IEC 61347-2-1

Edition 1.0 2013-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 2
AMENDEMENT 2

Lamp controlgear –
Part 2-1: Particular requirements for starting devices (other than glow starters)

Appareillages de lampes –
Partie 2-1: Prescriptions particulières pour les dispositifs d'amorçage (autres que starters à lueur)

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FOREWORD

This amendment has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical committee 34: Lamps and related equipment.

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

FDIS	Report on voting
34C/1051/FDIS	34C/1067/RVD

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

The committee has decided that the contents of this amendment and the base publication 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- withdrawn,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.

CONTENTS

Replace the titles of clause 15 and its subclauses by the following new titles:

15 Heating of built-in and independent starting devices
15.1 General
15.2 Normal operation
15.3 Abnormal operation

2 Normative references

Add the following new reference:

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

3 Definitions

Add, after 3.6, the following new entry 3.7:

3.7
maximum case temperature under abnormal conditions
maximum allowable case temperature of the starting devices and ignitors under abnormal conditions with metal halide lamps

$(t_c + X)$

NOTE The value of $(t_c + X)$ is declared by the manufacturer.

[SOURCE: IEC 60927, 3.7, modified – The term "starting device" is added.]

7.1 Mandatory markings

Add, at the end of the list, a new dashed item as follows:

– The manufacturer shall declare the allowable maximum case temperature under normal condition (A) and, for ignitors which are intended to be connected in series with discharge lamps which could, according to the lamp specification cause rectification, the maximum case temperature under abnormal condition (B). The marking shall be "t_c A/B" (example t_c 60/90 = maximum temperature 60 °C for the normal and maximum temperature 90 °C for the abnormal conditions).

14 Fault conditions

Replace the first sentence of 14.2 in Amendment 1 by the following sentence:

Independent starting devices shall not exceed the temperature values for abnormal operation given in 15.3.3.

15 Heating of independent starting devices

Replace the title and text of clause 15 and the changes made to it by Amendment 1 with the following:

15 Heating of built-in and independent starting devices

15.1 General

Built-in and independent starting devices shall not exceed the temperature limits during normal operation (t_c) and abnormal operation ($t_c + X$).

In addition to the requirements of this clause of IEC 61347-2-1 for built-in starting devices the normal and the abnormal operating condition are checked together with the luminaire in accordance with IEC 60598-1.

15.2 Normal operation

15.2.1 General

Normal conditions are working conditions in which one or more of the following situations apply:

a) lamps are operating normally;

b) rated current flows through the starting device;

c) the starting device has been connected to a voltage source, for example, the mains voltage or the lamp voltage arising during normal operation;

d) combination of b) and c).

15.2.2 Normal operation of built-in starting devices

Compliance of built-in starting device in normal operation is checked by the following procedure.

The starting devices are connected as for normal use with appropriate lamps.

The built-in starting device shall be placed in a test enclosure as detailed in annex D of IEC 61347-1, the starting device being supported by two wooden blocks as shown in figure H.1 of IEC 61347-1.

The wooden blocks shall be 75 mm high, 10 mm thick and of a width equal to, or greater than, the width of the starting device. Furthermore, the blocks shall be positioned with the extreme end of the starting device aligned with the outer vertical sides of the block.

The controlgear employed for the components shall meet the requirements of the relevant IEC standard and be compatible with the lamp type to be started by the starting device.

The whole test circuit (controlgear, built-in starting device and the lamp(s)) is connected to the supply voltage. When the lamp is in stable operation, the lamp current is set for rated value by modifying the voltage applied. The ambient temperature of the test enclosure is adjusted to reach t_c on the starting device. In this condition, the starting devices and lamp are operated until they reach steady temperature.

Compliance is checked by the temperature measurement. The measured value shall not exceed limits specified in tables 12.1 and 12.2 of IEC 60598-1.

15.2.3 Normal operation of independent starting devices

Compliance of independent starting device in normal operation is checked by the following procedure.

Independent starting devices are connected as for normal use with appropriate lamps.

Independent starting devices are mounted in a test corner consisting of three dull black painted laminated wood boards 15 mm to 25 mm thick and arranged so as to resemble two walls and the ceiling of a room. The starting device is secured to the ceiling as close as possible to the walls, the ceiling extending at least 250 mm beyond the other sides of the starting device. This assembly is positioned as far as possible from the five internal surfaces of the enclosure.

The tests are carried out in a draught-proof room or enclosure as specified in annex F. The ambient temperature within the draught-proof enclosure shall be within 5 °C of the t_a rating and should preferably be the same as the t_a rating.

The controlgear employed for the components shall meet the requirements of the relevant IEC standard and be compatible with the lamp type to be started by the starting device.

The whole test circuit (controlgear, independent starting device and the lamp(s)) is connected to the supply voltage. When the lamp is in stable operation, the lamp current is set for the rated value by modifying the voltage applied. In this condition, the starting device and lamps are operated until they reach steady temperature.

Compliance is checked by the temperature measurement. The measured value shall not exceed limits specified in tables 12.1 and 12.2 of IEC 60598-1.

