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Metal halide lamps – Performance specification

Lampes aux halogénures métalliques – Spécifications de performances

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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METAL HALIDE LAMPS – PERFORMANCE SPECIFICATION

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This Consolidated version of IEC 61167 bears the edition number 4.1. It consists of the fourth edition (2018-04) [documents 34A/2051/FDIS and 34A/2058/RVD] and its amendment 1 (2018-10) [documents 34A/2066/CDV and 34A/2103/RVC]. The technical content is identical to the base edition and its amendment.

This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.

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

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

a) A set of new lamp data sheets has been introduced for lamp types designed for replacing high pressure sodium lamps.
b) A set of new lamp data sheets has been introduced for 4200 K versions of 3000 K lamp types already in the standard.
c) A set of new lamp data sheets has been introduced for new lamp types where high frequency ignition data is important.
d) Annex G has been revised to incorporate high frequency ignition. As a consequence of this change, all data sheets in the standard have been revised to a new format.
e) A new informative Annex K has been introduced, giving recommended methods of making lamp temperature measurements.

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

The committee has decided that the contents of this document and its amendment 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- withdrawn,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.

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 were reached for the introduction of new lamp types and in aspects of operation which led to the third edition.

Major changes in the second edition were as follows. Since IEC 62035 was published in 1999, the related lamp specific performance standards such as 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 had already been carried out with other HID lamps. So, in some instances, the “pilot” text of IEC 60188 was used. Moreover, the measurement part was 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 had been needed for a long time, the new technique of low frequency square wave (LFSW) operation was implemented. This 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 to experts from the lamp and control gear side in order to accommodate the interface between control gear and lamp to these requirements.

Further lamp types which were considered to have market relevance and needing normative support were also added.

Major changes in the third edition were as follows. Compared to the second edition, a set of new lamp data sheets (20 W, 35 W, 50 W, 100 W) was introduced. Reference to ILCOS (International lamp coding system) was removed from the lamp data sheets and located in a new annex. Information on outer bulb temperature (and in some cases also on pin temperature and temperature adjacent to cap) was replaced with an explanation on differences in manufacturers’ construction; this explanation was given in detail in a new annex.

Major changes of this fourth edition are as follows. A total of 28 new data sheets have been introduced to specify lamp types designed for replacing high pressure sodium lamps, 4 200 K versions of 3 000 K lamp types already in the standard and lamp types where high frequency ignition is important. Annex G has been revised to incorporate high frequency ignition. As a consequence of this change, all data sheets in the standard have been revised to a new format. A new informative Annex K has been introduced, giving recommended methods of making lamp temperature measurements.

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 1035E, 1035F, 1070C and 1070D.

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

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

Panasonic Corporation

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Takatsuki City,
Osaka 569-1193,
Japan

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ISO (www.iso.org/patents) and IEC (http://patents.iec.ch) 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 document specifies the performance requirements for metal halide lamps for general lighting purposes.

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

The requirements of this document relate only to type testing.

The requirements and tolerances specified in this document correspond to testing of a type test sample submitted by the manufacturer for that purpose. In principle this type test sample consists of units having characteristics typical of the manufacturer’s production and being as close to the production centre point values as possible.

It can be expected that with the tolerances given in this document, the product manufactured in accordance with the type test sample will comply with this document 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 ISO 2859-10.

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 60050-845, *International Electrotechnical Vocabulary – Part 845: Lighting* (available at http://www.electropedia.org)

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

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 084, *Measurement of luminous flux*