

IS 60669-2-1: 2021 Particular requirements for Electronic switches standards for Switches for household and similar fixed electrical installations

The product in question is an electronic control device, which includes electronic switches, home and building electronic systems (HBES), building automation and control systems (BACS) switches, and electronic extension units. These devices are designed for household and similar fixed electrical installations, operating with alternating current (AC) not exceeding 250 V and a rated current not exceeding 16 A. They are used to control the operation of lighting equipment circuits, dimming functions, and other electrical loads, often through electronic signals transmitted via various media, such as powerline, twisted pair, or radio frequency.

Parameters expected by consumers in the product:

- **Safety:** Consumers prioritize devices that prevent electrical shock and ensure safe operation under various conditions.
- **Reliability:** The device should function correctly without failures or malfunctions, even in the presence of electrical disturbances.
- **Ease of Use:** User-friendly interfaces and intuitive controls are essential for consumer satisfaction.
- **Compatibility:** The device should work seamlessly with existing electrical systems and various load types (e.g., LED, incandescent).
- **Performance:** The ability to control lighting brightness, motor speed, and other functionalities effectively.
- **Energy Efficiency:** Consumers are increasingly concerned about energy consumption and prefer devices that minimize energy use.
- **Durability:** The product should withstand environmental factors such as humidity, heat, and mechanical stress.
- **EMC Compliance:** Consumers expect products to comply with electromagnetic compatibility standards to minimize interference with other devices.

The IS/IEC 60669-2-1:2021 standard provides comprehensive guidelines and requirements that **address consumer expectations** in the following ways:

- **Safety Requirements:** The standard outlines rigorous testing for protection against electric shock, ensuring devices are safe to use in household environments.
- **Immunity to Disturbances:** It specifies immunity tests for various electromagnetic disturbances, ensuring reliable operation in real-world conditions where electrical noise may be present.
- **User -Friendly Design:** The standard mandates clear marking and labeling of devices, which enhances usability and helps consumers understand the product's capabilities and limitations.
- **Compatibility and Performance:** The standard includes specifications for rated voltage & current, ensuring that devices can handle various loads effectively without compromising performance.
- **Energy Efficiency and Durability:** Requirements for thermal performance and resistance to aging are included, ensuring that devices remain efficient and functional over time.
- **Electromagnetic Compatibility (EMC) Compliance:** The standard establishes limits for electromagnetic emissions and immunity, ensuring that devices do not interfere with other electronic equipment and operate reliably in diverse environments.
- **Testing Protocols:** The standard specifies rigorous testing protocols to verify that devices meet safety, performance, and durability requirements before they reach consumers, ensuring high-quality products in the market.

In summary, IS/IEC 60669-2-1:2021 standard establishes a comprehensive framework for manufacturers to ensure that their electronic control devices meet consumer expectations for safety, reliability, and performance, thereby enhancing user satisfaction and trust in the product.

BIS standard mark on the product ensures that it conforms to IS/IEC 60669-2-1:2021 and guarantees reliable and high-quality Electronic switches standards for Switches for household and similar fixed electrical installations.