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NORME INTERNATIONALE



International lamp coding system (ILCOS)

Systeme international de codification des lampes (ILCOS)

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Système international de codification des lampes (ILCOS)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

INTERNATIONAL LAMP CODING SYSTEM (ILCOS)

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IEC 61231 edition 1.1 contains the first edition (2010) [documents 34A/1345/CDV and 34A/1374/RVC] and its amendment 1 (2013) [documents 34A/1663/FDIS and 34A/1680/RVD].

A vertical line in the margin shows where the base publication has been modified by amendment 1. Additions and deletions are displayed in red, with deletions being struck through.

International Standard IEC 61231 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

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

The committee has decided that the contents of this base publication and its amendment will remain unchanged until the maintenance result 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

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INTRODUCTION

The lamp industry strives continuously to meet customers' needs. Its innovative power has led to a tremendous variety of different light sources. To enable customers and experts to find their way within the diversity of products, a general system for the coding of lamps has been developed.

The code does not replace specific markings used by individual manufacturers on their lamps or in their catalogues, but it is promoted for cross-referencing purposes and, in due course, to replace national and regional lamp coding systems which already exist.

NOTE The code does not give all the technical characteristics necessary to specify a lamp fully. For this the relevant lamp standard and/or the manufacturer's literature have to be consulted.

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INTRODUCTION TO THE AMENDMENT

This proposal serves:

- a) the implementation of the low frequency square wave operation in ILCOS (International Lamp Coding System):

| |
|------------------------------------------------------------------------------------------------------------------------|
| ILCOS L – wattage – lamp voltage range/starting device/ current wave form and frequency – lamp cap – dimensions |
|------------------------------------------------------------------------------------------------------------------------|

- b) the implementation of lamps for use in high-pressure mercury equipment under 5.7.1.2. In order to distinguish this, other lamps are listed as normal lamps under 5.7.1.1.
- c) further editorial changes as being presented with PRESCO(RTK)198 and agreed by PRESCO.

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INTERNATIONAL LAMP CODING SYSTEM (ILCOS)

1 Scope and object

This International Standard gives the rules for the international lamp coding system and covers all lamp categories, excluding vehicle lamps. Coding for the main lamp types is specified and, for the others, will follow by amendments to this standard as appropriate.

The object of the international lamp coding system is

- to improve communication about the different types of lamps;
- to help in discussions concerning interchangeability and compatibility of products;
- to create a closer relationship between international standards and manufacturers' literature (for example the code could be given in future in the relevant parts of a standard);
- to enable correct replacements of lamps;
- to be used as a complementary marking on the luminaire;
- to replace national and regional coding systems.

2 Normative references

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.

IEC 60357, *Tungsten halogen lamps (non-vehicle) – Performance specifications*

[IEC 61231:2010](#)

[http://www.itsmo.com/standards/iec/iec60432-1.htm](#)
IEC 60432-1, *Incandescent lamps – Safety specifications – Part 1: Tungsten filament lamps for domestic and similar general lighting purposes*

IEC 60432-2, *Incandescent lamps – Safety specifications – Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes*

IEC 60838-2-2, *Miscellaneous lampholders – Part 2-2: Particular requirements – Connectors for LED-modules*

IEC/TR 60887, *Glass bulb designation system for lamps*

IEC 61167, *Metal halide lamps*

~~CIE publication 29.2, *Guide on interior lighting*~~

IEC/TR 62732, *Three-digit code for designation of colour rendering and correlated colour temperature*

3 Principles

The international lamp coding system has been developed on the basis of the following principles.

- It should be manufacturer-independent concerning its content and its wording.

- A relationship between the coding system and international standards should be established.
- It should be internationally acceptable. It is recognized that other systems with national and regional importance exist and that the change to an international code should be seen as a long-term process.
- The length of the code should be as short as possible and as long as necessary. Therefore, it should be possible to use the code in different lengths depending on the different purposes.
- In view of the technical diversity of the different lamp categories, it would not be practical to define the code for all types in the same way; the code depends therefore in its composition on the technical needs of the different lamp categories.
- The code should not replace manufacturer-specific marking on the lamp or in the catalogues, but should be used for cross-references in lamp and luminaire literature.
- The allocation of codes is based on interchangeability and compatibility.

An additional usage of the code on the lamp package should be envisaged for the future.

4 Basic structure

The complete lamp code ILCOS consists of a letter section and a figure section.

4.1 Letter section

The first letter of the letter section designates the lamp category as follows:

- I **Incandescent lamps** – tungsten filament lamps
- H Tungsten halogen lamps (non-vehicle)
- F Fluorescent lamps
- S High-pressure sodium **vapour** lamps
- L Low-pressure sodium **vapour** lamps
- Q High-pressure mercury **vapour** lamps
- M Metal halide lamps
- D LED modules **and lamps**
- X Special lamps

NOTE Vehicle lamps, including their coding, are covered by national and/or regional legislation.

