

<b>STN</b>	<b>Energetické vlastnosti ovládacích zariadení svetelných zdrojov. Časť 3: Ovládacie zariadenia halogénových svetelných zdrojov a modulov LED. Metóda merania na stanovenie účinnosti ovládacích zariadení.</b>	<b>STN EN 62442-3</b>  36 0513
------------	---	--

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/15

Obsahuje: EN 62442-3:2014, IEC 62442-3:2014

**119914**

---

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, odbor SÚTN, 2015  
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

EUROPEAN STANDARD

**EN 62442-3**

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2014

ICS 29.140.99

English Version

Energy performance of lamp controlgear - Part 3: Controlgear for  
halogen lamps and LED modules - Method of measurement to  
determine the efficiency of the controlgear  
(IEC 62442-3:2014)

Performance énergétique des appareillages de lampes -  
Partie 3: Appareillage de lampes à halogène et modules de  
DEL - Méthode de mesure pour la détermination du  
rendement de l'appareillage  
(CEI 62442-3:2014)

Energieeffizienz von Lampenbetriebsgeräten - Teil 3:  
Betriebsgeräte für Halogenlampen und LED-Module -  
Messverfahren zur Bestimmung des Wirkungsgrades des  
Betriebsgerätes  
(IEC 62442-3:2014)

This European Standard was approved by CENELEC on 2014-05-29. 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 CEN-CENELEC Management Centre 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 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 34C/1077/FDIS, future edition 1 of IEC 62442-3, prepared by SC 34C "Auxiliaries for lamps", of IEC/TC 34 "Lamps and related equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62442-3:2014.

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) 2015-03-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-05-29

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.

## Endorsement notice

The text of the International Standard IEC 62442-3:2014 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 60357	NOTE	Harmonized as EN 60357.
IEC 62384	NOTE	Harmonized as EN 62384.
IEC 62442-1:2011	NOTE	Harmonized as EN 62442-1:2011 (not modified).
IEC 62442-2:—	NOTE	Harmonized as EN 62442-2:2014 (not modified).

## Annex ZA (normative)

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

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61047	2004	DC or AC supplied electronic step-down convertors for filament lamps - Performance requirements	EN 61047	2004
IEC 61347-1 (mod)	2007	Lamp controlgear -	EN 61347-1	2008
+A1	2010	Part 1: General and safety requirements	+A1	2011
+A2	2012		+A2	2013
IEC 61347-2-2	-	Lamp controlgear - Part 2-2: Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps	EN 61347-2-2	-
IEC 61347-2-13	-	Lamp controlgear - Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules	EN 61347-2-13	-
IEC 61558-1	-	Safety of power transformers, power supplies, reactors and similar products - Part 1: General requirements and tests	EN 61558-1	-
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	EN 61558-2-6	-
IEC Guide 115	2007	Application of uncertainty of measurement to conformity assessment activities in the electrotechnical sector	-	-



# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

---

**Energy performance of lamp controlgear –  
Part 3: Controlgear for halogen lamps and LED modules – Method of  
measurement to determine the efficiency of the controlgear**

**Performance énergétique des appareillages de lampes –  
Partie 3: Appareillage de lampes à halogène et modules de DEL – Méthode de  
mesure pour la détermination du rendement de l'appareillage**





## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2014 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](mailto:info@iec.ch)  
[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.

#### IEC Catalogue - [webstore.iec.ch/catalogue](http://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](http://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](http://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](http://www.electropedia.org)

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)

More than 55 000 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](http://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](mailto: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](http://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](http://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](http://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](http://www.electropedia.org)

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)

Plus de 55 000 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](http://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](mailto:csc@iec.ch).



# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

---

**Energy performance of lamp controlgear –  
Part 3: Controlgear for halogen lamps and LED modules – Method of  
measurement to determine the efficiency of the controlgear**

**Performance énergétique des appareillages de lampes –  
Partie 3: Appareillage de lampes à halogène et modules de DEL – Méthode de  
mesure pour la détermination du rendement de l'appareillage**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX

N

---

ICS 29.140.99

ISBN 978-2-8322-1533-3

**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.**

## CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions .....	6
4 General .....	8
4.1 Applicability.....	8
4.2 General notes on test.....	8
4.3 Controllable controlgear .....	8
4.4 Measurement uncertainty .....	8
4.5 Sampling of controlgear for testing .....	8
4.6 Number of samples .....	8
4.7 Power supply.....	9
4.8 Supply voltage waveform.....	9
4.9 Substitution load .....	9
4.10 Thermocouple and temperature indicator.....	9
4.11 Instrument accuracy.....	10
4.12 Measuring circuits .....	10
4.13 Multi-rated voltage controlgear .....	10
4.14 Multi-power controlgear .....	10
5 Method of measurement and calculation of the efficiency of controlgear (transformer, convertor) for tungsten halogen lamps and for LED modules .....	11
5.1 Measurement setup: input and output power.....	11
5.2 Efficiency calculation for magnetic (transformer) and electronic (convertor) controlgear.....	12
5.3 Measurement setup: input power in off mode.....	12
5.4 Standby power measurement of convertor – electronic controlgear .....	13
Bibliography.....	14
Figure 1 – Power losses measurement setup for magnetic controlgear (transformer) and input and output power measurement setup for convertor (electronic controlgear).....	11
Figure 2 – Input power measurement setup for magnetic controlgear (transformer) and for convertor (electronic controlgear).....	12
Figure 3 – Measurement setup of the standby power of convertor – electronic controlgear.....	13
Table 1 – Typical nominal electricity supply details for some regions.....	9



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ENERGY PERFORMANCE OF LAMP CONTROLGEAR –

**Part 3: Controlgear for halogen lamps and LED modules –  
Method of measurement to determine the efficiency of the controlgear**

## 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 62442-3 has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical committee 34: Lamps and related equipment.

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

FDIS	Report on voting
34C/1077/FDIS	34C/1088/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.

A list of all parts of the IEC 62442 series, published under the general title *Energy performance of lamp controlgear*, can be found on the IEC website.

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,
- withdrawn,
- replaced by a revised edition, or
- amended.

## ENERGY PERFORMANCE OF LAMP CONTROLGEAR –

### Part 3: Controlgear for halogen lamps and LED modules – Method of measurement to determine the efficiency of the controlgear

#### 1 Scope

This part of the IEC 62442 series defines a measurement method for the power losses of magnetic transformers and the power losses with the standby power of electronic convertor for halogen lamps and LED modules.

Also a calculation method of the efficiency for the mentioned controlgear for halogen lamps and LED modules is defined.

This part of IEC 62442 applies to electrical controlgear – lamp circuits comprised solely of the controlgear and of the lamp(s).

For multipurpose power supplies only the lighting part will be considered.

NOTE 1 Requirements for testing individual controlgear during production are not included.

It specifies the measurement method for the total input power, the standby power and the calculation method of the controlgear efficiency for all controlgear sold for domestic and normal commercial purposes operating with halogen lamps and LED modules.

This part of IEC 62442 does not apply to:

- controlgear which form an integral part of lamps;
- controlgear circuits with capacitors connected in series;
- controllable wire-wound electromagnetic controlgear.

#### 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 61047:2004, *DC or AC. 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  
Amendment 2:2012

IEC 61347-2-2, *Lamp controlgear – Part 2-2: Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps*

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

IEC 61558-1, *Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests*

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 Guide 115:2007, *Application of uncertainty of measurement to conformity assessment activities in the electrotechnical sector*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**