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Replacing GB 20053-2006

Minimum Allowable Values of Energy Efficiency and Energy Efficiency Grades for Ballasts of Metal-halide Lamps

金属卤化物灯用镇流器能效限定值及能效等级

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Standardization Administration of the People's Republic of China.

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Foreword

In this Standard, 4.3 is mandatory; the remaining clauses are recommended.

This Standard was drafted in accordance with the rules in GB/T 1.1-2009.

This Standard serves as a replacement of GB 20053-2006 *The Minimum Allowable Values of Energy Efficiency and the Energy Efficiency Grades for Ballast of Metal-halide Lamps*. In comparison with GB 20053-2006, apart from editorial modifications, there are several main technical changes as follows:

---The scope of application adds: 20 W ~ 150 W ballasts of metal-halide lamps (see Chapter 2);

---Energy efficiency evaluation index is modified from the previous “ballast energy efficiency factor” into “ballast efficiency”, which is stipulated by the existing international standards (see 4.2);

---The valuing method of energy efficiency grades of nominal power lamps that are not listed in the table is stipulated (see 4.2);

---In terms of ballasts equipped with automatic control, the evaluation index of standby power consumption is added (see 4.5);

---The testing method and energy efficiency calculation method of electronic ballasts are added (see 5.3).

This Standard was proposed by Department of Resource Conservation and Environmental Protection of National Development and Reform Commission; Department of Energy Conservation and Comprehensive Utilization of Ministry of Industry and Information Technology.

This Standard shall be under the jurisdiction of National Technical Committee 20 on Energy Fundamentals and Management of Standardization Administration of China (SAC/TC 20).

The drafting organizations of this Standard: China National Institute of Standardization; OSRAM Opto Semiconductors; National Electric Light Source Quality Supervision and Inspection Center (Shanghai); Philips (China) Investment Co., Ltd.; Foshan Huaquan Electrical Lighting Co., Ltd.; Jiangsu Yaships Lighting Group; Wuhu Fuda Technology Limited Company; Shanghai Yaming Lighting Co., Ltd.; National Center for Quality Inspection & Supervision of LED Product (Jiangsu); Shanghai SHIDAIZHIGUANG Lighting Appliance Testing Co., Ltd.

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Minimum Allowable Values of Energy Efficiency and Energy Efficiency Grades for Ballasts of Metal-halide Lamps

1 Scope

This Standard specifies the energy efficiency grades, minimum allowable values of energy efficiency, evaluating values of energy conservation, testing methods and inspection rules for ballasts of metal-halide lamps (hereinafter referred to as: ballasts).

This Standard is applicable to freestanding, built-in inductors and electronic ballasts under the rated voltage: 220 V, frequency: 50 Hz AC power, nominal power: 20 W ~ 1,500 W.

2 Normative References

The following documents are indispensable to the application of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 2829 *Sampling Procedures and Tables for Periodic Inspection by Attributes (apply to inspection of process stability)*

GB/T 15042 *Auxiliaries for Lamps - Ballasts for Discharge Lamps (excluding tubular fluorescent lamps) - Performance Requirements*

GB 17625.1 *Electromagnetic Compatibility - Limits - Limits for Harmonic Current Emissions (equipment input current ≤ 16 A)*

GB 17743 *Limits and Methods of Measurement of Radio Disturbance Characteristics of Electrical Lighting and Similar Equipment*

GB 19510.10 *Lamp Control Gear - Part 10: Particular Requirements for Ballasts for Discharge Lamps (excluding fluorescent lamps)* (GB 19510.10-2009, IEC 61347-2-9:2003, IDT)

GB 19510.13 *Lamp Control Gear - Part 13: Particular Requirements for DC or AC Supplied Electronic Ballasts for Discharge Lamps (excluding fluorescent lamps)* (GB 19510.13-2007, IEC 61347-2-12:2005, IDT)

GB/T 26697 *Low-frequency Square Wave Electronic Ballasts for Metal Halide Lamps*

QB/T 2511 *Single-ended Metal Halide Lamps (Sc13-NaI series) with LC Peak Lead Ballasts - Performance Requirements*

QB/T 2878 *Auxiliaries for Lamps - DC or AC Supplied Electronic Ballasts for Discharge Lamps (excluding fluorescent lamps) - Performance Requirements*

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 Minimum Allowable Values of Energy Efficiency for Ballasts

Minimum allowable values of energy efficiency for ballasts refers to the lowest allowable value that the efficiency of ballasts shall reach under the test conditions stipulated in the Standard.

3.2 Evaluating Values of Energy Conservation for Ballasts

Evaluating values of energy conservation for ballasts refers to the lowest allowable value that the efficiency of energy-conserving ballasts shall reach under the test conditions stipulated in the Standard.

3.3 Standby Power

Standby power refers to the average power consumed by ballasts when lamps and ballasts in the circuit are under the normal state, and lamps are turned off through the control port in terms of electronic ballasts equipped with the control function.

4 Technical Requirements

4.1 Basic Requirements

The safety of ballasts, to which, this Standard is applicable, shall respectively comply with the requirements in GB 19510.10 or GB 19510.13. Electromagnetic compatibility and radio disturbance characteristics shall comply with the stipulations in GB 17625.1 and GB 17743. The performance of inductive ballasts shall comply with the requirements in GB/T 15042 or QB/T 2511. The performance of electronic ballasts shall comply with the requirements in GB/T 26697 and QB/T 2878.

4.2 Energy Efficiency Grades

Energy efficiency of ballasts can be divided into 3 grades. Grade-1 signifies the highest energy efficiency. The various grades of energy efficiency shall not be lower than what is stipulated in Table 1. In terms of ballasts whose nominal power is not listed in the Table, the various grades of energy efficiency may be determined through linear interpolation method.

5.4.2 Test requirements

The output circuit of ballast shall connect with lamp.

The power meter shall connect the input end of electronic ballast to measure the standby power consumption of the electric ballast.

If the ballast has other control functions, other extra functions shall be shut down during the test.

When the temperature of the electronic ballast reaches a stable state, the standby power consumption shall be recorded.

If the standby power consumption is not a stable value during the test, weighted average value within an appropriate period shall be adopted in the calculation.

5.4.3 Test procedures

In accordance with the following procedures, test the standby power consumption of electronic ballast:

a) In accordance with Figure 3, connect the test circuit;

b) Switch on the power (220 V, 50 Hz);

c) Through the control of the control port, put the output power of the electronic ballast into standby state;

d) Wait till the ballast being tested reaches the stability of electrical parameters;

e) Measure the standby power consumption.

6 Inspection Rules

Manufacturers shall conduct routine inspection of ballasts for at least once a year. Samples shall be randomly taken from products that have passed the inspection. Under one of the following circumstances, routine inspection shall also be conducted:

a) When it is the trial production and finalization appraisal of products;

b) When production is suspended for over half a year, then, resumed;

c) When there are changes in design, process or materials that might affect the performance of products;

d) When quality and technology supervision department proposes the request for a routine inspection.

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