

<b>STN</b>	<b>Halogenidové výbojky. Špecifikácie prevádzkových vlastností.</b>	<b>STN EN 61167</b>  36 0260
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Metal halide lamps - Performance specification

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. 09/16

Obsahuje: EN 61167:2016, IEC 61167:2015

Oznámením tejto normy sa od 10.06.2019 ruší  
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Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, 2016  
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy  
rozmnžovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 61167**

June 2016

ICS 29.140.30

Supersedes EN 61167:2011

English Version

**Metal halide lamps - Performance specification  
(IEC 61167:2015 , modified)**

Lampes aux halogénures métalliques - Spécifications de  
performance  
(IEC 61167:2015 , modifiée)

Halogen-Metall dampflampen - Anforderungen an die  
Arbeitsweise  
(IEC 61167:2015 , modifiziert)

This European Standard was approved by CENELEC on 2016-03-07. 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.

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Europäisches Komitee für Elektrotechnische Normung

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



**EN 61167:2016****European foreword**

The text of document 34A/1809/FDIS, future edition 3 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 approved by CENELEC as EN 61167:2016.

A draft amendment, which covers common modifications to IEC 61167 (34A/1809/FDIS), was prepared by CLC/TC 34A "Lamps" and approved by CENELEC.

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) 2016-12-10
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-06-10

This document supersedes EN 61167:2011.

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.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 61167:2015 are prefixed "Z".

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 Directives.

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.

**Endorsement notice**

The text of the International Standard IEC 61167:2015 was approved by CENELEC as a European Standard with agreed common modifications.



## COMMON MODIFICATIONS

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

**Add the following clause before Clause 2:**

### **Z1 Overall statement**

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

## **3 Terms and definitions**

After 3.18 **add new definitions 3.Z1 up to 3.Z7:**

### **3.Z1**

#### **directional lamp**

lamp having at least 80 % light output within a solid angle of  $\pi$  sr (corresponding to a cone with angle of 120°)

[SOURCE: Regulation 1194/2012, Article 2]

### **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]

### **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  $\alpha$  determined from the luminous intensity distribution  $I(\theta, \varphi)$  of the source:

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

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  $\alpha$  is the full angle (diameter) of the cone.

[SOURCE: EN 13032-4:2015, 3.41, modified, – Notes 4 and 5 removed]



**EN 61167:2016****3.Z4****useful luminous flux,  $\Phi_{\text{use}}$** 

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.

**3.Z5****efficacy**

'luminous efficacy of a source', 'light source efficacy' or 'lamp efficacy' ( $\eta_{\text{source}}$ )

the quotient of the luminous flux emitted ( $\Phi$ ) by the power consumed by the source ( $P_{\text{source}}$ ).  $\eta_{\text{source}} = \Phi / P_{\text{source}}$ . 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)]

**3.Z6****Lamp Lumen Maintenance Factor (LLMF)**

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)]

**3.Z7****Lamp Survival Factor (LSF)**

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)]

**4 Lamp requirements****4.2 Marking**

*Add the following paragraph at the end of 4.2*

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.

**4.8.4 Requirements and test conditions**

*Replace "Under consideration" with the following new text:*

The chromaticity coordinates and correlated colour temperature of an individual lamp shall be calculated according to CIE 15 from a measurement made under the conditions of Annex B or Annex E as appropriate

The colour rendering index of an individual lamp shall be calculated according to CIE 13.3 from a measurement made under the conditions of Annex B or Annex E as appropriate.



**4.Z1** *After Subclause 4.7 add new Subclause 4.Z1 as follows:*

**4.Z1 Useful luminous flux**

The useful luminous flux of a directional lamp shall be measured under the conditions of Annex A or Annex E as appropriate, 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 A.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

**4.Z2** *After 4.9 add new Subclauses 4.Z2 up to 4.Z5 as follows:*

**4.Z2**

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

**4.Z3**

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 or Annex E as appropriate. Lamp operation between these measurements shall be as prescribed in Annex C.

**4.Z4**

The survival of an individual lamp shall be determined by operating lamps under the conditions prescribed in Annex C 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).

**4.Z5**

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



**EN 61167:2016****Annex B (normative) Method of measuring electrical and photometrical characteristics  
(lamps for operation on 50 Hz or 60 Hz supply frequencies)****B.1 General**

*Replace the following paragraph in B.1*

Photometric characteristics shall be measured in accordance with the relevant recommendations of the CIE (Commission Internationale de l'Éclairage) 84. For measurement for the centre beam intensity of reflector lamps, IEC/TR 61341 shall be used.

**By**

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.

