SLOVENSKI STANDARD
SIST EN 60188:2002/A11:2019

01-april-2019

Visokotlačne živosrebrne sijalke - Tehnične specifikacije - Dopolnilo A11

High-pressure mercury vapour lamps - Performance specifications

Quecksilberdampf-Hochdrucklampen - Anforderungen an die Arbeitsweise

Lampes à vapeur de mercure à haute pression - Prescriptions de performance

Ta slovenski standard je istoveten z: **EN 60188:2001/A11:2019**

ICS:

29.140.30	Fluorescenčne sijalke. Sijalke	Fluorescent lamps. Discharge lamps

SIST EN 60188:2002/A11:2019 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 60188:2001/A11

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ICS 29.140.30

English Version

High-pressure mercury vapour lamps - Performance specifications

Lampes à vapeur de mercure à haute pression - Prescriptions de performance

Quecksilberdampf-Hochdrucklampen - Anforderungen an die Arbeitsweise

This amendment A11 modifies the European Standard EN 60188:2001; it was approved by CENELEC on 2018-12-26. 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.

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

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European foreword

This document (EN 60188:2001/A11:2019) has been prepared by CLC/TC 34A “Lamps and related equipment”.

The following dates are fixed:

–	latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2019-12-26
–	latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2021-12-26

Clauses, subclauses, notes, tables, figures and annexes, which are additional to those in IEC 60188:2001 are prefixed “Z”.

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.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Regulation(s).

For the relationship with EU Directives see informative Annexes ZZA, ZZB and ZZC, which are integral parts of this document.

This standard provides test methods related to parameters as prescribed by (EC) Regulation 245/2009, (EU) Regulation 1194/2012 and (EU) Regulation 874/2012 while conformity assessment (sampling, conformity procedures as well as limits) for market surveillance are specified in the text of the above Regulations.

CONTENTS ***Add*** *the following annexes:*

Annex ZA (normative) Normative references to international publications with their corresponding European publications

Annex ZZA (informative) Relationship between this European Standard and the requirements of Commission Regulation (EC) No 245/2009

Annex ZZB (informative) Relationship between this European Standard and the requirements of Commission Regulation (EU) No 1194/2012

Annex ZZC (informative) Relationship between this European Standard and the requirements of Commission Regulation (EU) No 874/2012

Delete *all mentioning of caps E26 and E39 and delete such data sheets. This is in detail:*

In Subclause 2.2.1, List of lamp data sheets, ***delete*** *lines with caps E26 and E39.*

In Subclause 2.2.2, List of maximum lamp outline sheets, ***delete*** *lines with caps E26 and E39.*

Delete *data sheets 60188-IEC-210, -235, -240, -250, -261, -270, -271 and -2000.*

1.1.A1 ***Add*** *the following clause before Clause 1.2*

1.1.Z1 Overall statement

Where a Commission Regulation specifies limits for parameters these limits shall be used instead of the limits specified in this standard.

1.3 **Terms and definitions**

After 1.3.11 ***add*** *new definitions 1.3.Z1 up to 1.3.Z7:*

1.3.Z1
directional lamp
lamp having at least 80 % light output within a solid angle of π sr (corresponding to a cone with angle of 120°)

[SOURCE: Regulation 1194/2012, Article 2]

1.3.Z2
beam angle
the angle between two imaginary lines in a plane through the optical beam axis, such that these lines pass through the centre of the front face of the lamp and through points at which the luminous intensity is 50 % of the centre beam intensity

[SOURCE: EN 61341]

1.3.Z3
partial luminous flux (of a light source, within a specified cone angle)

luminous flux emitted from a light source within a specified cone angle α determined from the luminous intensity distribution $I(\theta, \varphi)$ of the source:

$$\Phi_\alpha = \int_{\varphi=0}^{2\pi} \int_{\theta=0}^{\alpha/2} I(\theta,\varphi) \sin\theta \, \mathrm{d}\theta \, \mathrm{d}\varphi \qquad (2)$$

Note 1 to entry: Partial luminous flux is expressed in lumen (lm)

Note 2 to entry: $(\theta, \varphi)=(0,0)$ is the direction of the cone axis

Note 3 to entry: The cone angle α is the full angle (diameter) of the cone

[SOURCE: EN 13032-4, 3.41, modified, – Notes 4 and 5 removed]

1.3.Z4
useful luminous flux
Φuse
partial luminous flux of a lamp falling within the cone used for calculating the lamp's energy efficiency according Annex III, point 1.1 of regulation (EU) No 1194/2012

Note 1 to entry: Useful luminous flux is expressed in lumen (lm).

Note 2 to entry: The regulation specifies 90° or 120° cones according to the product characteristics.

Note 3 to entry: Useful luminous flux is similar to partial luminous flux. It is determined with the cone axis coincident with the observed optical beam axis of the light source, the axis about which the luminous intensity is substantially symmetrical.

