

Robust 4-channel and 8-channel PoE injectors for industrial applications

Efficient PoE solutions for the Industrial Ethernet

The number and variety of Power-over-Ethernet (PoE) applications is increasing rapidly. Even in industrial environments, the power supply to mains-compatible devices via the Ethernet cable is on the rise. This development is fuelled by a new industry standard (IEEE 802.3bt) which from 2018, permits a supply output of 100W per channel. Therefore, in the future PoE will also be interesting for power-hungry applications for which the existing standards at 15W (IEEE 802.3af) or 30W (IEEE 802.3at) per channel were not adequate.

However, many users are currently struggling with technical hurdles and limitations when using Industrial Ethernet solutions. The PoE injectors available generally have their origins in IT applications. In the IT environment – such as in server rooms – stable environmental conditions and decent network quality prevail. For industrial applications, things are generally more challenging. The devices need to be able to handle fluctuating network quality, high temperatures and vibrations. This means that many PoE injectors do not meet industrial requirements in terms of reliability, durability and efficiency. In addition, they generally only have 1 to a maximum of 4 channels and do not normally have an integrated power supply. Configuring the injectors and integrating them into existing PoE systems is also complicated.

With its new 4 and 8 channel PoE injectors, PULS now offers a robust, durable and efficient midspan solution for anyone looking to power a larger number of PoE devices in an industrial environment.



Figure 1: Power-over-Ethernet (PoE) injector - inner view

Efficient and reliable power supply integration

The innovative plug-and-play solutions are available as standalone PoE modules (PoE injector with DC-input and 4 or 8 channels) or with an integrated PULS power supply (PoE injector with AC input and 8 channels) based on the successful CP10.481. The advantage of the integrated AC/DC converter is clear.

The all-in-one device can be connected directly to the AC mains, permitting a simplified system structure where previously at least two devices needed to be combined to achieve the same thing. The underlying power supply CP10.481 provides an efficiency of 95.5% and a minimum service life of 109,000 hours, at AC 230V, full load and +40°C ambient temperature. The temperature range of -25°C to +70°C (from +60°C with derating) of the device is optimised for industrial applications.

The PoE injector with integrated power supply is just 77mm wide, which saves costs and space on the DIN rail. The standalone module – with no integrated power supply – is also designed with space-saving in mind at a width of 39mm.

Up to 8 channels with full output

The current market standard for injectors is 1 to a maximum of 4 channels. For devices with more than 4 channels, the onus was previously on users to carry out complex configuration work to set how much power was to be output on each channel. The configuration here was always linked to a limited power budget that the manufacturer had previously defined for the PoE injector.



Figure 2: PoE injector (DC-input)



Figure 3: PoE injector (AC input)

With PULS, this is no longer a problem. Both PoE injectors each have 8 channels, and the injector without integrated power supply is also available with 4 channels. All channels provide continuous power and without restrictions a maximum of 30W on the output, complying with the output of 25.5W defined by the IEEE standard on load. The outstanding data rate of 1 Gigabit per channel – on all 8 channels – makes the device unique in the marketplace. The integrated PULS power supply also offers increased efficiency in PoE systems. Most PoE systems are continuously powered up, therefore the energy-saving solutions from PULS also help to reduce ongoing operating costs.

Plug-and-play instead of complex configuration

The injectors are optimised for user-friendly plug-and-play use right from the outset. The devices automatically detect the performance class of the connected components (IEEE 802.3at or IEEE 802.3af). This function also helps in protecting the device in the event of a fault. For example, if there is a short-circuit in one of the connected cables, the injector responds immediately with automatic current limitation for that channel. This functionality is similar to the hiccup mode included in most PULS power supplies. The injector tests for short-circuits at regular intervals, and the channel is only re-activated and supplied with power once the fault has been rectified. The remaining channels remain unaffected by this safety measure and stay fully functional.

Future-proof and cost-optimised PoE solutions

With PULS PoE injectors, users save in every respect. One injector simultaneously supplies power to up to 8 devices, where previously at least 2 injectors were required. The injector with integrated power supply also replaces two components in the system at the same time. This saves on upfront purchase and installation costs and also saves valuable installation space within the system.

PoE injectors from PULS are ideal for flexible use in numerous applications owing to high performance (PoE+ and Gigabit Ethernet), durability and efficiency and the robust device design. The devices are also perfect for retrofit projects to modernise existing systems or installations with PoE technology, or to expand existing industrial Ethernet solutions.

As well as industrial applications, there are also other exciting applications for the PULS PoE solutions in other markets, such as in building digitisation (Wireless Access Points / access systems, with video cameras (surveillance / image processing), advertising panels, POS systems, healthcare equipment, and many more.