



**NSAI**  
Standards

Irish Standard  
I.S. EN 62031:2008&A1:2013&A2:2015

# LED modules for general lighting - Safety specifications

**I.S. EN 62031:2008&A1:2013&A2:2015**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

EN 62031:2008/A1:2013

EN 62031:2008/A2:2015

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN 62031:2008

*Published:*

2008-09-11

*This document was published  
under the authority of the NSAI  
and comes into effect on:*

2015-02-19

ICS number:

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 62031:2008/A2**

January 2015

ICS 29.140.99; 31.080.99

English Version

**LED modules for general lighting - Safety specifications  
(IEC 62031:2008/A2:2014)**

Modules de DEL pour éclairage général - Spécifications de  
sécurité  
(IEC 62031:2008/A2:2014)

LED-Module für Allgemeinbeleuchtung -  
Sicherheitsanforderungen  
(IEC 62031:2008/A2:2014)

This amendment A2 modifies the European Standard EN 62031:2008; it was approved by CENELEC on 2014-10-24. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of document 34A/1771/FDIS, future IEC 62031:2008/A2, prepared by SC 34A "Lamps" of IEC/TC 34 "Lamps and related equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62031:2008/A2:2015.

The following dates are fixed:

- latest date by which the document has to be (dop) 2015-07-24  
implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2017-10-24  
standards conflicting with the  
document have to be withdrawn

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

## Endorsement notice

The text of the International Standard IEC 62031:2008/A2:2014 was approved by CENELEC as a European Standard without any modification.

In the Bibliography of EN 62031:2008, the following note has to be **added** for the standard indicated:

IEC 62471                      NOTE                      Harmonized as EN 62471.

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 62031/A1**

February 2013

ICS 29.140.99; 31.080.99

English version

**LED modules for general lighting -  
Safety specifications  
(IEC 62031:2008/A1:2012)**

Modules de DEL pour éclairage général -  
Spécifications de sécurité  
(CEI 62031:2008/A1:2012)

LED-Module für Allgemeinbeleuchtung -  
Sicherheitsanforderungen  
(IEC 62031:2008/A1:2012)

This amendment A1 modifies the European Standard EN 62031:2008; it was approved by CENELEC on 2012-12-03. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

# CENELEC

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

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 34A/1608/FDIS, future edition 1 of IEC 62031:2008/A1, prepared by SC 34A, "Lamps", of IEC TC 34, "Lamps and related equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62031:2008/A1:2013.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-09-03
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-12-03

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

## Endorsement notice

The text of the International Standard IEC 62031:2008/A1:2012 was approved by CENELEC as a European Standard without any modification.

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 62031**

September 2008

ICS 29.140.99; 31.080.99

English version

**LED modules for general lighting -  
Safety specifications  
(IEC 62031:2008)**

Modules de DEL pour éclairage général -  
Spécifications de sécurité  
(CEI 62031:2008)

LED-Module für Allgemeinbeleuchtung -  
Sicherheitsanforderungen  
(IEC 62031:2008)

This European Standard was approved by CENELEC on 2008-07-01. 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

**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 34A/1237/FDIS, future edition 1 of IEC 62031, prepared by SC 34A, Lamps, of IEC TC 34, Lamps and related equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62031 on 2008-07-01.

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) | 2009-04-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn   | (dow) | 2011-07-01 |

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.

Annex ZA has been added by CENELEC.

---

## Endorsement notice

The text of the International Standard IEC 62031:2008 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60968	NOTE Harmonized as EN 60968:1990 (modified).
IEC 62384	NOTE Harmonized as EN 62384:2006 (not modified).

---



## **Annex ZA** (normative)

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

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

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60598-1 (mod)	2003	Luminaires - Part 1: General requirements and tests	EN 60598-1 + corr. August	2004 2007
A1	2006		A1	2006
IEC 60838-2-2	- <sup>1)</sup>	Miscellaneous lampholders - Part 2-2: Particular requirements - Connectors for LED modules	EN 60838-2-2	2006 <sup>2)</sup>
IEC 61347-1 (mod)	2007	Lamp controlgear - Part 1: General and safety requirements	EN 61347-1	2008
IEC 61347-2-13	2006	Lamp controlgear - Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules	EN 61347-2-13	2006
IEC 62471 (mod)	2006	Photobiological safety of lamps and lamp systems	EN 62471	2008
ISO 4046-4	2002	Paper, board, pulps and related terms - Vocabulary - Part 4: Paper and board grades and converted products	-	-

---

<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

This page is intentionally left blank



**IEC 62031**

Edition 1.0 2008-01

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**

---

**LED modules for general lighting – Safety specifications**

**Modules de DEL pour éclairage général – Spécifications de sécurité**



## **THIS PUBLICATION IS COPYRIGHT PROTECTED**

**Copyright © 2008 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](mailto:inmail@iec.ch)  
Web: [www.iec.ch](http://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](http://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](http://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.

