

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Lamp controlgear – **STANDARD PREVIEW**
Part 2-2: Particular requirements for d.c. or a.c. supplied electronic step-down
convertors for filament lamps
(standards.iteh.ai)

Appareillages de lampes – [IEC 61347-2-2:2011](https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-)
Partie 2-2: Exigences particulières pour les convertisseurs abaisseurs
électroniques alimentés en courant continu ou alternatif pour lampes à
incandescence



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2011 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

- Catalogue of IEC publications: www.iec.ch/searchpub

The IEC on-line Catalogue enables you to search by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, withdrawn and replaced publications.

- IEC Just Published: www.iec.ch/online_news/justpub

Stay up to date on all new IEC publications. Just Published details twice a month all new publications released. Available on-line and also by email.

www.iec.ch/online_news/justpub

- Electropedia: www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 20 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary online.

- Customer Service Centre: www.iec.ch/webstore/custserv

If you wish to give us your feedback on this publication or need further assistance, please visit the Customer Service Centre FAQ or contact us:

Email: csc@iec.ch

Tel.: +41 22 919 02 11

Fax: +41 22 919 03 00

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

- Catalogue des publications de la CEI: www.iec.ch/searchpub/cur_fut-f.htm

Le Catalogue en-ligne de la CEI vous permet d'effectuer des recherches en utilisant différents critères (numéro de référence, texte, comité d'études,...). Il donne aussi des informations sur les projets et les publications retirées ou remplacées.

- Just Published CEI: www.iec.ch/online_news/justpub

Restez informé sur les nouvelles publications de la CEI. Just Published détaille deux fois par mois les nouvelles publications parues. Disponible en-ligne et aussi par email.

- Electropedia: www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International en ligne.

- Service Clients: www.iec.ch/webstore/custserv/custserv_entry-f.htm

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions, visitez le FAQ du Service clients ou contactez-nous:

Email: csc@iec.ch

Tél.: +41 22 919 02 11

Fax: +41 22 919 03 00



IEC 61347-2-2

Edition 2.0 2011-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Lamp controlgear – **STANDARD PREVIEW**
Part 2-2: Particular requirements for d.c. or a.c. supplied electronic step-down
convertors for filament lamps
(standards.iteh.ai)

[IEC 61347-2-2:2011](http://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-7c1957c1957c/iec-61347-2-2-2011)
Appareillages de lampes –
Partie 2-2: Exigences particulières pour les convertisseurs abaisseurs
électroniques alimentés en courant continu ou alternatif pour lampes à
incandescence

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

N

ICS 29.140.99

ISBN 978-2-88912-813-6

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions	7
4 General requirements	7
5 General notes on tests.....	8
6 Classification	8
7 Marking	8
7.1 Mandatory marking	8
7.2 Information to be provided if applicable	8
8 Protection against accidental contact with live parts	8
9 Terminals	9
10 Provisions for protective earthing	9
11 Moisture resistance and insulation	9
12 Electric strength.....	9
13 Thermal endurance test for windings of ballasts	9
14 Fault conditions	9
15 Transformer heating	9
15.1 General	9
15.2 Normal operation	9
15.3 Abnormal operation	10
16 Construction	10
17 Creepage distances and clearances.....	10
18 Screws, current-carrying parts and connections	10
19 Resistance to heat, fire and tracking	10
20 Resistance to corrosion	10
Bibliography.....	13

INTERNATIONAL ELECTROTECHNICAL COMMISSION

LAMP CONTROLGEAR –

**Part 2-2: Particular requirements for d.c. or a.c. supplied
electronic step-down convertors for filament lamps**

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 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 61347-2-2 has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical committee 34: Lamps and related equipment.

This second edition of IEC 61347-2-2 replaces the first edition (2000), Amendment 1 (2005) and Amendment 2 (2006). The major modification for this second edition is the changeover from SELV equivalent to SELV.

This standard shall be used in conjunction with the second edition of IEC 61347-1 (2007) and its Amendment 1 (2010) and 2 (to be published).

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

FDIS	Report on voting
34C/994/FDIS	34C/1001/RVD

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

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

This part 2 supplements or modifies the clauses in IEC 61347-1, so as to convert that publication into the IEC Standard: Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps.

