



Eaton fast-acting fuses support PoE++ specifications for RJ45 connectors

The reliability of data transmission between devices set up in a network depends chiefly on the medium of propagation. In networking protocols such as PoE++ (Power over Ethernet) that transmit power and signals over physical connections, the reliability and efficiency rely heavily on the integrity of the signal cables.

RJ45 is a standard networking interface for connecting computers to I/O modules for telecom switches, Ethernet for LANs, and more. Each RJ45 cable contains an 8-wire configuration enclosed in plastic male/female jacks, with unshielded twisted-pairs (UTP) that help minimize crosstalk and EMI during data transfer.

The PoE++ standard utilizes all four twisted pairs within an RJ45 connector to achieve simultaneous power delivery and high-speed (IEEE 802.3bt) signal

transmission. It enables a host of communication applications, such as VoIP phones, POE switches, IP cameras, and Wi-Fi/RFID readers. PoE++ technology offers several advantages, including cost savings, scalability, greater flexibility, and reliability. However, due to the higher power requirements (50 – 57 V), internal electronics are prone to failures or damage without adequate circuit protection.

During regular use, RJ45 cables can be affected by surge (instantaneous) currents, static charge or other triboelectric generation, and short circuits. Circuit protection devices help to isolate sensitive components, should a fault occur. These components work by instantly shutting off the power supply to a device's electronics during overload or overcurrent conditions to prevent damage to

electronics or the melting of the cable.

Due to space constraints, design engineers and OEMs looking to specify components for PoE++ RJ45 applications must integrate higher voltage overcurrent protection devices suited to the highest voltage ratings in the smallest form factor possible. The ideal solution is a small footprint, fast-acting fuse to detect and isolate abnormal current and voltages.

Eaton Bussmann series 0603HV fuses are compact 0603 (1608) footprint surface mounted devices that support the higher voltage requirements of PoE++ applications, while providing reliable overcurrent and overload protection in RJ45 cables. The 0603HV fuses are devices designed to interrupt up to 50 A at 63 V. Despite their small form factor, 0603HV fuses offer excellent on-off and temperature

cycling characteristics with operating temperatures ranging from -55° C to 125° C, easy installation via solder-free design, and durable packaging for rugged operation.

Eaton Bussmann 0603HV fast-acting fuses help protect electronic circuits in VoIP phones, IP cameras, and Wi-Fi/RFID readers that utilize RJ45 cables from shorts and overcurrent conditions. Similarly, they also provide protection in the high-voltage, small-footprint circuits of I/O modules, Inkjet printers, TFT LCDs, and lithium-ion battery modules.

As an environmentally responsible manufacturer, Eaton utilizes only the highest-grade, eco-friendly materials in its 0603HV fuses. Every product is halogen and lead-free, UL recognized, and RoHS compliant.

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