

TECHNICAL REPORT



Dimming and hot restrike of metal halide lamps

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

DIMMING AND HOT RESTRIKE OF METAL HALIDE LAMPS

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IEC TR 63130, which is a Technical Report, has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

The text of this Technical Report is based on the following documents:

Draft TR	Report on voting
34A/2012/DTR	34A/2027/RVDTR

Full information on the voting for the approval of this Technical Report 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.

This document is to be used in conjunction with IEC 61167:2015.

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- withdrawn,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.

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INTRODUCTION

Much work has been carried out in recent years on “advanced” properties of metal halide lamps, particularly on the subject of hot restrike and dimming. These issues have been discussed within SC 34A. However, the changes in technology and the focus of experts in the field of lighting products has meant that there is now less market relevance or interest or resources available to carry this work through with a view to publishing amendments to IEC 61167, the standard on metal halide performance.

It was therefore considered that the publication of this "state of the art" data as a Technical Report would be more useful. This document represents the current state of experts' opinions on how metal halide lamps should be standardized to cover the relevant parameters for hot restrike and dimming.

This document contains additional comments and material with respect to IEC 61167.

This document is intended only as a guide for future standardizers and is not intended to be used normatively.

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DIMMING AND HOT RESTRIKE OF METAL HALIDE LAMPS

1 Scope

This document describes the current state of experts' opinions on the standardization of metal halide lamps to cover the relevant parameters for hot restrike and for dimming in combination with low frequency square wave ballasts. It provides guidelines for supplementing or modifying IEC 61167 in order that these conditions are covered.

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 61167:2015¹, *Metal halide lamps – Performance specification*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

hot-restrike

ability of a lamp to restart immediately at any moment after switching off the lamp

3.2

superimposed symmetric pulse ignition

to be updated

Note 1 to entry: To update IEC 61167, a new definition is required, complying with the definition of ignition pulse voltage in IEC 61347-1:2015.

3.3

pulse width

to be updated

Note 1 to entry: To update IEC 61167, a new definition is required, see also Figure 1 proposed for Annex G.

3.4

pulse repetition frequency

to be updated

Note 1 to entry: To update IEC 61167, a new definition is required, see description in Annex G.

¹ Withdrawn.

3.5

pulse symmetry
to be updated

Note 1 to entry: To update IEC 61167, a new definition is required, see description in Annex G.

3.6

polarized base
base allowing for specified voltage behaviour with one pin defined as reference

4 Changes to IEC 61167 to specify hot restrike

4.1 General

The following additions and/or modifications to IEC 61167:2015 are expected to be necessary in order to make the standard suitable for specifying lamps for hot restrike and to give adequate information on low frequency ballast design.

Hot restrike of metal halide lamps is distinguished from the more common warm restrike situation where the lamp needs to cool down after switching off for a period long enough that the normal ignition circuit is sufficient to restart the lamp. Special lamp caps and controlgear are needed.

4.2 Lamp caps

At the time of publication of this document, lamps with caps G(X)14.5 are envisioned.

4.3 Starting and warm-up characteristics

Add the following subclause to IEC 61167:2015, 4.5:
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Lamps suitable for hot-restrike on low frequency square wave ballasts only

In addition to the requirements of IEC 61167:2015, 4.5.2, the lamp shall be able to restart immediately at any moment after switching off the lamp.

4.4 Information on ballast, ignitor and luminaire design

Add the following content to IEC 61167:2015, Clause 5:

A remark on allowed re-ignition behaviour when lamps are switched off due to lamp fault and a statement that electrical interaction parameters are specified at the lamp terminals should be provided.

4.5 Data sheets

Add the following data sheets to IEC 61167:2015, Clause 6.

Values where given are based on the state of the art investigations made on lamps with G(X)14.5 caps. Several parameters related to hot restrike are still open and are marked "under consideration". Some other parameters are marked as "xx", indicating that they relate to other lamp characteristics not concerned with hot-restrike behaviour.