NOTE In this standard, 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 of the IEC 61347 series, under the general title: *Lamp control gear* can be found on the IEC website.

iTeh STANDARD PREVIEW

The committee has decided that the contents of this 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, [IEC 61347-2-2:2011](https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-af9601484e21/iec-61347-2-2-2011)
- withdrawn, <https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-af9601484e21/iec-61347-2-2-2011>
- replaced by a revised edition, or
- amended.

INTRODUCTION

This second edition of IEC 61347-2-2 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 other 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 control gear covered by this particular part of IEC 61347-2.

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

[IEC 61347-2-2:2011](https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-af9601484e21/iec-61347-2-2-2011)

<https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-af9601484e21/iec-61347-2-2-2011>

LAMP CONTROLGEAR –

Part 2-2: Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps

1 Scope

This part of IEC 61347 specifies particular safety requirements for electronic step-down convertors for use on d.c. supplies of up to 250 V or a.c. supplies of up to 1 000 V, at 50 Hz or 60 Hz and with rated output voltage ≤ 50 V r.m.s. at a frequency deviating from the supply frequency, or 120 V ripple free d.c. between conductors and between any conductor and earth, associated with tungsten-halogen lamps as specified in IEC 60357 and other filament lamps.

NOTE The limit of 50 V rated output voltage is in accordance with band I of IEC 60449.

Particular requirements for electronic step-down convertors with means of protection against overheating are given in Annex C.

Particular additional requirements for convertors providing safety extra low voltage (hereinafter SELV), are given in Annex I.

Performance requirements are covered by IEC 61047.

Plug-in convertors, being part of the luminaire, are covered as for built-in convertors by the additional requirements of the luminaire standard.

<https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-af9601484e21/iec-61347-2-2-2011>

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 60357, *Tungsten halogen lamps (non vehicle) – Performance specifications*

IEC 61047, *DC or a.c. supplied electronic step-down convertors for filament lamps – Performance requirements*

IEC 61347-1:2007, *Lamp controlgear – Part 1: General and safety requirements Amendment 1 (2010)*

IEC 61558-2-1, *Safety of power transformers, power supplies, reactors and similar products – Part 2-1: Particular requirements and tests for separating transformers and power supplies incorporating separating transformers for general applications*

IEC 61558-2-6, *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 61558-2-13, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-13: Particular requirements and tests for auto transformers and power supply units incorporating auto transformers*

IEC 61558-2-16, *Safety of transformers, reactors, power supply units and similar products for 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*

3 Terms and definitions

For the purposes of this part of IEC 61347, the terms and definitions given in Clause 3 of IEC 61347-1 apply, together with the following:

3.1

electronic step-down convertor

unit inserted between the supply and one or more tungsten-halogen or other filament lamps which serves to supply the lamp(s) with its (their) rated voltage, generally at high frequency

The unit may consist of one or more separate components and may include means for dimming, correcting the power factor and suppressing radio interference.

3.2

d.c. or a.c. supplied convertor

convertor that includes stabilizing elements for operating one or more filament lamps, generally at high frequency

3.3

SELV convertor

convertor providing a 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

independent convertor

convertor designed to supply unspecified appliances and intended to be used without any additional enclosure which provides protection against electric shock

3.5

plug-in convertor

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

3.6

rated output voltage

output voltage, at rated supply voltage, rated frequency and at unity power factor, assigned to the convertor

3.7

half-resistance effect

effect which can occur at the end of lamp life due to filament deformation or crystallization effects resulting in a partial short-circuit of the lamp filament, which can cause overloading of the convertor

4 General requirements

The requirements of Clause 4 of IEC 61347-1 apply, together with the following additional requirement:

Convertors providing SELV shall comply with the requirements of Annex I. This includes insulation resistance, electric strength, creepage distances and clearances between primary and secondary circuits.

Other types of convertors shall comply with the requirements of:

- IEC 61558-2-13 and IEC 61558-2-16, for auto-wound convertors,
- IEC 61558-2-1 and IEC 61558-2-16, for separating convertors.

5 General notes on tests

The requirements of Clause 5 of IEC 61347-1 apply, with the following additional requirement:

5.8 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 20;
- one unit for the tests of Clause 14 (additional units or components, where necessary, may be required in consultation with the manufacturer).

Unless otherwise declared by the manufacturer, the tests are carried out with the length of the output wire or cable either 20 cm or 200 cm, choosing the most unfavourable condition. It is possible to use two twisted wires or cable H03VV-. The cross section of the conductors shall be chosen according to the rated wattage and the current density shall not exceed 5 A/mm² in normal use.