**Annex E (normative) Method of measuring electrical and photometrical characteristics  
on low frequency square wave reference ballast****E.1 Purpose of this annex**

*Replace the following paragraph in E.1*

Photometric characteristics shall be measured in accordance with the relevant recommendations of the CIE (Commission Internationale de l'Éclairage) 84. For measurement for the centre beam intensity of reflector lamps, IEC/TR 61341 shall be used.

**By**

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.



## 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>
		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
		Light and lighting - Measurement and presentation of photometric data of lamps and luminaires - Part 4: LED lamps, modules and luminaires	EN 13032-4	2015
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	EN 60061-1	-
IEC 60598-1	-	Luminaires - 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	EN 61341	-
IEC 62035	-	Discharge lamps (excluding fluorescent lamps) - Safety specifications	EN 62035	-
IEC 62321-4		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	
IEC 62471	-	Photobiological safety of lamp and lamp systems	EN 62471	-



**EN 61167:2016**

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CIE 84	-	The measurement of luminous flux	-	-
CIE 13.3		Method of Measuring and Specifying Colour Rendering Properties of Light Sources	-	-



## Annex ZZA (informative)

### Relationship between this European Standard and the ecodesign requirements of Commission Regulation (EC) No 245/2009 aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/495 to provide one voluntary means of conforming to the ecodesign requirements of Commission Regulation (EC) No 245/2009 of 18 March 2009 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council [2009 OJ L76].

Once this standard is cited in the Official Journal of the European Union under that Regulation, compliance with the normative clauses of this standard given in Table ZZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding ecodesign requirements of that Regulation and associated EFTA Regulations.

**Table ZZA.1 – Correspondence between this European Standard and Commission Regulation (EC) No 245/2009 of 18 March 2009 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council [2009 OJ L76] and Commission's standardization request M/495**

Ecodesign requirements of Regulation No 245/2009 [2009 OJ L76]	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
Annex III, Article 2	Annex B or Annex E as appropriate	Lamp power
Annex III, Article 1.3	Annex B or Annex E as appropriate	Luminous flux
Annex III, Article 1.2, Table 14	Subclause 4.Z4	Lamp survival factor
Annex III, Article 1.2, Table 14	Subclause 4.Z3	Lumen maintenance
Annex II, Article 3(b)	Subclause 4.8.4	Chromaticity coordinates
Annex III, Article 1.3 (h)	Subclause 4.8.4	Colour rendering index (CRI)
Annex III, Article 1.3 (g)	Subclause 4.8.4	Correlated colour temperature (CCT)
Annex III, Article 2	Annex B or Annex E as appropriate	Spectral power distribution
Annex I, Article 1(d), (h)	Annex B or Annex E as appropriate	specific effective radiant UV power
Annex I, Article 1 (i)	Subclause 4.4	Caps
Annex III, Article 1.3 (f), Annex V, Article 2	Subclause 4.Z5	Mercury content

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**EN 61167:2016****Annex ZZB**  
(informative)**Relationship between this European Standard and the ecodesign requirements of Commission Regulation (EU) No 1194/2012 aimed to be covered**

This European Standard has been prepared under a Commission's standardization request M/495 to provide one voluntary means of conforming to the ecodesign requirements of Commission Regulation (EU) No 1194/2012 of 12 December 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment [2012 OJ L342].

Once this standard is cited in the Official Journal of the European Union under that Regulation, compliance with the normative clauses of this standard given in Table ZZB.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding ecodesign requirements of that Regulation and associated EFTA Regulations.

**Table ZZB.1 – Correspondence between this European Standard and Commission Regulation (EU) No 1194/2012 of 12 December 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment [2012 OJ L342] and Commission's standardization request M/495**

Ecodesign requirements of Regulation No 1194/2012 [2012 OJ L342]	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
Article 2.4, 3.1, Annex I	Subclause 4.2	Technical description of special purpose lamps for eco-design
Annex III, Article 1 Annex III, Article 3.1	Annex B or Annex E as appropriate	Lamp power
Annex III, Article 3.1.1, 3.1.2 (a), 3.1.3 (c)	Subclause 4.Z1	Useful luminous flux
Annex III, Article 3.1.2 (i), 3.1.3 (k)	Annex B or Annex E as appropriate	Beam angle
Annex III, Table 4, Article 3.1.3	Subclause 4.Z4	Lamp life
Annex III, Table 4, Table 7, Article 3.1.3	Subclause 4.Z3	Lumen maintenance
	Not covered in this standard	Number of switching cycles before failure
Annex III, Table 4	Subclause 4.5, Annex A	Starting time
Annex III, Table 4	Subclause 4.5, Annex A	Warm-up time to 60% $\phi$
Annex I	Subclause 4.8.4	Chromaticity coordinates
Annex III, article 3.1.3 (h)	Subclause 4.8.4	Colour rendering index (CRI)
Annex III, article 3.1.1, 3.1.2 (c)	Subclause 4.8.4	Correlated colour temperature (CCT)
	Not covered in this standard	Power factor (only for lamps with integrated control gear)
Annex III, article 3.1.2 (h)	Subclause 4.3 (Data sheets Clause 6)	Lamp dimensions
Annex III, article 3.1.3 (m)	Annex B or Annex E as	Spectral power distribution