The next letters within the letter section give further details as outlined in the description of the different lamp categories. The letter section is separated from the rest by a hyphen.

4.2 Figure section

The figure section consists of several blocks mainly containing figures. Each block, separated by hyphens, contains characteristic values of lamps such as

- wattage;
- voltage;
- lamp cap;
- dimensional values.

As a hyphen is used to separate the blocks, it cannot be applied within a block. As a consequence, the sign of equality = is used instead of the hyphen, for example within the cap designation.

The sequence and the specific content of the blocks is determined for each lamp category and described in 5.1 to 5.89.

4.3 Length of the code

4.3.1 General

The code can be used in different lengths depending on the purpose. In catalogues and leaflets, specialities, for example special applications, can be indicated with an asterisk (*) in the place where the difference occurs or at the end of the code and explained in a separate remark, also indicated with an asterisk (*).

The code can be shortened by deleting parts from the end, not by deleting intermediate parts. In general, if 'standard' types are concerned, the dimension block can be omitted. Intermediate parts may be omitted, providing the separating signs such as hyphens (–) and slashes (/) are given.

NOTE These shortening rules do not apply to the extended short version ILCOS LE.

4.3.2 Short version: ILCOS L

The short version consists of the letter section or a part of it and is called ILCOS L. It can be used for the general classification of lamps. A survey of ILCOS L is given in Annex A.

4.3.3 Extended short version: ILCOS LE

The extended short version, where applicable, consists of the first part of the letter section (ILCOS L) immediately followed (without spaces) by the relevant dimensions.

4.3.4 Standard version: ILCOS D

The standard version gives the complete designation and consists of the letter section and (a part of) the figure section. The use of ILCOS D should enable the customer to find the correct lamp type, for example in the case of lamp replacement from a different manufacturer. It can be used for the purpose of marking luminaires, when suitable also in an abbreviated form.

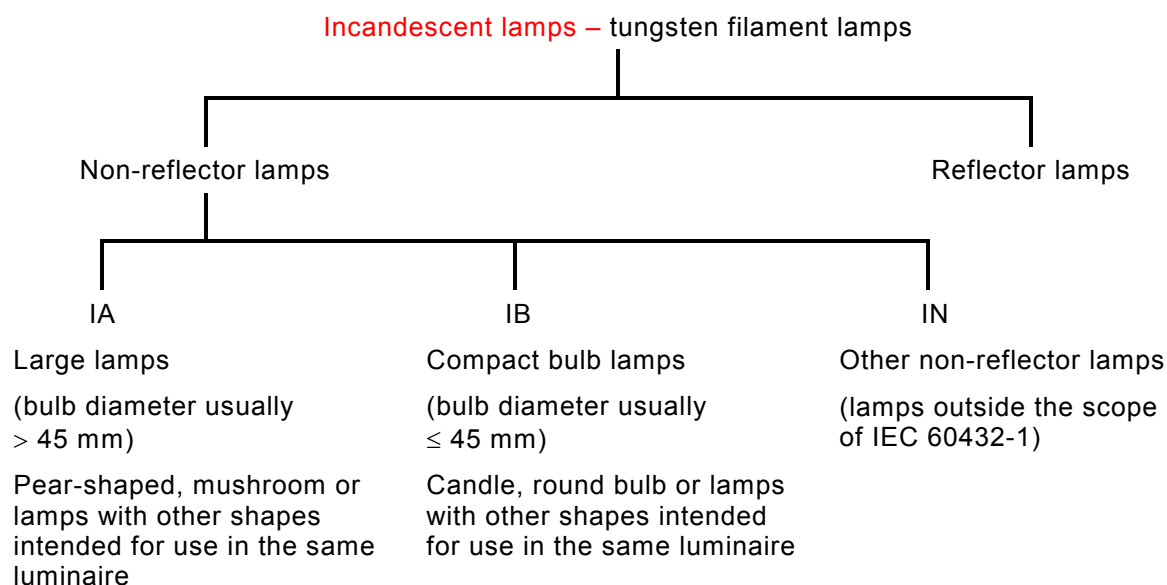
5 Lamp categories

For information about relevant lamp standards and lamp-related standards, see the IEC publications prepared by IEC technical committee 34.

5.1 Incandescent lamps – tungsten filament lamps

5.1.1 ILCOS L for incandescent lamps – tungsten filament lamps

The ILCOS L code is built up as follows:



After the first two letters IA, IB and IN the shape of the bulb follows, indicated as specified in IEC 60887.

