

## PoE PD Media Converters

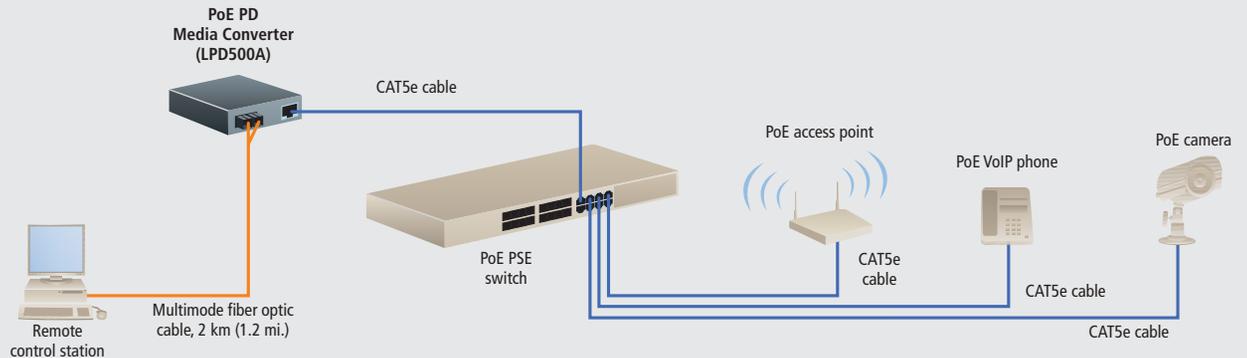


**The copper-to-fiber converter  
that gets its power over Ethernet.**

## FEATURES

- Translate 10-/100-Mbps copper to 100-Mbps fiber optic connections.
- Operate as powered devices, receiving power from the copper cable.
- Connect to PoE switches, mid-span hubs, or other 802.3af power source equipment.
- Great for integrating fiber into your expanded PoE network.
- Link fault passthrough enhances the integrity of the copper and fiber links.
- Far-end fault detection keeps data from being sent over an invalid link.
- DIP-switch configurable. Quick and easy to set up.
- Multimode and single-mode models available.
- Compact design makes them ideal for areas with limited space.
- RoHS and CE compliant for use in your European offices.

## Power the media converter from a PSE switch!



## OVERVIEW

Bridge long-distance Fast Ethernet fiber optic segments with Ethernet or Fast Ethernet copper cabling—all without the need for a local power supply—by using a BLACK BOX® PoE PD Media Converter.

Compatible with the 802.3af PoE standard, the converter features an advanced autosensing algorithm that enables it to function as a powered device (PD) and draw its power from PoE power source equipment (PSE) or a PoE injector.

With PoE, both data and power are delivered over the spare pairs of an Ethernet data cable to compatible PoE devices—a method of power delivery that's beneficial in areas where you're short on AC power outlets. It also eliminates having to run separate AC power wiring to devices at the edge of your far-flung LAN. (For an overview of PoE technology, see [page 3](#).)

In a typical PoE application, you would use the POE PD Media Converter to convert copper and fiber in order to extend your data runs a greater distance over interference-free, signal-enhancing optical cable. Then, using a distant management PC or security station at the end of the 100BASE-FX run, you can communicate via the media converter and a PSE switch with the PoE devices themselves. These devices can include wireless access points, network-enabled security cameras, and VoIP phones.

On the fiber optic side, the converter connects to 1310-nm 100BASE-FX media. Depending on the model you order, this can be multimode fiber optic cable with ST® or SC type connectors or single-mode cable terminated with SC type connectors. The multimode PoE PD Media Converters support full duplex fiber runs up to 2 kilometers (1.2 mi.) long, and the single-mode model supports full duplex fiber segments as far as 20 kilometers (12.4 mi.).

On the twisted-pair side, the converter supports 10BASE-T or 100BASE-TX media. You can even set up the converter to autonegotiate the link to match the speed of the Ethernet or Fast Ethernet connection.

