareillages électroniques
alimentés en courant continu ou alternatif pour les modules de LED**



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VERSION REDLINE



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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
INTRODUCTION TO AMENDMENT 1	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	8
4 General requirements	9
5 General notes on tests	10
6 Classification.....	10
7 Marking	10
7.1 Mandatory marking	10
7.2 Information to be provided if applicable.....	10
8 Protection against accidental contact with live parts	10
9 Terminals	10
10 Provisions for protective earthing.....	11
11 Moisture resistance and insulation.....	11
12 Electric strength	11
13 Thermal endurance test for windings of ballasts	11
14 Fault conditions	11
15 Transformer heating	11
15.1 General.....	11
15.2 Normal operation	11
15.3 Abnormal operation.....	11
16 Construction	12
17 Creepage distances and clearances	12
18 Screws, current-carrying parts and connections.....	12
19 Resistance to heat, fire and tracking.....	12
20 Resistance to corrosion	12
21 Maximum working voltage (U_{out}) in any load condition.....	12
Annex A (normative) Test to establish whether a conductive part is a live part which may cause an electric shock	13
Annex B (normative) Particular requirements for thermally protected lamp controlgear	14
Annex C (normative) Particular requirements for electronic lamp controlgear with means of protection against overheating.....	15
Annex D (normative) Requirements for carrying out the heating tests of thermally protected lamp controlgear	16
Annex E (normative) Use of constant S other than 4 500 in t_w tests.....	17
Annex F (normative) Draught-proof enclosure	18
Annex G (normative) Explanation of the derivation of the values of pulse voltages	19
Annex H (normative) Tests.....	20
Annex I (normative) Particular additional requirements for SELV d.c. or a.c. supplied electronic controlgear for LED modules.....	21

Annex J (normative) Particular additional safety requirements for a.c., a.c./d.c. or d.c. supplied electronic controlgear for emergency lighting	22
J.1 General.....	22
J.2 Marking.....	22
J.2.1 Mandatory markings.....	22
J.2.2 Information to be provided if applicable	22
J.3 General notes on tests	22
J.4 Starting conditions	23
J.5 Operating condition	23
J.6 Emergency supply current.....	23
J.7 EMC immunity.....	23
J.8 Pulse voltage from central battery systems	23
J.9 Tests for abnormal conditions.....	24
J.10 Temperature cycling test and endurance test.....	24
J.11 Functional safety (EOF _x).....	24
Bibliography	25
Table J.1 – Pulse voltages	23

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LAMP CONTROLGEAR –

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

FOREWORD

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 61347-2-13 edition 2.1 contains the second edition (2014-09) [documents 34C/1092/FDIS and 34C/1106/RVD] and its amendment 1 (2016-07) [documents 34C/1199/FDIS and 34C/1211/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

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

This edition includes the following significant technical changes with respect to the previous edition.

- a) Replacement of the SELV-equivalent requirements by SELV requirements and reference to the SELV requirements of Annex L in IEC 61347-1:~~2007/AMD1:2010/AMD2:2012~~.
- b) Reference to IEC 61347-1 for the protection against accidental contact with live parts, moisture resistance and insulation and electric strength.
- c) New Annex J for emergency lighting requirements.

This standard shall be used in conjunction with IEC 61347-1. 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:~~2007/AMD1:2010/AMD2:2012~~, 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.

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.

A list of all parts in the IEC 61347, published under the general title *Lamp controlgear* can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability 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.

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INTRODUCTION

This second edition of IEC 61347-2-13 is published in conjunction with IEC 61347-1. 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 self-contained and therefore do not include references to each other.

INTRODUCTION TO AMENDMENT 1

This Amendment 1 to IEC 61347-2-13: 2014 has been developed by SC 34C to include the following significant technical changes:

- a) Dated reference to Part 1 has been deleted to allow the use of this Part 2 in conjunction with the latest updated version of IEC 61347-1.

This Part 2-13 is intended to be used in conjunction with the latest edition of IEC 61347-1 and its amendments.

- b) Clause 21 has been introduced to verify the U_{out} as the maximum output voltage in any load conditions. This clause has been circulated in SC 34C as Fragment 3 of 34C/1038/DC, but was not included in the 34C/1092/FDIS.

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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. or a.c. supplies up to 1 000 V (a.c. 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 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 SELV controlgear are given in Annex I.

Performance requirements are covered by IEC 62384.