15.3 Abnormal operation

15.3.1 Abnormal operation of built-in ignitors

Compliance of built-in starting device in abnormal operation is checked by the following test procedure:

The test is required for built-in starting devices (built-in ignitors) intended to be connected in series with discharge lamps which could, according to the lamp specification cause rectification and are tested additionally with rectifying test circuit in accordance with 12.5 and annex C of IEC 60598-1.

The built-in starting device shall be placed in a test enclosure as detailed in annex D of IEC 61347-1, the starting device being supported by two wooden blocks as shown in figure H.1 of IEC 61347-1.

The wooden blocks shall be 75 mm high, 10 mm thick and of a width equal to, or greater than, the width of the starting device. Furthermore, the blocks shall be positioned with the extreme end of the starting device aligned with the outer vertical sides of the block.

For the test the built-in starting device is operated in the test enclosure described above for 30 minutes during which the double value of the rated current flows through the built-in starting device. Built-in starting devices, which are intended for the use of different lamps, the highest value of the current, shall be used.

The ambient temperature in the test enclosure is set to achieve at the end of the test (t_c + X) °C for which built-in starting device is specified. If during the test the value of (t_c + X) °C is not reached, then the test shall be repeated on another sample at an increased ambient temperature at which (t_c + X) °C is achieved.

Compliance is checked by the following parameters:

After the test, the temperature of the components is determined:

a) temperatures shall not exceed the values specified in table 12.3 of IEC 60598-1.

After cooling down, the starting device shall comply with the following conditions:

b) the starting device marking shall still be legible;

c) the pulse voltage must not differ by more than ± 10 % from the initially measured value;

d) the starting device shall withstand without damage an electric strength test according to clause 12 of this standard, the test voltage, however, being reduced to 75 % of the values given in table 1 of IEC 61347-1, but not less than 500 V.

30 min is the medium time required for a controlgear incorporated into a luminaire to heat up and cause the operation of the thermal control device during rectifying effect.

15.3.2 Abnormal operation of built-in starters

Compliance of built-in starter in abnormal operation is checked by the following test procedure:

The built-in starting device shall be placed in a test enclosure as detailed in annex D of IEC 61347-1, the starting device being supported by two wooden blocks as shown in figure H.1 of IEC 61347-1.

The wooden blocks shall be 75 mm high, 10 mm thick and of a width equal to, or greater than, the width of the starting device. Furthermore, the blocks shall be positioned with the extreme end of the starting device aligned with the outer vertical sides of the block.

Built-in starters are connected as for normal use with appropriate lamps as indicate in 15.2.1. The test is made with lamps having deactivated cathodes or substitution resistors specified in IEC 60081 and IEC 60901 on the lamp data sheets.

Upon completion of these tests, and after cooling down, the starting device shall comply with the following conditions:

a) the starting device marking shall still be legible;

b) the starting device shall withstand without damage an electric strength test according to clause 12 of this standard, the test voltage, however, being reduced to 75 % of the values given in table 1 of IEC 61347-1, but not less than 500 V.

15.3.3 Abnormal operation of independent starting devices

Compliance of independent starting device in abnormal operation is checked by the following test procedure:

The test is required for independent starting devices (independent ignitors) intended to be connected in series with discharge lamps which could, according to the lamp specification lead to controlgear/starting devices overheating and are tested additionally with rectifying test circuit in accordance with 12.5 and annex C of IEC 60598-1.

Independent starting devices are mounted in a test corner consisting of three dull black painted laminated wood boards 15 mm to 25 mm thick and arranged so as to resemble two walls and the ceiling of a room. The starting device is secured to the ceiling as close as possible to the walls, the ceiling extending at least 250 mm beyond the other sides of the starting device. This assembly is positioned as far as possible from the five internal surfaces of the enclosure.

The tests are carried out in a draught-proof room or enclosure as specified in annex F.

The controlgear employed for the components shall meet the requirements of the relevant IEC standard and be compatible with the lamp type to be started by the starting device.

Starting devices are connected as for appropriate use, but without lamps. In the case of abnormal conditions, the starting devices are operated at 110 % of the rated voltage until they reach the steady temperature, or, for starting devices with operating time limitation, until they cut out at or before the required time limit.

The test is performed after loading the starting device for 30 minutes with the double value of the rated current of the product. Starting devices, which are intended for the use of different lamps, the highest value of the current shall be used.

The ambient temperature within the draught-proof enclosure shall be within 5 °C of the t_a rating and should preferably be the same as the t_a rating.

Compliance is checked by the following parameters:

After the test, the temperature of the components is determined:

a) Temperatures shall not exceed the values specified in table 12.3 of IEC 60598-1.

After cooling down, the starting device shall comply with the following conditions:

b) the starting device marking shall still be legible;

c) the pulse voltage must not differ by more than ± 10 % from the initially measured value;

d) the starting device shall withstand without damage an electric strength test according to clause 12 of this standard, the test voltage, however, being reduced to 75 % of the values given in table 1 of IEC 61347-1, but not less than 500 V.

30 min is the medium time required for a controlgear incorporated into a luminaire to heat up and cause the operation of the thermal control device during rectifying effect.