1.3.Z5
efficacy
'luminous efficacy of a source', 'light source efficacy' or 'lamp efficacy' (ηsource)
means the quotient of the luminous flux emitted (Φ) by the power consumed by the source (P_{source}). $\eta_{source} = \Phi / P_{source}$. Unit: lm/W.

The power dissipated by auxiliary equipment such as ballasts is not included in the power consumed by the source

[SOURCE: Regulation 245/2009 Annex II, 1.a)]

1.3.Z6
Lamp Lumen Maintenance Factor (LLMF)
means the ratio of the luminous flux emitted by the lamp at a given time in its life to the initial luminous flux

[SOURCE: Regulation 245/2009 Annex II, 1.b)]

1.3.Z7
Lamp Survival Factor (LSF)
means the fraction of the total number of lamps which continue to operate at a given time under defined conditions and switching frequency

[SOURCE: Regulation 245/2009 Annex II, 1.c)]

1.6 ***Add** a new sub-clause after 1.5:*

1.6 Marking

Where a lamp is to be considered as a special purpose product according to Regulation (EC) No 1194/2012 this shall be declared by the supplier.

1.4.Z1 *After Subclause 1.4.8* ***add*** *new Subclauses 1.4.Z1 to 1.4.Z5 as follows:*

1.4.Z1 Useful luminous flux

The useful luminous flux of a directional lamp shall be measured under the conditions of Annex B, by luminous intensity integration as described in EN 13032-4:2015, 6.3 "Partial luminous flux".

Alternative measurement methods may be used if they can be shown to give equivalent results for the product being tested, if necessary by applying correction factors. Measurements with lamps operating horizontally are often much easier to carry out. The reference method, however, uses the measurement position according to Annex B, B.1.

In case of doubt a goniophotometry measurement of EN 13032-4:2015, 6.3 shall be used.

NOTE Below are a few examples of alternative measurement methods. It is not an exhaustive list.

- For small beam angles shine into integrating sphere.
- Mount lamp on internal surface of integrating sphere.
- Mount lamp inside integrating sphere with screening (LM-20 technique).
- Illuminate a surface and measure the illuminance across the surface with a photometer.
- Illuminate a surface and measure the surface luminance with a luminance camera.
- Illuminate a translucent screen and measure the surface luminance of the rear side with a luminance camera

1.4.Z2 Efficacy

The efficacy of an individual lamp shall be calculated from a measurement of luminous flux and power according to the conditions of Annex B.

1.4.Z3 Lamp lumen maintenance factor

The lamp lumen maintenance factor of an individual lamp shall be calculated from measurements of its luminous flux made at appropriate times according to the conditions of Annex B.

1.4.Z4 Lamp survival factor

The survival of an individual lamp shall be determined by operating lamps under the conditions prescribed in Annex B until the lamp fails to remain alight or delivers low light output (in case of doubt, low light output refers to noticeably less than 50 % of rated light output).

1.4.Z5 Mercury content

The average mercury content shall be measured in accordance with the CV AAS method as described in EN 62321-4.

Annex B (normative) Method of measuring electrical and photometrical characteristics

B.4 Measurement

Insert *the following paragraphs in* ***B.4*** *between the second and third paragraph.*

Photometric characteristics shall be measured in accordance with EN 13032-1. For determination of the centre beam intensity of reflector lamps, EN 61341 shall be used.

The chromaticity coordinates and correlated colour temperature (CCT) of an individual lamp shall be calculated according to CIE 15 from a measurement made under the conditions of Annex B.

The colour rendering index (CRI) of an individual lamp shall be calculated according to CIE 13.3 from a measurement made under the conditions of Annex B.

Replace *the Annex ZA by the following one:*

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

Publication	Year	Title	EN/HD	Year
		Light and lighting – Measurement and presentation of photometric data of lamps and luminaires – Part 1: Measurement and file format	EN 13032-1 + A1	2004 2012
IEC 60050-845	1987	International Electrotechnical Vocabulary – Chapter 845: Lighting	-	-
IEC 60061-1	1993	Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps	EN 60061-1	1993 (mod)
IEC 60923	2005	Auxiliaries for lamps – Ballasts for discharge lamps (excluding tubular fluorescent lamps) – Performance requirements	EN 60923	2005
IEC/TR 61341	2010	Method of measurement of centre beam intensity and beam angle(s) of reflector lamps	EN 61341	2011
IEC 62035	2014	Discharge lamps (excluding fluorescent lamps) – Safety specifications	EN 62035	2014 (mod)
IEC 62321-4 A1	2013 2017	Determination of certain substances in electrotechnical products - Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS	EN 62321-4 A1	2014 2017
CIE 84	1989	The measurement of luminous flux	-	-
CIE 13.3	1995	Method of Measuring and Specifying Colour Rendering Properties of Light Sources	-	-