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(JELMA/JSA)

**Self-ballasted LED-lamps for general
lighting services by voltage > 50 V**

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by Japan Electric Lamp Manufacturers Association (JELMA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

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Self-ballasted LED-lamps for general lighting services by voltage > 50 V

Introduction

This Japanese Industrial Standard is a product standard that specifies the safety and performance requirements, type, group, etc. of self-ballasted LED-lamps for general lighting services. For safety requirements, **JIS C 8156** is referred to, and for performance requirements, **JIS C 8157** is referred to.

No corresponding International Standard has been established at this point.

1 Scope

This Standard specifies the self-ballasted LED-lamps intended for household use or similar general lighting services, that are integrated with a device that performs lighting operation stably.

The range of self-ballasted LED-lamps covered by this Standard is as follows.

- Rated wattage: 60 W or under
- Rated voltage: over 50 V up to and including 250 V in a.c. or d.c.
- Cap: Type E (E26/25)

This Standard is not applicable to those self-ballasted LED-lamps that are produced intentionally to have a light source colour other than those of LED specified in **JIS Z 9112**. Furthermore, it is also not applicable to bulb-shaped lamps in which OLED (organic EL) is used as a light source.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 7507 *Vernier, dial and digital callipers*

JIS C 7709-1 *Lamp caps and holders together with gauges for the control of interchangeability and safety Part 1: Lamp caps*

JIS C 7801 *Measuring methods of lamps for general lighting*

JIS C 8156 *Self-ballasted LED-lamps for general lighting services by voltage > 50 V—Safety specifications*

JIS C 8157 *Self-ballasted LED-lamps for general lighting services > 50 V—Performance requirements*

JIS Z 8113 *Lighting vocabulary*

JIS Z 9015-1 *Sampling procedures for inspection by attributes—Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

JIS Z 9112 *Classification of fluorescent lamps and light emitting diodes by chromaticity and colour rendering property*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS Z 8113** and the following apply.

3.1 self-ballasted LED-lamp

lamp of an integrated combination of a single LED or an LED module, and an additional device necessary for stable lighting operation, which is equipped with any of the cap of Type E, Type B or GX53 and cannot be disassembled without hindering functions permanently

3.2 type

lamps of the same group having the same light source colour and colour rendering properties

3.3 group

lamps having the same cap, same electric characteristics, same dimensions and same lighting method

3.4 rated voltage

voltage or range of voltage specified by the manufacturer or responsible vendor

NOTE : “The manufacturer or responsible vendor” as stated in this Standard is equivalent to “Notifying Supplier” as given in the Electrical Appliances and Materials Safety Act, and is defined as the manufacturer of products in Japan and the vendor (wholesale, etc.) who performs import enterprises.

3.5 rated wattage

electric power specified by the manufacturer or responsible vendor

3.6 rated frequency

frequency value specified by the manufacturer or responsible vendor

3.7 downward flux (of a source)

2π steradians of solid angles, i.e., the cumulative luminous flux source emitted downward from the horizontal plane containing a light source

In the case of self-ballasted LED-lamps, unless otherwise specified by the manufacturer or responsible vendor, the position of the cap shall be on the product body. It is expressed in lumens (lm).

3.8 lumen maintenance

ratio of the value of luminous flux of a self-ballasted LED-lamp at a specific elapsed time within its life to the initial value, when the self-ballasted LED-lamp is lighted under the specified condition

The lumen maintenance is specified by the manufacturer or responsible vendor and is generally expressed in percentage (%).

3.9 type test

one or a series of inspections performed using type test samples in order to check that the design of a product conforms to the requirements of related standards

3.10 type test sample

one sample, or two or more samples of the same type provided by the manufacturer or responsible vendor for conducting a type test

3.11 life (of an individual LED-lamp)

period of time during which a self-ballasted LED-lamp, when it is lighted under the predetermined condition, maintains the luminous flux of not less than 70 % of the initial luminous flux (see NOTE 3)

Normally, the life is declared by the manufacturer or responsible vendor in combination with failure rates (see NOTE 4 and 3.13).

