

CONSOLIDATED VERSION

VERSION CONSOLIDÉE



**Lamp controlgear –
Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear
for LED modules**

**Appareillage de lampes –
Partie 2-13: Exigences particulières pour les appareillages électroniques
alimentés en courant continu ou alternatif pour les modules de LED**



THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2016 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 l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
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.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

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 It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

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

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) 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 IEC

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

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 15 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

65 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

CONSOLIDATED VERSION

VERSION CONSOLIDÉE



Lamp controlgear –

Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules

Appareillage de lampes –

Partie 2-13: Exigences particulières pour les appareillages électroniques alimentés en courant continu ou alternatif pour les modules de LED

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.140.99

ISBN 978-2-8322-3542-3

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

REDLINE VERSION

VERSION REDLINE



Lamp controlgear –

Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules

Appareillage de lampes –

Partie 2-13: Exigences particulières pour les appareillages électroniques alimentés en courant continu ou alternatif pour les modules de LED

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
INTRODUCTION TO AMENDMENT 1	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	8
4 General requirements	9
5 General notes on tests	10
6 Classification.....	10
7 Marking	10
7.1 Mandatory marking	10
7.2 Information to be provided if applicable.....	10
8 Protection against accidental contact with live parts	10
9 Terminals	10
10 Provisions for protective earthing.....	11
11 Moisture resistance and insulation.....	11
12 Electric strength	11
13 Thermal endurance test for windings of ballasts	11
14 Fault conditions	11
15 Transformer heating	11
15.1 General.....	11
15.2 Normal operation	11
15.3 Abnormal operation.....	11
16 Construction	12
17 Creepage distances and clearances	12
18 Screws, current-carrying parts and connections.....	12
19 Resistance to heat, fire and tracking.....	12
20 Resistance to corrosion	12
21 Maximum working voltage (U_{out}) in any load condition.....	12
Annex A (normative) Test to establish whether a conductive part is a live part which may cause an electric shock	13
Annex B (normative) Particular requirements for thermally protected lamp controlgear	14
Annex C (normative) Particular requirements for electronic lamp controlgear with means of protection against overheating.....	15
Annex D (normative) Requirements for carrying out the heating tests of thermally protected lamp controlgear	16
Annex E (normative) Use of constant S other than 4 500 in t_w tests.....	17
Annex F (normative) Draught-proof enclosure.....	18
Annex G (normative) Explanation of the derivation of the values of pulse voltages	19
Annex H (normative) Tests.....	20
Annex I (normative) Particular additional requirements for SELV d.c. or a.c. supplied electronic controlgear for LED modules.....	21

Annex J (normative) Particular additional safety requirements for a.c., a.c./d.c. or d.c. supplied electronic controlgear for emergency lighting	22
J.1 General.....	22
J.2 Marking.....	22
J.2.1 Mandatory markings.....	22
J.2.2 Information to be provided if applicable	22
J.3 General notes on tests	22
J.4 Starting conditions	23
J.5 Operating condition	23
J.6 Emergency supply current	23
J.7 EMC immunity.....	23
J.8 Pulse voltage from central battery systems	23
J.9 Tests for abnormal conditions.....	24
J.10 Temperature cycling test and endurance test.....	24
J.11 Functional safety (EOF _x).....	24
Bibliography	25
 Table J.1 – Pulse voltages	 23

INTERNATIONAL ELECTROTECHNICAL COMMISSION

LAMP CONTROLGEAR –

Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules

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.

DISCLAIMER

This Consolidated version is not an official IEC Standard and has been prepared for user convenience. Only the current versions of the standard and its amendment(s) are to be considered the official documents.

This Consolidated version of IEC 61347-2-13 bears the edition number 2.1. It consists of the second edition (2014-09) [documents 34C/1092/FDIS and 34C/1106/RVD] and its amendment 1 (2016-07) [documents 34C/1199/FDIS and 34C/1211/RVD]. The technical content is identical to the base edition and its amendment.

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 61347-2-13 has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical committee 34: Lamps and related equipment.

This edition includes the following significant technical changes with respect to the previous edition.

- a) Replacement of the SELV-equivalent requirements by SELV requirements and reference to the SELV requirements of Annex L in IEC 61347-1:~~2007/AMD2:2012~~.
- b) Reference to IEC 61347-1 for the protection against accidental contact with live parts, moisture resistance and insulation and electric strength.
- c) New Annex J for emergency lighting requirements.

This standard shall be used in conjunction with IEC 61347-1. 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:~~2007/AMD1:2010/AMD2:2012~~, 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.

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

In this standard, the following print types are used:

- requirements: in roman type,
- *test specifications: in italic type,*
- notes: in small roman type.

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

The committee has decided that the contents of the base publication and its amendment 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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This second edition of IEC 61347-2-13 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 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.

INTRODUCTION TO AMENDMENT 1

This Amendment 1 to IEC 61347-2-13: 2014 has been developed by SC 34C to include the following significant technical changes:

- a) Dated reference to Part 1 has been deleted to allow the use of this Part 2 in conjunction with the latest updated version of IEC 61347-1.

This Part 2-13 is intended to be used in conjunction with the latest edition of IEC 61347-1 and its amendments.

- b) Clause 21 has been introduced to verify the U_{out} as the maximum output voltage in any load conditions. This clause has been circulated in SC 34C as Fragment 3 of 34C/1038/DC, but was not included in the 34C/1092/FDIS.

LAMP CONTROLGEAR –

Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules

1 Scope

This part of IEC 61347 specifies particular safety requirements for electronic controlgear for use on d.c. or a.c. supplies up to 1 000 V (a.c. at 50 Hz or 60 Hz) and at an output frequency which can deviate from the supply frequency, associated with LED modules.

Controlgear for LED modules specified in this standard are designed to provide constant voltage or current at SELV or higher voltages. Deviations from the pure voltage and current types do not exclude the gear from this standard.

The annexes of IEC 61347-1 which are applicable according to this Part 2-13 and using the word “lamp” are understood to also comprise LED modules.

Particular requirements for SELV controlgear are given in Annex I.

Performance requirements are covered by IEC 62384.

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

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61347-1:~~2007~~, *Lamp controlgear – Part 1: General and safety requirements*
Amendment 1:2010
Amendment 2:2012

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

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

IEC 61558 (all parts), *Safety of power transformers, power supplies, reactors and similar products*

IEC 61558-2-6:2009, *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 61558-2-16:2009, *Safety of transformers, reactors, power supply units and similar products for supply 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*