To keep your expensive equipment safe, the PoE PD Media Converter features short-circuit protection. What's more, it has power-in autodetection for automatically adapting to the type of power source used. For applications where you don't have a 802.3af PSE to plug into, the converters can be powered by an optional AC/DC power adapter (which you can also use as a backup power solution to the PSE itself).

Rear-panel DIP switches enable you to configure the converter quickly so you're up and running in a matter of minutes. No further intervention is required by you. Just make sure that all connected nodes are set to operate in flow control modes identical to that of the media converter.

Link-fault passthrough and far-end fault detection keep you from sending valuable data across invalid links. Link status on one port is propagated to the other port. If either the twisted-pair or the fiber optic port is in link-fail state—if it's unplugged, for instance—the converter disables the other port.

For at-a-glance status monitoring and troubleshooting, the converter features front-panel LEDs that inform you of its operating status. These LEDs signal when the connected fiber or twisted-pair links are good and transmitting data, or when there's a link failure; when the converter is operating in half- or full duplex mode, or detects a collision; and when the converter's transmitting either 10-Mbps or 100-Mbps data traffic.

## Technically Speaking

Power over Ethernet (PoE) provides a way for network devices to be powered by their data cables rather than by separate power cords.

The most popular PoE standard is the IEEE 802.3af specification, which calls for 48 volts of AC power over any grade of UTP wire, including Category 3, 5, 5e, and 6. The specification is compatible with standard Ethernet UTP hardware without requiring modification.

The IEEE 802.3af standard covers power sourcing equipment (PSE) and powered devices (PDs). The PSE, sometimes called an injector or source device, puts power onto the UTP cable and the PD picks the power off.

How does PoE work? Very simply, Ethernet cable consists of four twisted pairs of cable: two pairs for data transmission and two "free" pairs that can be used for other purposes. 802.3af PoE uses either the spare pairs or the data pairs to transmit power. It adds DC power to the wires using signal transformers and picks off power at the far end the same way.

Although sending power over the data pairs rather than the spare pairs would seem to be counterintuitive, data and power transmissions don't interfere with each other because they're at opposite ends of the frequency spectrum. Specifically, electricity has a low frequency of 60 Hz or less, and data transmissions have frequencies that can range from 10 million to 100 million Hz.

The 802.3af standard calls for the maximum power available to any powered device to be 12.95 watts with a voltage range of 36 VDC to 57 VDC. This is more than enough to power typical PoE devices, such as wireless access points.

## TECH SPECS

**Certification** — FCC Part 15, Class A

**Flow Control** — 802.3x for full duplex; backpressure for half-duplex

**Forwarding Rate** — 100 Mbps: 148,800 pps;

10 Mbps: 14,880 pps

**PoE Power Reception Supports** — Endpoint: Via TP Pin 1, 2, 3, 6;

Midspan: Via TP Pin 4, 5, 7, 8

**Standards** — IEEE 802.3u 10BASE-T, 100BASE-TX, 100BASE-FX; IEEE 802.3af

**CE Approval** — Yes

**Connectors** — Copper side: (1) RJ-45 (10BASE-T/100BASE-TX);

Fiber side: (1) pair of SC or ST

**Indicators** — LEDs: (1) Power, (1) PoE, (1) TP Link/Act, (1) FX Link/Act, (1) FDX/COL

**Operating Environment** — Temperature: 32 to 122°F (0 to 50°C);

Humidity: 5 to 90%, noncondensing

**Power** — Requires 1 A at +5 VDC from an AC/DC adapter or 60 mA

at -48 VDC from 802.3af PSE or PoE injector

**Size** — 1"H x 2.7"W x 3.7"D (2.5 x 6.9 x 9.4 cm)



LPD500A

Item	Code
PoE PD Media Converters	
10BASE-T/100BASE-TX to 100BASE-FX	
Multimode SC	LPD500A
ST	LPD501A
Single-Mode SC	LPD502A

### Need a PSE switch? Then order...

PoE L2 Managed Gigabit Ethernet Switch	LPD200A
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For help ordering compatible PoE equipment, including PoE hubs, PoE PSE media converters, and PoE compatible access points and other end devices, contact our FREE Tech Support.

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