NOTE 1 The life characteristics of a self-ballasted LED-lamp differ from those of conventional lamps. In self-ballasted LED-lamps, no-lighting due to sudden failure of a single LED does not occur, and the light emission gradually decreases with the passage of time.

NOTE 2 For the incorporated control gear, a state regarded as a sudden end of life may appear. In the definition of 3.11, self-ballasted LED-lamps not emitting light are not regarded as operating at the minimum luminous flux declared by the manufacturer or responsible vendor, and therefore regarded as having reached an end of life.

NOTE 3 The attenuation limit value of lumen maintenance may differ depending on the use of a self-ballasted LED-lamp. In this Standard, the lumen maintenance of 70 % (L_{70}) is selected for lamps for general lighting services. The information concerning the lumen maintenance selected is provided by the manufacturer or responsible vendor.

NOTE 4 The life of a self-ballasted LED-lamps is normally indicated such as " L_{70}, F_{50} " by combining F_{50} , which represents 50 % of self-ballasted LED-lamps failing and L_{70} , which represents the lumen maintenance of the self-ballasted LED-lamps reaching 70 %. For products for specialists, this should be " L_{70}, F_{10} ", which means that when the rated lamp life is reached, 10 % of self-ballasted LED-lamps may fail to maintain 70 % of the initial luminous flux including the cases of failures due to no-lighting.

3.12 rated lamp life

period of time during which a self-ballasted LED-lamp, when lighted under the predetermined condition, maintains the luminous flux of not less than 70 % of the rated luminous flux

The rated lamp life is declared by the manufacturer and the responsible vendor in combination with failure rated.

NOTE 1 See NOTE 1, NOTE 2 and NOTE 4 to **3.11**.

NOTE 2 The rated lamp life is generally determined based on tests performed by the manufacturer or responsible vendor, but it can also be theoretically derived as an estimated value from the engineering data, etc. of the manufacturer or responsible vendor of single-LED parts that shows a relationship between the temperature and current indicating the operating conditions of an LED, and the time change of the maintenance of optical characteristics.

3.13 failure rate, F_x

when two or more self-ballasted lamps of the same type are tested, the rate of the number of lamps that have reached a life within the predetermined time¹⁾ to the total number of lamps tested

It is expressed in percentage (%).

NOTE 1 A failure rate includes failures of a lighting device.

NOTE 2 Generally, a failure rate of 10 % and/or 50 % is applied. It is indicated as F_{10} and/or F_{50} .

Note ¹⁾ Predetermined time generally refers to the rated lamp life that is marked on the package, etc. However, when the manufacturer or responsible vendor declares the failure rate at a specific time, the predetermined time differs from the rated lamp life.

4 Type and group

Type is expressed by the first term to seventh term as shown in table 1, and group is expressed by the first term to third term and fifth term to seventh term. The method for coding of type and group of self-ballasted LED-lamps shall be as follows.

- a) The descriptions in the first, third, fourth and fifth terms are essential, and those of second, sixth and seventh terms are optional.
- b) For “symbol denoting classification and shape of lamp” in the first term, Type A, Type G or Type T, respectively expressed as LDA, LDG and LDT, is given.
- c) For “numeral denoting the rated voltage” in the second term, the rated voltage expressed as “○○○ V”, if the rated voltage is other than 100 V, is given. This may be omitted if the rated voltage is 100 V.
- d) For “numeral denoting the rated wattage” in the third term, the rated wattage rounded to the nearest whole number is given. Any rated wattage value less than 1 W is expressed as “1”.
- e) For “symbol denoting the light source colour” in the fourth term, classification in accordance with **JIS Z 9112** is given.
- f) For “symbol denoting the light distribution angle” in the fifth term, either of the two divisions of H: quasi-full light distribution type (90° or over to and excluding 180°) and G: full light distribution type (180° or over) is given. The light distribution angle here refers to the total angle indicating the range of half the downward luminous intensity at the time of lighting with the cap turned vertically upward. This fifth term is preceded by “-”.