- Electropedia: [www.electropedia.org](http://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](http://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](mailto: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](http://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](http://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](http://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](http://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](mailto:csc@iec.ch)  
Tél.: +41 22 919 02 11  
Fax: +41 22 919 03 00



**IEC 62031**

Edition 1.0 2008-01

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**

---

**LED modules for general lighting – Safety specifications**

**Modules de DEL pour éclairage général – Spécifications de sécurité**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX

**P**

## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references .....	6
3 Terms and definitions .....	7
4 General requirements .....	8
5 General test requirements .....	8
6 Classification.....	9
7 Marking .....	9
7.1 Mandatory marking for built-in or independent modules .....	9
7.2 Location of marking .....	10
7.3 Durability and legibility of marking .....	10
8 Terminals .....	10
9 Provisions for protective earthing .....	10
10 Protection against accidental contact with live parts .....	10
11 Moisture resistance and insulation.....	10
12 Electric strength .....	10
13 Fault conditions .....	11
13.1 General.....	11
13.2 Overpower condition .....	11
14 Conformity testing during manufacture .....	11
15 Construction.....	11
16 Creepage distances and clearances .....	11
17 Screws, current-carrying parts and connections.....	11
18 Resistance to heat, fire and tracking.....	12
19 Resistance to corrosion .....	12
Annex A (normative) Tests.....	13
Annex B (informative) Overview of systems composed of LED modules and control gear.....	14
Annex C (informative) Conformity testing during manufacture .....	15
Bibliography.....	16
Figure B.1 – Overview of systems composed of LED modules and control gear .....	14

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### LED MODULES FOR GENERAL LIGHTING – SAFETY SPECIFICATIONS

#### 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 provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 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 62031 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

The text of this first edition is based on the following documents:

FDIS	Report on voting
34A/1237/FDIS	34A/1256/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.

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.

The committee has decided that the contents of this publication 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

The first edition of a safety standard for LED modules for general lighting applications acknowledges the need for relevant tests for this new source of electrical light, sometimes called “solid state lighting”.

The provisions in the standard represent the technical knowledge of experts from the fields of the semiconductor industry and those of the traditional electrical light sources.

Two types of LED modules are covered: with integral and external control gear.

## **LED MODULES FOR GENERAL LIGHTING – SAFETY SPECIFICATIONS**

### **1 Scope**

This International Standard specifies general and safety requirements for light-emitting diode (LED) modules:

- \* LED modules without integral control gear for operation under constant voltage, constant current or constant power;
- \* self-ballasted LED modules for use on d.c. supplies up to 250 V or a.c. supplies up to 1 000 V at 50 Hz or 60 Hz.

NOTE 1 The safety requirements for separate control gear are specified in IEC 61347-2-13. The performance requirements for separate control gear are specified in IEC 62384.

NOTE 2 Requirements for LED modules with integrated control gear and equipped with a lamp cap (self-ballasted lamp), intended for mains voltage general lighting service retrofit applications (thereby replacing existing lamps with identical lamp caps) are specified in IEC 60968 (an amendment to the present edition or a new edition with extended scope is in preparation).

Requirements for LED modules with integrated control gear and equipped with a lamp cap (self-ballasted lamp), intended for non-mains voltage general lighting service retrofit applications (thereby replacing existing lamps with identical lamp caps) are under consideration.

NOTE 3 Where in the requirements of this standard both types of LED modules, with and without integral control gear, are addressed, the word “modules” is used instead. Where only the expression “LED module(s)” is used, it is understood to refer to the type without integral control gear.

### **2 Normative references**

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

IEC 60598-1:2003, *Luminaires, Part 1: General requirements and tests*<sup>1)</sup>  
Amendment 1 (2006)

IEC 60838-2-2, *Miscellaneous lampholders – Part 2-2: Particular requirements – Connectors for LED modules*

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

IEC 61347-2-13:2006, *Lamp controlgear – Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules*

IEC 62471:2006, *Photobiological safety of lamps and lamp systems*

ISO 4046-4:2002, *Paper, board, pulp and related terms – Vocabulary – Part 4: Paper and board grades and converted products*

---

<sup>1)</sup> A consolidated 6.1 (2006) exists, that includes IEC 60598-1 (2003) and its Amendment 1 (2006).

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-