IEC 61347-2-14

Edition 1.0 2018-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Lamp controlgear – Part 2-14: Particular requirements for DC and/or AC supplied electronic controlgear for fluorescent induction lamps

Appareillages de lampes – Partie 2-14: Exigences particulières pour les appareillages électroniques alimentés en courant continu et/ou alternatif pour les lampes fluorescentes à induction

IEC 61347-2-14:2018-02(en-fr)

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Part 2-14: Particular requirements for DC and/or AC supplied electronic controlgear for fluorescent induction lamps

FOREWORD

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The text of this International Standard is based on the following documents:

FDIS	Report on voting
34C/1374/FDIS	34C/1383/RVD

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

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

This document is to be used in conjunction with IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017.

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

– Requirements proper: in roman type.

– *Test specifications: in italic type.*

– Explanatory matter: in smaller roman type.

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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- withdrawn,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

INTRODUCTION

This document specifies requirements for fluorescent induction lamp controlgear. The formatting of IEC 61347-2 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 document, 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 used.

Where the requirements of any of the clauses of IEC 61347-1 are referred to in this document 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 2-14: Particular requirements for DC and/or AC supplied electronic controlgear for fluorescent induction lamps

1 Scope

This part of IEC 61347 specifies particular safety requirements for electronic controlgear for use on AC supplies up to 1 000 V at 50 Hz or 60 Hz and/or DC supplies with operating frequencies deviating from the supply frequency, associated with fluorescent induction lamps as specified in IEC 62532 and IEC 62639, for high-frequency operation.

For emergency lighting operation, particular requirements for controlgear operated from a central supply are given in Annex J. Performance requirements appropriate to the safe operation of emergency lighting are also contained in Annex J.

Requirements for emergency lighting controlgear operating from non-centralized power supplies are given in IEC 61347-2-7.

NOTE Performance requirements detailed in Annex J are those considered to be safety related with respect to reliable emergency operation.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60929:2011, *AC and/or DC-supplied electronic control gear for tubular fluorescent lamps – Performance requirements*

IEC 61347-1:2015, *Lamp controlgear – Part 1: General and safety requirements*
IEC 61347-1:2015/AMD1:2017

IEC 61347-2-7:2011, *Lamp controlgear – Part 2-7: Particular requirements for battery supplied electronic controlgear for emergency lighting (self-contained)*
IEC 61347-2-7:2011/AMD1:2017

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

IEC 62532:2011, *Fluorescent induction lamps – Safety specifications*

IEC 62639:2012, *Fluorescent induction lamps – Performance specification*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61347-1, IEC 62532 and IEC 62639 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
DC and/or AC supplied electronic controlgear
mains/battery-supplied DC only, AC/DC or AC only to AC invertor including stabilizing elements for starting and operating one or more fluorescent induction lamps, generally at high frequency

3.2
maximum allowed peak voltage
highest permitted peak voltage across any insulation under open-circuit condition and any normal and abnormal operating conditions

Note 1 to entry: The maximum peak voltage is related to the declared RMS working voltage (see Table 1).

3.3
emergency lighting
lighting provided for use when the supply to the normal lighting fails

Note 1 to entry: Emergency lighting includes escape lighting and standby lighting.

3.4
rated battery voltage
voltage declared by the battery manufacturer

3.5
rated emergency power supply voltage
rated voltage of the emergency power supply claimed by the manufacturer

3.6
starting aid
device which facilitates the starting of the lamp

Note 1 to entry: A conductive strip affixed to the outer surface of the lamp and a conductive plate which is spaced within an appropriate distance from a lamp are examples of starting aids.

3.7
ballast lumen factor
ratio of the luminous flux of a reference lamp when the controlgear under test is operated at its rated voltage and frequency compared with the luminous flux of the same lamp operated with the appropriate reference ballast supplied at its rated voltage and frequency

3.8
emergency ballast lumen factor
EBLF
ratio of the emergency luminous flux of the lamp supplied by the emergency controlgear to the luminous flux of the same lamp operated with the appropriate reference ballast at its rated voltage and frequency

Note 1 to entry: This note only applies to the French language.

3.9
total circuit power
total power dissipated by ballast and lamp in combination, at the rated voltage and frequency of the ballast

3.10
reference lamp
lamp selected for testing controlgear which, when associated with a reference ballast, has electrical characteristics which are close to the rated values as stated in the relevant lamp standard

Note 1 to entry Relevant starting lamp data sheets are contained in IEC 62639.

[SOURCE: IEC 61347-1:2015, 3.3, modified – "ballasts" has been replaced with "controlgear" and the note has been added.]

4 General requirements

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 4 apply, together with the following additional requirement:

DC and/or AC supplied electronic controlgear for emergency lighting shall comply with the requirements of Annex J.

5 General notes on tests

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 5 apply together with the following additional requirement with regard to the number of specimens.

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 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 DC and/or AC supplied electronic controlgear for emergency lighting are made under the conditions specified in Annex J.

