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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 39021-2020

Intelligent lighting systems - General requirements

智能照明系统 通用要求

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1 Scope

China's national general requirements for intelligent lighting systems. It specifies the terms and definitions, the environmental conditions and the installation and system requirements. An intelligent lighting system is one whose luminaires are individually addressable and are controlled by sensors and schedules rather than by switches - occupancy detection, daylight compensation, scene setting and remote monitoring. The energy case for it is stronger than for the lamp upgrade that usually precedes it: LED reduced the power of each fitting, and control reduces the hours each fitting runs, and the second saving is often the larger. What a general requirements standard has to establish is interoperability and reliability, because a lighting installation lasts twenty years and the control system's manufacturer may not. A building left with luminaires that only one company's controller can address has bought a liability, which is the failure mode this kind of standard exists to prevent.

This Standard specifies the general requirements for intelligent lighting systems, including installation and maintenance, function and performance requirements, safety requirements, instruction manual. This Standard applies to all types of intelligent lighting systems. The specific technical requirements of each component that constitutes the intelligent lighting system adopt the provisions of the corresponding standard; however, if it is inconsistent or conflict with this Standard, the provisions of this Standard shall prevail.

Note 1: For example, LED light source, as a component of the intelligent lighting system, its specific technical requirements must meet the provisions of the LED light source standard.

Note 2: In addition to terms and definitions, the "system" that appears in this Standard represents an intelligent lighting system, unless otherwise specified.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 24826, General lighting - Light emitting diode (LED) products and related equipment - Terms and definitions

GB/T 39022-2020, Lighting system and related equipment - Terms and definitions ISO/

IEC 31010, Risk management - Risk assessment techniques

IEC 60050, International Electrotechnical Vocabulary (IEV)

IEC 63117, General requirements for lighting systems - Safety

Note 1: The protocol can stipulate: establish the connection conditions for transmission to the media, manage the access rules to the media, error protection procedures, functional and procedural methods of data exchange, transmission mechanism, communication control, data expression and application data exchange. The protocol stipulates, for example: -- Data units that are transmitted between system components; -- Meaning of the data unit (semantically); -- Format of the data unit (syntax); -- Logic timing of data exchange.

Note 2: The protocol which is used in the system can be organized according to, for example, the OSI/ISO seven-layer reference model.

IEC 60050-351:2013, definition 351-56-14.

3.5 Adaptive characteristic A characteristic that responds to the environment or predefined conditions.

4 Environmental conditions

The lighting system shall use products that are suitable for the applied environmental conditions, such as but not limited to temperature range, humidity range, altitude and vibration. Check the eligibility according to the test procedures that are specified in the relevant product standards.

5 Installation and maintenance

The lighting system shall be installed, debugged and maintained in accordance with the instruction manual that is provided by the manufacturer or seller of the lighting system (see Chapter 8).

6 Safety requirements

6.1 Electrical safety Figure 1 -- System safety compliance inspection process The assessment can be carried out according to the risk assessment process in ISO/IEC 31010. Without the explicit consent of the user, the lighting system shall not upload any collected information or data to any party. If the information and/or data upload is the default operation after the system configuration is installed or set up, the manufacturer or seller shall give a clear warning about the default operation in the manual. Whether to confirm the inquiry of the default operation shall be automatically pushed to the user during the system configuration installation or setup process.

7 Function and performance requirements

7.1 General requirements The function and performance of the lighting system shall comply with the claims in the instruction manual.

7.2 Adaptive characteristic The adaptive characteristic of the lighting system helps to enhance the lighting performance and/or other functions of the system, which improves the convenience of use, and may help improve the energy-saving effect. Different lighting systems may have different adaptive characteristics and levels; the lighting system shall meet the declared adaptive characteristics and levels, such as: -- Sensitivity to specific stimulation (such as natural light level, weather, traffic flow); -- Related responses (such as dimming, color adjustment, control over time and/or environment).

7.3 Communication protocol Combined with specific application occasions, scenarios and usage requirements, the lighting system can use different communication protocols. This Standard does not limit the type of protocol that must be used.

7.4 Operation interface The operation interface shall support the functions which are declared by the lighting system. When applicable, the manufacturer or seller shall specify the following performance indicators of the lighting system. If a preset condition is required to reach the declared target, the preset condition shall be clearly stated in the manual. For example: -- Light output adjustment ability and range; -- Chromaticity adjustment ability and range.

Note: For different applications and scenarios, the specific performance indicators of the lighting system may be different. In order to better meet the lighting performance application indicator requirements (such as the illuminance requirements for general lighting visual function), it is recommended that the manufacturer or seller provide lighting system configuration suggestions corresponding to typical occasions and scenarios (such as number of terminals, installation and configuration schemes of the lighting system).