Ecodesign requirements of Regulation No 1194/2012 [2012 OJ L342]	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
	appropriate	
Annex III, article 3.1.2 (n), (o)	Subclause 4.Z5	Mercury content
	Not covered in this standard	Dimmability
	Not covered in this standard	Lamp type (MR11 GU4 etc.)
Annex III, article 3.1.3 (j)	Annex B or Annex E as appropriate	Peak intensity in candela

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**EN 61167:2016**

**Annex ZZC**  
(informative)

**Relationship between this European Standard and the energy labelling requirements of Commission Delegated Regulation (EU) No 874/2012 aimed to be covered**

This European standard has been prepared under a Commission's standardisation request M/495 to provide one voluntary means of conforming to the energy labelling requirements of Commission Delegated Regulation (EU) No 874/2012 of 12 July 2012 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of electrical lamps and luminaires [2012 OJ L258].

Once this standard is cited in the Official Journal of the European Union under that Regulation, compliance with the normative clauses of this standard given in Table ZZC.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding energy labelling requirements of that Regulation and associated EFTA Regulations.

**Table ZZC.1 – Correspondence between this European Standard and Commission Delegated Regulation (EU) No 874/2012 of 12 July 2012 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of electrical lamps and luminaires [2012 OJ L258] and Commission's standardisation request M/495**

Energy labelling requirements of Regulation No 874/2012 [2012 OJ L258]	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
Article 1	Annex B or Annex E as appropriate	Applicable parameter according to Article 1: luminous flux
Annex VII	Annex B or Annex E as appropriate	Lamp power
Annex VII	Annex B or Annex E as appropriate	Luminous flux (non-directional only)
Annex VII	Subclause 4.Z1	Useful luminous flux (directional only)
Annex VII	Annex B or Annex E as appropriate	Beam angle

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## Bibliography

*Add the following notes for the standards indicated:*

IEC 60081	NOTE	Harmonized as EN 60081.
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.

*Add the following documents:*

COMMISSION REGULATION (EC) No 245/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council

COMMISSION REGULATION (EU) No 874/2012 of 12 July 2012 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of electrical lamps and luminaires

COMMISSION REGULATION (EU) No 1194/2012 of 12 December 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment.





IEC 61167

Edition 3.0 2015-01

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



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**Metal halide lamps – Performance specification**

**Lampes aux halogénures métalliques – Spécifications de performance**





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IEC 61167

Edition 3.0 2015-01

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



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**Metal halide lamps – Performance specification**

**Lampes aux halogénures métalliques – Spécifications de performance**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

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## CONTENTS

FOREWORD .....	5
INTRODUCTION .....	7
1 Scope .....	9
2 Normative references .....	9
3 Terms and definitions .....	10
4 Lamp requirements .....	12
4.1 General .....	12
4.2 Marking .....	12
4.3 Dimensions .....	12
4.4 Caps .....	12
4.5 Starting and warm-up characteristics .....	12
4.5.1 Lamps that may operate on electromagnetic ballasts .....	12
4.5.2 Lamps suitable for low frequency square wave ballasts only .....	13
4.6 Electrical characteristics .....	13
4.7 Photometric characteristics .....	13
4.8 Colour characteristics .....	13
4.8.1 Lamps with non-standardised chromaticity co-ordinates .....	13
4.8.2 Lamps with standardised chromaticity co-ordinates .....	13
4.8.3 Colour rendering index .....	13
4.8.4 Requirements and test conditions .....	14
4.9 Lumen maintenance and life .....	14
5 Information for ballast, ignitor and luminaire design .....	14
6 Data sheets .....	14
6.1 General principles of numbering sheets .....	14
6.2 Lists of data sheets .....	14
6.2.1 List of diagrammatic lamp data sheets .....	14
6.2.2 List of lamp data sheets .....	27
6.3 List of maximum lamp outline sheets ( <i>construction according to IEC 61126</i> ) .....	175
Annex A (normative) Method of measuring lamp starting and warm-up characteristics .....	178
A.1 General .....	178
A.2 Measurements .....	178
Annex B (normative) Method of measuring electrical and photometrical characteristics (lamps for operation on 50 Hz or 60 Hz supply frequencies) .....	180
B.1 General .....	180
B.2 Particular requirements for double-capped lamps .....	180
B.3 Colour characteristics .....	181
B.4 Supply .....	181
B.5 Instruments .....	181
B.6 Measurement .....	181
Annex C (normative) Method of test for lumen maintenance and life .....	184
C.1 General .....	184
C.2 Lamps for operation on 50 Hz or 60 Hz supply frequencies .....	184
C.3 Lamps for operation on low frequency square wave .....	184
Annex D (informative) Information for luminaire design .....	186
D.1 Maximum lamp outlines .....	186