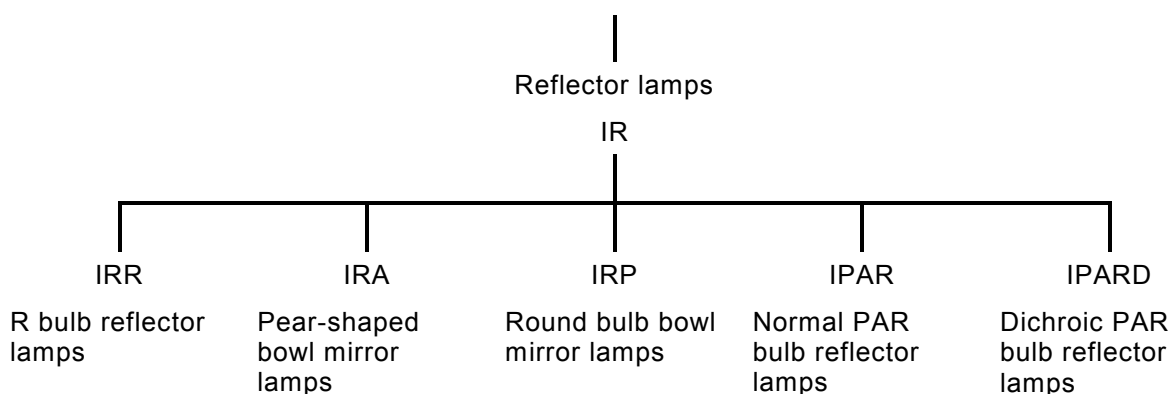
The main bulb shape types are

- ..A pear-shaped
- ..B ~~candle (bulged)~~ (candle)
- ..C conical
- ..G globular
- ..M mushroom
- ..P round bulb
- ..S pigmy (straight-sided)
- ..T tubular

~~An~~ Some examples with ~~a~~ modifiers ~~is~~ are:

- ..BA bulged (candle) with angular tip
- ..BF bulged (candle) with flutes twisted

For reflector lamps:



If it is necessary to indicate the finish or the colour of a lamp, or the specific kind of reflector or other technical details, this can be done after a slash as follows:

- /C clear
- /F frosted, frosted equivalently coated
- /W white
- /R red
- /B blue
- /G green
- /Y yellow
- /V violet
- /P pink
- /A amber
- /O orange
- /S silver
- /X gold
- /N neodymium
- /D decorative filament design

A second letter may be added for the following purposes:

- /P to indicate pastel shades
- /F to indicate a window
- /T to indicate transparent colours

Further technical details can be given after a second slash:

- //AX axial filament
- //TR transversal filament
- //RS rough service lamps
- //LT limited surface temperature
- //RT rough service with limited surface temperature

Examples

- IAA/F Frosted pear-shaped lamps
- IAM Mushroom lamps

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| | |
|--------|--------------------------------------------------------------------------------------------|
| IAT/W | White-coated tubular lamps intended for use in the same luminaire as pear-shaped lamps |
| IBBA/C | Bulged clear (candle) lamps with angular tip |
| IBP/R | Red round bulb lamps |
| IAG | Globular lamps, intended for use in the same luminaire as pear-shaped lamps |
| IBT/W | White-coated tubular lamps, intended for use in the same luminaire as round bulb lamps IBP |
| IBC | Conical lamps, intended for use in the same luminaire as round bulb lamps IBP |
| IRA/S | Pear-shaped bowl mirror lamp with silver reflector |

5.1.2 ILCOS LE for **incandescent lamps – tungsten filament lamps**

ILCOS LE consists of the first part of ILCOS L up to and including the shape indication followed by the number giving the nominal diameter of the lamp.

Examples

| | |
|-------|---------------------------------------------------|
| IAA60 | Pear-shaped lamp with 60 mm nominal bulb diameter |
| IBP45 | Round bulb lamp with 45 mm nominal bulb diameter |
| IAG80 | Globular lamp with 80 mm nominal bulb diameter |

5.1.3 ILCOS D for **incandescent lamps – tungsten filament lamps**

ILCOS D consists of the following blocks:

ILCOS L-wattage-rated voltage-lamp cap-dimensions

- **Wattage:** For miniature and/or glow lamps, the lamp current can be indicated in place of the wattage. In that case, the lamp current value shall be immediately followed by a capital A.
- **Rated voltage:** In case of a voltage range, two numbers are given separated by a slash.
- For airfield lamps the lamp voltage may be replaced by the lamp current value immediately followed by a capital A.
- **Dimensions:** This block consists normally only of the number giving the nominal diameter. For tubular lamps the maximum overall length can be added after a slash. For reflector lamps, the beam angle can be added after a slash. In case of a non-symmetrical beam, two numbers separated by a slash may be given, the first describing the horizontal and the second the vertical beam angle.

Examples

| | |
|-------------------------|-------------------------------------------------------------------------------------|
| IAA/C-40-220/230-E27-60 | Clear pear-shaped lamp, 40 W, 220-230 V, cap E27, nominal diameter 60 mm |
| IBB/W-40---35 | White bulged (candle) lamp, 40 W, nominal diameter 35 mm, rest not specified |
| IRR-60-240-B22d-125/30 | R bulb reflector lamp, 60 W, 240 V, cap B22d, type R125, beam angle 30° |