

Lamp controlgear —

Part 2-10: Particular requirements for electronic invertors and convertors for high-frequency operation of cold tubular discharge lamps (neon tubes)

ICS 29.140.99

National foreword

This British Standard is the UK implementation of EN 61347-2-10:2001+A1:2009, incorporating corrigendum December 2010. It is identical with IEC 61347-2-10:2000, incorporating amendment 1:2008. It supersedes BS EN 61347-2.10:2001 which will be withdrawn on 1 December 2011.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated 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.

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Amendments/corrigenda issued since publication

This British Standard was published under the authority of the Standards Committee and comes into effect on 15 May 2001

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ISBN 978 0 580 73693 3

Date	Comments
31 May 2010	Implementation of IEC amendment 1:2008 with CENELEC endorsement A1:2009
30 June 2011	Implementation of CENELEC corrigendum December 2010: deletion of date of reference to EN 61347-1 in EN Foreword

Lamp controlgear
Part 2-10: Particular requirements for electronic invertors
and convertors for high-frequency operation of
cold start tubular discharge lamps (neon tubes)
(IEC 61347-2-10:2000)

Appareillages de lampes
Partie 2-10: Prescriptions particulières
pour onduleurs et convertisseurs
électroniques destinés à l'alimentation
en haute fréquence des lampes tubulaires
à décharge à démarrage à froid
(tubes néon)
(CEI 61347-2-10:2000)

Geräte für Lampen
Teil 2-10: Besondere Anforderungen
an elektronische Wechselrichter und
Konverter für Hochfrequenzbetrieb
von röhrenförmigen Kaltstart-
Entladungslampen (Neonröhren)
(IEC 61347-2-10:2000)

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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/507/FDIS, future edition 1 of IEC 61347-2-10, 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 61347-2-10 on 2000-11-01.

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) 2003-11-01

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 roman type.

Annexes designated "normative" are part of the body of the standard.
In this standard, annexes A to F, H, I and ZA are normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61347-2-10:2000 was approved by CENELEC as a European Standard without any modification.

Foreword to amendment A1

The text of document 34C/849/FDIS, future amendment 1 to IEC 61347-2-10:2000, 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 61347-2-10:2001 on 2008-12-01.

The following dates were fixed:

- latest date by which the amendment has to be
implemented at national level by publication of
an identical national standard or by endorsement (dop) 2009-09-01
- latest date by which the national standards conflicting
with the amendment have to be withdrawn (dow) 2011-12-01

Endorsement notice

The text of amendment 1:2008 to the International Standard IEC 61347-2-10:2000 was approved by CENELEC as an amendment to the European Standard without any modification.

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INTRODUCTION

This part of IEC 61347, 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.

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 2-10: Particular requirements for electronic invertors and convertors for high-frequency operation of cold start tubular discharge lamps (neon tubes)

1 Scope

This part of IEC 61347 specifies particular requirements for electronic invertors and convertors for high-frequency operation of tubular cold-cathode discharge lamps used in signs and luminous discharge tube installations and operating with an output voltage exceeding 1 000 V but not exceeding 10 000 V for direct connection to supply voltages not exceeding 1 000 V at 50 Hz or 60 Hz or 1 000 V d.c.

NOTE 1 In Japan, the output voltage of 15 000 V is acceptable.

The requirements for two types of invertors and convertors, types A and B, are specified as follows:

- Type A unit: an invertor or convertor operating within the frequency range 20 kHz to 50 kHz, and having an output voltage (between terminals) not exceeding 5 000 V peak, a maximum output current limited to 35 mA (r.m.s.) and 50 mA (peak value). The supply voltage does not exceed 250 V at 50 Hz or 60 Hz or 250 V d.c.

NOTE 2 The output current of a type A unit may be considered as not presenting an electric shock hazard due to the limits on the current and frequency range.

NOTE 3 In Japan, the output voltage of 15 000 V is acceptable.

- Type B unit: an invertor or convertor having a no-load output voltage not exceeding 5 000 V to earth or 10 000 V between terminals, operating within the frequency range 10 kHz to 100 kHz with a maximum output current limited to 200 mA (r.m.s.) and 400 mA (peak value).

NOTE 4 Type B units require additional protection in the output circuit.

NOTE 5 In Japan, a type B unit exceeding 50 mA and/or the secondary grounded is not acceptable.

In order to check the safety of invertors or convertors, it is necessary to check their performance. However, since no standardization of the characteristics of neon tubes exists, reference loads are specified in this standard to ensure reproducible test results.

The rated maximum operating temperature of the winding, t_w , is not applicable to this standard.

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

ISO 3864:1984, *Safety colours and safety signs*

3 Definitions

For the purpose of this part of IEC 61347, the definitions given in clause 3 of IEC 61347-1, with the exception of definitions 3.14, 3.16 and 3.17 apply, together with the following:

3.1

tubular cold cathode discharge lamp (neon tube)

discharge tube having cathodes which may be coated with an electron emitting material and which, during the starting process without external heating, emits electrons by field emission. These lamps have a low-pressure filling of a rare gas (or a mixture of rare gases) and possibly mercury vapour. They can have an inside coating of fluorescent materials

3.2

no-load rated output voltage

$\sqrt{A_1}$ U_o

maximum rated voltage between the output terminals or the ends of the integral connecting leads of the inverter or convertor connected to the rated supply voltage at rated frequency with no load on the output circuit

NOTE For sinusoidal wave forms, it is the r.m.s. value or the peak value divided by square root of 2. For other waveforms, it is the r.m.s. value or the equivalent value deduced from the peak value, obtained by mathematical calculation. $\sqrt{A_1}$

3.3

inverter

electric energy transducer that converts direct current to alternating current

3.4

convertor

unit for the electronic conversion of a.c. supply at one frequency to an a.c. supply at another frequency

3.5

earth-leakage protective device

device which removes the output power from an inverter or convertor in the event of an earth fault current flowing between any part of the output high-voltage circuit and earth