D.2	Replacement of lamps .....	186
Annex E (normative) Method of measuring electrical and photometrical characteristics on low frequency square wave reference ballast .....		187
E.1	Purpose of this annex .....	187
E.2	Characteristics .....	187
E.3	Test procedure .....	187
E.3.1	General .....	187
E.3.2	Start-up .....	188
E.3.3	Steady state .....	188
Annex F (normative) Spectral analysis of power ripple: calculation procedure for amplitude spectrum ratio and guidance .....		189
F.1	General .....	189
F.2	Mathematical background .....	189
F.2.1	General .....	189
F.2.2	Description of the algorithm .....	189
F.3	Measurement procedure .....	190
F.4	Test signal .....	190
F.4.1	General .....	190
F.4.2	Description of the test signal .....	191
F.4.3	Outcome of the test signal .....	191
Annex G (informative) Low frequency square wave operation .....		192
G.1	General .....	192
G.2	Information for square wave ballast design .....	192
Annex H (informative) Information for ballast design .....		198
H.1	General .....	198
H.2	Explanation of the ignition schemes .....	198
Annex I (informative) Information regarding lamp performance temperature limits for luminaire design .....		200
Annex J (informative) ILCOS codes .....		202
Bibliography .....		205
Figure A.1 – Circuit diagram for measurement of lamp starting and warm-up characteristics .....		179
Figure B.1 – Circuit diagram for measurement of lamp characteristics .....		182
Figure B.2 – Luminaire simulator for use with double-capped lamps .....		183
Figure E.1 – Circuit for lamp measurement under reference conditions .....		188
Figure G.1 – DC current component .....		195
Figure G.2 – HF ripple and fast Fourier transformation (power curve) .....		196
Figure G.3 – Measurement of PCR during run-up and steady state .....		196
Figure G.4 – Example of a measurement circuit of lamp potential against earth .....		197
Figure G.5 – Commutation time, deviating waveform .....		197
Figure H.1 – Example 1 for ignition scheme according to option (1) (see Annex G and lamp data sheets) .....		198
Figure H.2 – Example 2 for ignition scheme according to option (1) (see Annex G and lamp data sheets) .....		198
Figure H.3 – Example for ignition scheme according to option (2) (see Annex G and lamp data sheets) .....		199
Figure I.1 – Principle ways of heat transport in a lamp .....		200



Table 1 – List of diagrammatic lamp data sheets.....	15
Table 2 – List of lamp data sheets .....	27
Table 3 – List of maximum lamp outline sheets.....	175
Table B.1 – Correlated colour temperature and chromaticity co-ordinates x and y.....	181
Table E.1 – Characteristics of the reference ballast .....	187
Table F.1 – Settings of the analysing oscilloscope .....	190
Table G.1 – Requirements for square wave operation .....	192
Table J.1 – Lamp coding.....	202



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**METAL HALIDE LAMPS –  
PERFORMANCE SPECIFICATION****FOREWORD**

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

This third edition replaces the second edition published in 2011. This third edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition.

- a) A set of new lamp data sheets (20 W, 35 W, 50 W, 100 W) is introduced.
- b) Reference to ILCOS (International lamp coding system) is removed from the lamp data sheets and now located in a new annex.
- c) Information on outer bulb temperature (and in some cases also on pin temperature and temperature adjacent to cap) is replaced with an explanation on differences in manufacturers' construction; this explanation is given in detail in a new annex.



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

FDIS	Report on voting
34A/1809/FDIS	34A/1830/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.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**



## INTRODUCTION

A big step forward when standardising metal halide lamps and their operation was made with the second edition which was published in 2011. Meanwhile, agreements have been reached for introduction of new lamp types and in aspects of operation which led to the third edition.

Major changes of the **second edition** are as follows. 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 3 000 K and 4 200 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

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Major changes of the **third edition** are as follows. Compared to the 2<sup>nd</sup> edition, a set of new lamp data sheets (20 W, 35 W, 50 W, 100 W) is introduced. Reference to ILCOS (International lamp coding system) is removed from the lamp data sheets and now located in a new annex. Information on outer bulb temperature (and in some cases also on pin temperature and temperature adjacent to cap) is replaced with an explanation on differences in manufacturers' construction; this explanation is given in detail in a new annex.



## 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.

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 that with the tolerances given in the standard, the 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 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 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*

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