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

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61347-1:2007, *Lamp controlgear – Part 1: General and safety requirements*
~~Amendment 1:2010~~
~~Amendment 2:2012~~

IEC 61347-2-7:2011, *Lamp controlgear – Part 2-7: Particular requirements for battery supplied electronic controlgear for emergency lighting (self-contained)*

IEC 61547, *Equipment for general lighting purposes – EMC immunity requirements*

IEC 61558 (all parts), *Safety of power transformers, power supplies, reactors and similar products*

IEC 61558-2-6:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers*

IEC 61558-2-16:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units*

IEC 62384:2006, *DC or AC supplied electronic controlgear for LED modules – Performance requirements*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in IEC 61347-1, as well as the following apply.

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

Note 1 to entry: The unit may consist of one or more separate components and may include means for dimming, correcting the power factor and suppressing radio interference, and further control functions.

Note 2 to entry: The controlgear consists of a power supply and a control unit.

Note 3 to entry: The controlgear may be partly or totally integrated in the LED module.

3.2 d.c. or a.c. supplied controlgear

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

3.3 SELV controlgear

controlgear providing an SELV output isolated from the supply mains by means such as a safety isolating transformer, as specified in IEC 61558-2-6 and IEC 61558-2-16

3.4 associated controlgear

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

EXAMPLE: An electronic controlgear within an emergency unit where it is assigned in a one-to-one relation to a battery driven ballast

3.5 plug-in controlgear

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

3.6 rated output voltage for constant voltage controlgear

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

3.7 rated output current for constant current controlgear

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

3.8 light emitting diode LED

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

Note 1 to entry: This definition is independent from the existence of enclosure(s) and of terminals.

[SOURCE: IEC 60050-845:1987, 845.04.40]

3.9

LED module

light source having no cap, incorporating one or more LED package(s) on a printed circuit board, and possibly including one or more of the following:

electrical, optical, mechanical, and thermal components, interfaces and controlgear

Note 1 to entry: A LED module may be integrated (LEDi module, Type 1) or semi-integrated (LEDsi module, Type 2) or nonintegrated (LEDni module, Type 3).

Note 2 to entry: The LED module is usually designed to be part of a LED lamp or LED luminaire.

3.10

maximum output voltage

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

3.11

emergency lighting

lighting provided for use when the supply to the normal lighting fails; it includes escape lighting and standby lighting

3.12

rated emergency supply voltage or voltage range

rated voltage or voltage range claimed by the manufacturer where the controlgear will operate according specification

3.13

emergency output factor

EOF_x

ratio of the electrical output parameter when the control gear under test is operated in emergency mode to the output electrical parameter when the control gear is operated with the normal lighting conditions

Note 1 to entry: The electrical output parameter can be current (EOF_I), voltage (EOF_V) or power (EOF_W) at the output(s) of the control gear (depending on the module it could be constant current, constant voltage or constant power).

Note 2 to entry: The emergency output factor is the minimum of the values measured at the appropriate time after failure of the normal supply and continuously.

3.14

emergency supply current

rated supply current of the control gear operating in the emergency mode

4 General requirements

The requirements of Clause 4 of IEC 61347-1:~~2007/AMD2:2012~~ apply, together with the following additional requirements.

- Controlgear providing SELV shall comply with the requirements of Annex I. This includes insulation resistance, electric strength, creepage distances and clearance between primary and secondary circuits.
- If a separating, isolating or autotransformer is used, it shall comply with the relevant parts of IEC 61558. If, however, insulated winding wires are used for controlgear with an input voltage of up to 300 V, the dielectric strength test voltage is limited to 3 kV for raw material.

5 General notes on tests

The requirements of Clause 5 of IEC 61347-1:~~2007~~/AMD2:2012 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 20;
- 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:~~2007~~ and according to protection against electric shock as:

- auto-wound controlgear;
- separating controlgear;
- isolating controlgear;
- 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:~~2007~~, with the following mandatory markings:

- items a), b), c), d), e), f), k), l), m), t) and u) of 7.1 of IEC 61347-1:~~2007~~/AMD2:2012, together with:
- for constant voltage types: P_{rated} rated output power and U_{rated} rated output voltage;
- for constant current types: P_{rated} rated output power and I_{rated} rated output current;
- if applicable: an indication that the controlgear 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), j) and s) of 7.1 of IEC 61347-1:~~2007~~/AMD2:2012 together with
- a mention of whether the controlgear has mains-connected windings of transformer.

Windings do not apply to ferrite inductors and ferrite line filters.

8 Protection against accidental contact with live parts

The requirements of Clause 10 of IEC 61347-1:~~2007~~/AMD2:2012 apply.

9 Terminals

The requirements of Clause 8 of IEC 61347-1:~~2007~~ apply.