6 Classification

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 6 apply.

7 Marking

7.1 General

Controlgear which forms an integral part of the luminaire need not be marked.

7.2 Mandatory markings

In accordance with the requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, 7.2, controlgear, other than integral controlgear, shall be clearly and durably marked with the following mandatory markings:

a) items a), b), c), d), e), k) and l) of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, 7.1, together with
b) the symbol for earthing, as applicable;
c) for controllable controlgear, the control terminals shall be identified;
d) a declaration of the maximum working voltage (RMS) according to 15.3 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 = xx V, where xx is the marked working voltage value.

7.3 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) given in IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, 7.1;
– information regarding voltage polarity reversal protection for DC supplied controlgear only.

8 Protection against accidental contact with live parts

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 10 apply.

9 Terminals

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 8 apply.

10 Provisions for earthing

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 9 apply.

11 Moisture resistance and insulation

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 11 apply.

12 Electric strength

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 12 apply.

13 Thermal endurance test for windings

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 13 do not apply.

14 Fault conditions

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 14 apply.

For DC only electronic controlgear, the additional fault condition with reversed polarity of the supply voltage shall be applied.

15 Protection of associated components

15.1 Maximum peak voltage under normal operation conditions

Under conditions of normal operation, verified using the appropriate circuit for ballast testing in IEC 62639:2012, Clause D.4 and Figure D.3 and under conditions of abnormal operation, as specified in Clause 16, the voltage at the output terminals shall at no time exceed the maximum allowed peak value specified in Table 1. Linear interpolation between the given voltage steps is allowed

Table 1 – Relation between RMS working voltage and maximum peak voltage

Data sheet 62639-IEC-xxxx	Voltage at output terminals	
xxxx	RMS working voltage V	Maximum allowed peak voltage V
0055, 0085	300	1 500
1070, 1100, 1105, 1150	300	2 000
0035	300	2 500
0165	350	1 500
0050	350	2 500
0160, 0260	450	2 500
NOTE The values are aligned with IEC 62532:2011, Tables D.1 and D.2.		

15.2 Maximum working voltage under normal and abnormal operating conditions

Under normal operating conditions and abnormal operating conditions as specified in Clause 16, and from 2 s after the switch is on or from 2 s after the beginning of the starting process, the voltage at the output terminals shall not exceed the maximum working voltage for which the controlgear is declared.

15.3 Compliance

For the tests of 15.1 and 15.2, the output voltages measured shall be those between any output terminal and earth. Additionally, voltages that appear between output terminals shall be measured in cases where the voltage is present across insulation barriers within associated components.

15.4 Insulation of input terminals of controllable electronic controlgear

For controllable electronic controlgear, the control input shall be insulated from the mains circuit by insulation at least equal to basic insulation.

NOTE This requirement does not apply to those controlgear where control signals are injected via the supply terminals or where the control signals are completely insulated from the controlgear by being transmitted remotely from infra-red or radio wave transmitters.

If SELV is to be used, then double or reinforced insulation is required.

16 Abnormal conditions

16.1 Abnormal conditions for DC and/or AC supplied electronic controlgear

The DC and/or AC supplied electronic controlgear shall not impair safety when operated under abnormal conditions at any voltage between 90 % and 110 % of the rated supply voltage.

Compliance is checked by the following test.

Each of the following conditions shall be applied with the controlgear operating according to the manufacturer's instructions (including a heat sink, if specified) for 1 h:

a) the lamp or one of the lamps is not inserted; test conducted by nothing connected to the output;

b) the lamp does not start because one of the wire to the core is broken; test conducted by cutting one wire close to the controlgear;

c) the lamp does not start because a core is damaged; test conducted by removing the ferrite;

d) short circuit; test conducted by bridging the output terminals;

e) leaky lamp; test conducted by removing the discharge vessel or breaking the exhaust tube.

During and at the end of the tests specified under items a) to e), the controlgear shall show no defect impairing safety nor shall any smoke be produced.

16.2 Additional abnormal conditions for DC only electronic controlgear

If the DC only electronic controlgear is declared by the manufacturer as a protected controlgear against the reversal polarity of the supply voltage, then the following test is applied.

The DC only electronic controlgear shall be connected for 1 h with the reversal supply voltage at the maximum value of the rated voltage with the maximum lamp power declared by the manufacturer.

During and at the end of the test the DC only electronic controlgear shall operate the lamp(s) normally without any defects.

17 Construction

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 15 apply.

18 Creepage distances and clearances

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 16 apply. Values for frequencies up to and including 700 kHz, are specified in IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017.

NOTE Values for frequencies above 700 kHz can be considered in future revisions of this document.

19 Screws, current-carrying parts and connections

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 17 apply.

20 Resistance to heat, fire and tracking

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 18 apply.

21 Resistance to corrosion

The requirements of IEC 61347-1:2015 and IEC 61347-1:2015/AMD1:2017, Clause 19 apply.