6 Classification

Convertors are classified according to the method of installation given in Clause 6 of IEC 61347-1 and according to:

- Protection against electric shock
- auto wound (autotransformer) convertors,
- separating convertors,
- SELV convertors.

7 Marking

7.1 Mandatory marking

Convertors, other than integral convertors, shall be clearly and durably marked, in accordance with the requirements of 7.2 of IEC 61347-1, with the following mandatory markings:

- items a), b), c), d), e), f), k), l), m), s) and t) of 7.1 of IEC 61347-1, together with
- rated output voltage.

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 convertor, or be made available in the manufacturer's catalogue or similar:

- items h), i), j) and s) of 7.1 of IEC 61347-1 together with
- mention whether the convertor has mains-connected windings,
- a declaration of the allowed length of the output wire or cable, if it is not between 20 cm and 200 cm.

8 Protection against accidental contact with live parts

The requirements of Clause 10 of IEC 61347-1 apply.

9 Terminals

The requirements of Clause 8 of IEC 61347-1 apply.

10 Provisions for protective earthing

The requirements of Clause 9 of IEC 61347-1 apply.

11 Moisture resistance and insulation

The requirements of Clause 11 of IEC 61347-1 apply.

12 Electric strength

The requirements of Clause 12 of IEC 61347-1 apply.

13 Thermal endurance test for windings of ballasts

The requirements of Clause 13 of IEC 61347-1 are not applicable.

14 Fault conditions

The requirements of Clause 14 of IEC 61347-1 apply, together with the following additional requirements:

[IEC 61347-2-2:2011](https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-a9691494e21/iec-61347-2-2-2011)

[https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-](https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-a9691494e21/iec-61347-2-2-2011)

In the case of convertors provided with the marking ∇ , the requirements specified in Annex C shall be fulfilled.

In addition, the output voltage of the convertor, when operated under fault conditions, shall not exceed 115 % of the rated output voltage.

15 Transformer heating

15.1 General

SELV and separating convertors shall be tested according to Clause L.6 and L.7 of IEC 61347-1, where the requirements for control gear providing SELV are valid also for separating convertors.

15.2 Normal operation

The requirements of Clause L.6 of IEC 61347-1 apply, together with the following additional requirements:

The test shall be carried out with the length of the output cable of both, 20 cm and 200 cm, unless otherwise declared by the manufacturer.

For built-in and integrated convertors, tests shall be made under conditions such that the convertor is brought to t_c , as reached under normal operation at rated supply voltage.

The load in normal operating conditions should be made by normal lamps.

15.3 Abnormal operation

The requirements of Clause L.7 of IEC 61347-1 apply, together with the following additional requirements:

The test shall be carried out with the length of the output cable of both, 20 cm and 200 cm, unless otherwise declared by the manufacturer.

In addition, the following test at any voltage between 90 % and 110 % of the rated supply voltage, shall be performed with the control gear operating according to the manufacturer's instructions (including heat sinks, if specified) for 1 h.

The output voltage of the convertor, when operated under fault conditions, shall not exceed 115 % of the rated output voltage.

Double the number of lamps of the type for which the convertor is designed are connected in parallel to the output terminals.

During and at the end of the tests specified above, the convertor shall show no defect impairing safety, nor shall any smoke or flammable gases be produced.

After the test(s), when the convertor has returned to ambient temperature, the insulation resistance measured at approximately 500 V d.c. shall not be less than 1 M Ω .

To check whether gases liberated from the convertor are flammable or not, a test with a high frequency spark generator is made.

The temperatures on components in non-totally enclosed convertors shall not exceed their rated values.

[IEC 61347-2-2:2011](https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-af9601484e21/iec-61347-2-2-2011)

<https://standards.iteh.ai/catalog/standards/sist/51a86886-44bc-40b5-8866-af9601484e21/iec-61347-2-2-2011>

16 Construction

The requirements of Clause 15 of IEC 61347-1 apply.

17 Creepage distances and clearances

Unless otherwise specified in Clause 14, the requirements of Clause 16 of IEC 61347-1 apply.

18 Screws, current-carrying parts and connections

The requirements of Clause 17 of IEC 61347-1 apply.

19 Resistance to heat, fire and tracking

The requirements of Clause 18 of IEC 61347-1 apply.

20 Resistance to corrosion

The requirements of Clause 19 of IEC 61347-1 apply.