
Irish Standard
I.S. EN 61347-2-10:2001

# 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 (EQV))

# I.S. EN 61347-2-10:2001

*Incorporating amendments/corrigenda issued since publication:*

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English version

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Foreword

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Avant propos

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Vorwort

Das Jahr der Verweisung EN 61347-1 ist zu streichen.

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Dezember 2010

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I.S. EN 61347-2-10:2001

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 61347-2-10/A1

January 2009

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English version

# 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/A1:2008)

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/A1:2008)

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/A1:2008)

This amendment A1 modifies the European Standard EN 61347-2-10:2001; it was approved by CENELEC on 2008-12-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: avenue Marnix 17, B - 1000 Brussels**



Ref. No. EN 61347-2-10:2001/A1:2009 E

## Foreword

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.

EUROPEAN STANDARD **EN 61347-2-10**

NORME EUROPÉENNE

EUROPÄISCHE NORM January 2001

ICS 29.140.99

English version

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

This European Standard was approved by CENELEC on 2000-11-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
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Ref. No. EN 61347-2-10:2001 E

## 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 61347-1:2001.

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.

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## Endorsement notice

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

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# Annex ZA
(normative)

## Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 61347-1 | 2000 | Lamp controlgear<br>Part 1: General and safety requirements | EN 61347-1 | 2001 |
| ISO 3864 | 1984 | Safety colours and safety signs | - | - |

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# CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

# LAMP CONTROLGEAR –

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

## FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61347-2-10 has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical committee 34: Lamps and related equipment.

This consolidated version of IEC 61347-2-10 consists of the first edition (2000) [documents 34C/507/FDIS and 34C/521/RVD] and its amendment 1 (2008) [documents 34C/849/FDIS and 34C/859/RVD].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 1.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

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

This part 2 supplements or modifies the corresponding clauses in IEC 61347-1, so as to convert that publication into the IEC Standard: Particular requirements for electronic invertors and convertors for high-frequency operation of cold start tubular discharge lamps (neon tubes)

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

– Requirements proper: in roman type.

– *Test specifications: in italic type*.

– NOTES: Explanatory matter: in smaller roman type.

Annexes A, B, C, D, E, F, H and I form an integral part of this standard.

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 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

The committee has decided that the contents of the base publication and its amendments 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 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*