

© Copyright SEK. Reproduction in any form without permission is prohibited.

Belysningsmateriel – Drivdon för ljuskällor – Energiprestanda – Del 3: Drivdon för halogenlampor och lysdiodmoduler – Bestämning av verkningsgrad

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

Som svensk standard gäller europastandarden EN IEC 62442-3:2018. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62442-3:2018.

Nationellt förord

Europastandarden EN IEC 62442-3:2018

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 62442-3, Second edition, 2018 - Energy performance of lamp controlgear - Part 3: Controlgear for halogen lamps and LED modules - Method of measurement to determine the efficiency of the controlgear**

utarbetad inom International Electrotechnical Commission, IEC.

EN från CENELEC som är identiska med motsvarande IEC-standarder och som görs tillgängliga för nationalkommittéerna efter den 1 januari 2018 får en beteckning som inleds med EN IEC istället för som tidigare bara EN.

Tidigare fastställd svensk standard SS-EN 62442-3, utgåva 1, 2014 och SS-EN 62442-3/A11, utgåva 1, 2017, gäller ej fr o m 2021-06-07.

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard

Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

English Version

Energy performance of lamp controlgear -
Part 3: Controlgear for tungsten-halogen lamps and LED light
sources - Method of measurement to determine the efficiency of
controlgear
(IEC 62442-3:2018)

Performance énergétique des appareillages de lampes -
Partie 3: Appareillage de lampes tungstène-halogène et
sources lumineuses à LED - Méthode de mesure pour la
détermination du rendement des appareillages
(IEC 62442-3:2018)

Energieeffizienz von Lampenbetriebsgeräten -
Teil 3: Betriebsgeräte für Halogenlampen und LED-
ModuleLichtquellen - Messverfahren zur Bestimmung des
Wirkungsgrades des Betriebsgerätes
(IEC 62442-3:2018)

This European Standard was approved by CENELEC on 2018-06-07. 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, Serbia, 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: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 34C/1344/CDV, future edition 2 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 IEC 62442-3:2018.

The following dates are fixed:

- latest date by which the document has to be (dop) 2019-03-07
implemented at national level by
publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2021-06-07
standards conflicting with the
document have to be withdrawn

This document supersedes EN 62442-3:2014.

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

Endorsement notice

The text of the International Standard IEC 62442-3:2018 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 62442-1:2018	NOTE	Harmonized as EN 62442-1 ¹ (not modified).
IEC 62442-2	NOTE	Harmonized as EN 62442-2.

¹ To be published.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where 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.

<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	2015	Lamp controlgear - Part 1: General and safety requirements	EN 61347-1	2015
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 transformers, reactors, power supply units and combinations thereof - 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 62301 (mod)	2011	Household electrical appliances - Measurement of standby power	EN 50564	2011
IEC Guide 115	2007	Application of uncertainty of measurement - to conformity assessment activities in the electrotechnical sector		-

CONTENTS

FOREWORD	3
1 Scope	5
2 Normative references	5
3 Terms and definitions	6
4 General	9
4.1 Applicability	9
4.2 General notes on tests	9
4.3 Controllable controlgear	9
4.4 Measurement uncertainty	9
4.5 Sampling of controlgear for testing	9
4.6 Size of the test sample	9
4.7 Power supply	9
4.8 Supply voltage waveform	10
4.9 Substitution load	10
4.10 Thermocouple and temperature indicator	10
4.11 Instrument accuracy	10
4.12 Measuring circuits	11
4.13 Multi-rated voltage controlgear	11
4.14 Multi-power controlgear	11
4.15 Sensor and network connections	11
5 Method of measurement and calculation of the efficiency of controlgear (transformer, convertor) for tungsten-halogen lamps and for LED light sources	12
5.1 Measurement setup: input and output power	12
5.2 Efficiency calculation for electromagnetic (transformer) and electronic (convertor) controlgear	12
5.3 Measurement setup: input power in no-load mode	13
5.4 Standby power measurement of convertor-electronic controlgear	13
Bibliography	15
Figure 1 – Power losses measurement setup for electromagnetic controlgear (transformer) and input and output power measurement setup for convertor (electronic controlgear)	12
Figure 2 – Input power in no-load mode measurement setup for electromagnetic controlgear (transformer) and for convertor (electronic controlgear)	13
Figure 3 – Measurement setup of the standby power of convertor-electronic controlgear	14
Table 1 – Typical nominal electricity supply details for some regions	10

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENERGY PERFORMANCE OF LAMP CONTROLGEAR –

**Part 3: Controlgear for tungsten-halogen lamps and LED light sources –
Method of measurement to determine the efficiency of 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.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision and has been harmonized with IEC 62442-1 and IEC 62442-2.

The text of this International Standard is based on the following documents:

CDV	Report on voting
34C/1344/CDV	34C/1378/RVC

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

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

A list of all parts in 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 document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

ENERGY PERFORMANCE OF LAMP CONTROLGEAR –

Part 3: Controlgear for tungsten-halogen lamps and LED light sources – Method of measurement to determine the efficiency of controlgear

1 Scope

This part of IEC 62442 defines a measurement method for the power losses of electromagnetic transformers as well as the power losses and the standby power of electronic convertors for tungsten-halogen lamps and for LED light source(s).

It is applicable for controlgear that are designed for use on DC supplies up to 1 000 V and/or AC supplies up to 1 000 V at 50 Hz or 60 Hz.

A calculation method of the efficiency of the mentioned controlgear for tungsten-halogen lamps and LED light source(s) is also defined.

This document applies to electrical controlgear-lamp circuits comprised solely of the controlgear and of the lamp(s) (LED light sources).

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

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

This document 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 tungsten-halogen lamps and LED light source(s). The term "LED light sources" includes LED modules and LED lamps.

This document does not apply to:

- controlgear which form an integral part of lamps (LED light sources);
- controlgear circuits with capacitors connected in series;
- controllable electromagnetic controlgear.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 61047:2004, *DC or AC supplied electronic step-down convertors for filament lamps – Performance requirements*

IEC 61347-1:2015, *Lamp controlgear – Part 1: General and safety requirements*

IEC 61347-2-2, *Lamp controlgear – Part 2-2: Particular requirements for DC or AC supplied electronic step-down convertors for filament lamps*

IEC 61347-2-13, *Lamp controlgear – Part 2-13: Particular requirements for DC or AC supplied electronic controlgear for LED modules*

IEC 61558-1, *Safety of transformers, reactors, power supply units and combinations thereof – 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 62301:2011, *Household electrical appliances – Measurement of standby power*

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