SLOVENSKI STANDARD
SIST EN 61167:2011

01-september-2011

Sijalke s kovinskim halidom - Tehnične specifikacije

Metal halide lamps - Performance specifications

Lampes aux halogénures métalliques - Spécifications de performance

Ta slovenski standard je istoveten z: **EN 61167:2011**

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29.140.30	Fluorescenčne sijalke. Sijalke	Fluorescent lamps. Discharge lamps

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EUROPEAN STANDARD

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English version

Metal halide lamps - Performance specification (IEC 61167:2011)

Lampes aux halogénures métalliques - Spécifications de performance (CEI 61167:2011)

Halogen-Metalldampflampen - Anforderungen an die Arbeitsweise (IEC 61167:2011)

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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.

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CENELEC

European Committee for Electrotechnical Standardization

Comité Européen de Normalisation Electrotechnique

Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

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Foreword

The text of document 34A/1442/FDIS, future edition 2 of IEC 61167, 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 61167 on 2011-05-04.

This European Standard supersedes EN 61167:1994 + A1:1995 + A2:1997 + A3:1998.

Compared to EN 61167:1994, measurement methods for electrical and photometric parameters are included and safety related requirements are deleted as far as they are now covered by EN 62035. Modern kind of ignition (e.g. aggregated pulse widths) and operation (low frequency square wave) is added with extensive description of methods of calculation for peak current ratio. At the same time, a review was made on lamps in the market which are fit for standardising, leading to a big number of new lamp data sheets in the range of 20 W up to 250 W lamp power.

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

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)	2012-02-04
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2014-05-04

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 61167:2011 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 60081:1997 A1:2000 A2:2003	NOTE Harmonized as EN 60081:1998 (not modified). A1:2002 (modified) A2:2003 (not modified)
IEC 60188	NOTE Harmonized as EN 60188.
IEC 60357:2002	NOTE Harmonized as EN 60357:2003 (modified).
IEC 60682	NOTE Harmonized as EN 60682.
IEC 61231	NOTE Harmonized as EN 61231.

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.

Publication	Year	Title	EN/HD	Year
IEC 60050-845	1987	International Electrotechnical Vocabulary (IEV) - Chapter 845: Lighting	-	-
IEC 60061-1	-	Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 1: Lamp caps	EN 60061-1	-
IEC 60598-1	-	Luminaires - Part 1: General requirements and tests	EN 60598-1	-
IEC 60923	-	Auxiliaries for lamps - Ballasts for discharge lamps (excluding tubular fluorescent lamps) - Performance requirements	EN 60923	-
IEC 60927	-	Auxiliaries for lamps - Starting devices (other than glow starters) - Performance requirements	EN 60927	-
IEC/TR 61341	-	Method of measurement of centre beam intensity and beam angle(s) of reflector lamps	FprEN 61341[1)]	-
IEC 62035	-	Discharge lamps (excluding fluorescent lamps) - Safety specifications	EN 62035	-
IEC 62471	-	Photobiological safety of lamps and lamp systems	EN 62471	--
CIE 84	-	The measurement of luminous flux	-	-

[1)] At draft stage.

IEC 61167

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Metal halide lamps – Performance specification

Lampes aux halogénures métalliques – Spécifications de performance

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

METAL HALIDE LAMPS – PERFORMANCE SPECIFICATION

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.
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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.

International Standard IEC 61167 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

This second edition replaces the first edition published in 1992 and its Amendments 1 (1995), 2 (1997) and 3 (1998). This second edition constitutes a technical revision.

Compared to the 1st edition, measurement methods for electrical and photometric parameters are included and safety related requirements are deleted as far as they are now covered by IEC 62035. Modern kind of ignition (e.g. aggregated pulse widths) and operation (low frequency square wave) is added with extensive description of methods of calculation for peak current ratio. At the same time, a review was made on lamps in the market which are fit for standardising, leading to a big number of new lamp data sheets in the range of 20 W up to 250 W lamp power.

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

FDIS	Report on voting
34A/1442/FDIS	34A/1458/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 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.

INTRODUCTION

Since IEC 62035 *Discharge lamps (excluding fluorescent lamps) – Safety specifications* was published in 1999, the related lamp specific performance standards like IEC 61167 needed to be reviewed in an editorial action, splitting performance and safety requirements, but also to include all items in abeyance, stored for this occasion. The separation has already been carried out with other HID lamps. So, in some instances, the “pilot” text of IEC 60188 has been used. Moreover, the measurement part has been introduced with the assistance of IEC 60188 and IEC 60081.

It may also be noted that the colour coordinates for CCT 3000 K and 4200 K were adjusted to a point two units below Planck in order to take account of the life time shift to higher *y*-values.

Apart from these basic changes which were needed for long time, the new technique of low frequency square wave (LFSW) operation was implemented. This has led to additional pages to the existing lamp data sheets and several annexes describing and specifying the requirements. Further, detailed requirements and measurement methods for the ignition (break down/take-over/run-up) were introduced. Intense discussions took place on measurement and specification of the peak-current ratio during ignition and steady state. Workshops were held in order to come to a broad worldwide acceptance of the concepts. The Workshops were open for experts from lamp and control gear side in order to accommodate the interface between control gear and lamp to these requirements.

IEC SC34A MT PRESCO took the opportunity to add further lamp types which were considered of having market relevance and needing normative support.

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents concerning the lamp given in standard sheets 1039-1, 1041-1, 1080-1 and 1082-1.

IEC takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent has assured the IEC that he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of these patents is registered with the IEC. Information may be obtained from:

Panasonic Corporation
1-1 Saiwai-cho,
Takatsuki City,
Osaka 569-1193,
Japan

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

ISO (www.iso.org/patents) and IEC (http://www.iec.ch/tctools/patent_decl.htm) maintain on-line data bases of patents relevant to their standards. Users are encouraged to consult the data bases for the most up to date information concerning patents.

