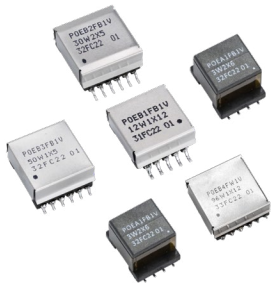


Use case

Eaton Power-over-Ethernet (PoE) solutions for remote monitoring



Eaton Power-over-Ethernet (PoE) solutions for remote monitoring

One of the most common problems engineers face when designing electronic equipment for industrial settings is where to source power. Space constraints to add a step-down transformer from medium voltage often add significant design complications. For many applications, then, this makes Power-over-Ethernet (PoE) solutions an attractive option for delivering power directly to the device. PoE is a technology that delivers electric power over twisted-pair ethernet cables to powered devices (PD).

A powered device is any device powered by PoE, consuming energy in addition to data that the cable carries. Examples include wireless access points, IP cameras, and VoIP phones.

Power sourcing equipment (PSE) are devices that provide power from the ethernet cable. The IEEE's standard for PoE is IEEE 802.3af. Other PoE types and power levels include the following examples:

- PoE -- IEEE 802.3af -- 12.95 W
- PoE+ -- IEEE 802.3at -- 25.5 W
- PoE++ -- IEEE 802.3bt (Type 3) -- 51 W
- PoE++ -- IEEE 802.3bt (Type 4) -- 71.3 W

In industrial remote monitoring applications, maintaining sufficient power levels is critical while simultaneously transmitting high-speed data and signals. Security cameras, access points, and LED lighting modules

are examples of powered devices utilizing PoE cables. PoE transformers are cost-effective and energy-efficient components for today's PoE industrial applications. PoE DC-DC converters utilize transformers in forward and flyback configurations for energy transfer. Forward PoE transformers typically deliver higher output power than flyback types, although they often require additional components, such as an output inductor. In industrial remote monitoring applications, a wide power range, high isolation voltages, and broad operating temperatures are essential for meeting the power needs of current and emerging PoE devices.

Eaton's Power-over-Ethernet transformers (PoE) are suitable for a wide range of ethernet power devices using IEEE802.3

ethernet protocols. Eaton's PoE transformers support various PoE controllers across many power devices, ranging from 3 W to 156 W. Eaton PoE comes in 6 standard transformer sizes (EP10, EP13, EFD15, EFD20, EFD25, EFD30) and both flyback and forward topologies.

Applications for the PoE transformers include lighting, remote cameras, Industrial automation, security systems, Voice over Internet Protocol (VoIP), network access points, chargers, network routers, bluetooth, and network repeaters. They perform reliably in high operating temperatures ranging from - 40° C to + 125° C and up to 1500 V isolation voltage.

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