METAL HALIDE LAMPS – PERFORMANCE SPECIFICATION

1 Scope

This International Standard specifies the performance requirements for metal halide lamps for general lighting purposes.

For some of the requirements given in this standard, reference is made to “the relevant lamp data sheet”. For some lamps, these data sheets are contained in this standard. For other lamps, falling under the scope of this standard, the relevant data are supplied by the lamp manufacturer or responsible vendor.

The requirements of this standard relate only to type testing.

NOTE The requirements and tolerances permitted by this standard correspond to testing of a type test sample submitted by the manufacturer for that purpose. In principle this type test sample should consist of units having characteristics typical of the manufacturer's production and being as close to the production centre point values as possible.

It may be expected with the tolerances given in the standard that product manufactured in accordance with the type test sample will comply with the standard for the majority of production. Due to the production spread however, it is inevitable that there will sometimes be products outside the specified tolerances. For guidance on sampling plans and procedures for inspection by attributes, see IEC 60410.

2 Normative references

The following reference 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 reference document (including any amendments) applies.

IEC 60050-845:1987, *International Electrotechnical Vocabulary – Chapter 845: Lighting*

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps*

IEC 60598-1, *Luminaires – General requirements and tests*

IEC 60923, *Auxiliaries for lamps – Ballasts for discharge lamps (excluding tubular fluorescent lamps) – Performance requirements*

IEC 60927, *Auxiliaries for lamps – Starting devices (other than glow starters) – Performance requirements*

IEC/TR 61341, *Method of measurement of centre beam intensity and beam angle(s) of reflector lamps*

IEC 62035, *Discharge lamps (excluding fluorescent lamps) – Safety specifications*

IEC 62471, *Photobiological safety of lamp and lamp systems*

CIE 84, *The measurement of luminous flux*

3 Terms and definitions

For the purposes of this document, the terms and definitions in IEC 60050-845 and the following apply.

3.1
metal halide lamp
high-intensity discharge lamp in which the major portion of the light is produced by the radiation of a mixture of metallic vapour, metal halides and the products issued from the dissociation of metal halides

NOTE The definition covers clear and coated lamps.

[IEC 60050-845:1987, 845-07-25, modified]

3.2
nominal value
approximate quantity value used to designate or identify a lamp

[IEC 60081:1997, Definition 1.4.3, Amendment 2:2003]

3.3
rated value
quantity value for a characteristic of a lamp for specified operating conditions

The value and the conditions are specified in this standard, or assigned by the manufacturer or responsible vendor.

[IEC 60081:1997, Definition 1.4.4, Amendment 2:2003]

3.4
lumen maintenance
ratio of the luminous flux of a lamp at a given time in its life to the initial reading of its luminous flux, the lamp being operated under specific conditions

NOTE The ratio is generally expressed as a percentage.

3.5
initial readings
starting characteristics of a lamp, measured before ageing, and the electrical and photometric characteristics, measured at the end of the 100 h ageing period

3.6
reference ballast
special ballast complying with the requirements of IEC 60923, designed for the purpose of providing comparison standards for use in testing ballasts, for the selection of reference lamps and for testing regular production lamps under standardised conditions

NOTE It is essentially characterised by the fact that, at its rated frequency, it has a stable voltage/current ratio which is relatively uninfluenced by variations in current, temperature and electromagnetic surroundings, as outlined in the relevant ballast standard.

3.7
calibration current
value of the current on which the calibration and control of the reference ballast are based

3.8
type test
test or a series of tests made on a type test sample for the purpose of checking compliance of the design of a given product with the requirements of the relevant standard

[IEC 60081:1997, Definition 1.4.10, Amendment 1:2000]

3.9
specific effective radiant UV power
effective power of the UV radiation of a lamp related to its luminous flux (Unit: mW/klm)

NOTE The effective power of the UV radiation is obtained by weighting the spectral power distribution of the lamp with the UV hazard function $S_{UV}(\Lambda)$. Information about the relevant UV hazard function is given in IEC 62471. It only relates to possible hazards regarding UV exposure of human beings. It does not deal with the possible influence of optical radiation on materials, like mechanical damage or discoloration.

3.10
type test sample
sample consisting of one or more similar units submitted by the manufacturer or the responsible vendor for the purpose of a type test

3.11
inrush current
short term high lamp current, totally or partially rectified, by the asymmetrical electrode heating for some seconds during lamp ignition

3.12
warm-up current
increased lamp current after inrush phase which is due to the low initial lamp voltage

NOTE It is in the limits of double rated lamp current down to a value corresponding to highest allowed lamp voltage.

3.13
run-up time
after switching on a 100 h aged lamp at rated supply voltage, maximum time allowed to reach 90 % of the declared luminous flux

3.14
take-over
time between lamp being able to conduct current until electrodes are at thermionic emission

NOTE At the end of the take-over phase, the lamp power factor is above 0,9 and the lamp voltage stabilises and ramps up from about 20 V rms.

3.15
peak current ratio
PCR
ratio between the peak currents and the r.m.s. currents

NOTE For measurement procedure, see Annex G.

3.16
typical lamp voltage, typical lamp current
steady state lamp voltage and current expected for a lamp operating on low frequency square wave ballast.

NOTE Typical lamp current is derived from the lamp rated wattage and typical lamp voltage. In practice, lamps for use on low frequency square wave ballasts may be targeted to a different voltage within the allowed range for best performance, and the lamp current will be different accordingly. Typical lamp voltages and currents have been used as a basis for assigning currents at take-over and run-up.