

PoE PSE Media Converters

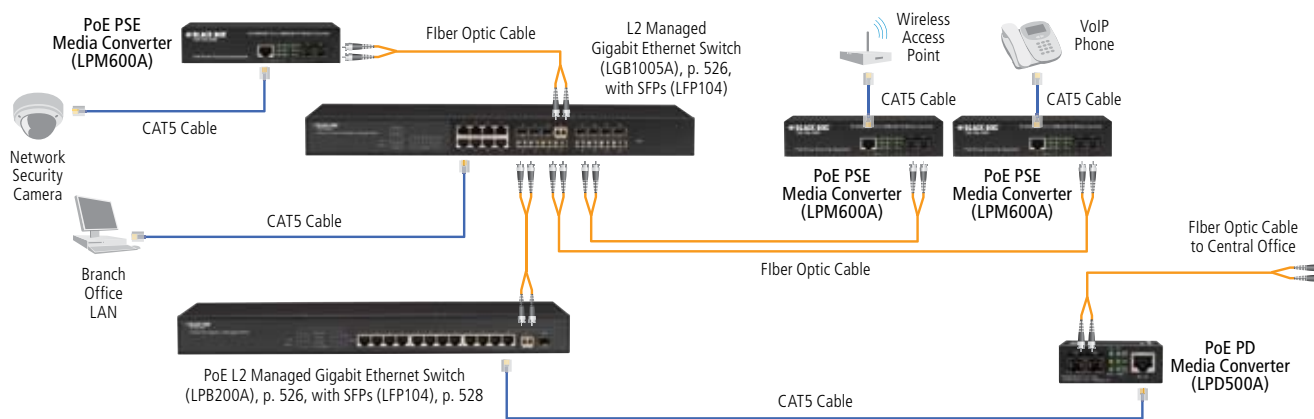
Convert fiber optic media
to copper twisted pair
and power PoE devices.



FEATURES

- » Translate 10-/100-Mbps copper to 100-Mbps fiber optic connections.
- » Operate as power source equipment (PSE), providing voltage to compatible 802.3af devices over ordinary twisted-pair copper cable.
- » Power access points, cameras, and VoIP phones in areas without readily accessible outlets.
- » Great for integrating fiber into your expanded PoE network.
- » Multimode and single-mode models available.
- » Copper-side port autodetects speed of Ethernet connection.
- » 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.
- » Overcurrent and undercurrent detection, as well as PD signature sensing for equipment protection.
- » DIP-switch configurable. Quick and easy to set up.
- » RoHS and CE compliant.

Extend the distance between copper PoE devices up to 1.2 miles (2 km) using multimode fiber optic cable or 62.1 miles (100 km) via single-mode fiber optic cable—and power the devices connected to the copper cable.



OVERVIEW

Bridge Fast Ethernet fiber optic and copper segments and provide reliable power to devices in out-of-the-way areas.

The BLACK BOX® PoE PSE Media Converter not only connects 100BASE-FX fiber to 10BASE-T/100BASE-TX copper, but it also functions as power source equipment (PSE) in Power over Ethernet (PoE) applications.

PoE enables you to provide power over the spare pairs of an Ethernet data cable to compatible PoE-powered devices (PDs). These can be wireless access points, CCTV security cameras, or VoIP phones. The PoE PSE Media Converter works as an endpoint PSE that delivers -48-VDC power via twisted-pair cable Pins 1, 2, 3, and 6.

Using a single cable to deliver both data and power gives you added flexibility. It's particularly beneficial in areas where you're short on AC power outlets, and it eliminates the need to run separate AC power circuits to devices at the edge of your LAN.

In a typical PoE application, you'd use the PoE PSE Media Converter to convert copper and fiber in order to extend your data runs at long distances over interference-free, signal-enhancing optical cable. Then, at the end of the fiber run, you would use a remote management PC or security station to communicate with the PoE devices plugged into the converter.

The converter gets its power from an autosensing AC power supply that plugs into a standard outlet.

Compatible with the 802.3af PoE standard, the PoE PSE Media Converter features an advanced autosensing algorithm that enables it to provide PDs with discovery, classification, current limit, and other necessary functions.

For PoE-side PD links, simply run a twisted-pair cable to compatible equipment. The converter supports 10BASE-T or 100BASE-TX media. Or set it up to adapt to the speed of the Ethernet or Fast Ethernet connection, and use it in an existing switch, bridge, or router application.

The media converter offers overcurrent and undercurrent detection, as well as fault protection input and power monitoring. LEDs inform you if PoE feeding power is disrupted and the class of PD connected (4-W Class 1, 7-W Class 2, or 15.4-W Class 0 or 3 device). PD signature sensing detects when a 802.3af-compliant PD is connected downstream. This helps protect non-802.3af legacy devices that may be accidentally connected to the converter.

On the fiber side, the media 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 PSE Media Converter models 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.).

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, thus passing through the link fault. The converter also stops sending link pulse to the link partner if it detects loss of a fiber RX signal.



LPM600A: front view



LPM600A: rear view

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

And though it's designed to work as a PoE PD, the PoE converter doesn't have to be used this way. It also works as a pure converter. It's even ideal for temporary setups where you need to convert copper twisted-pair interfaces to fiber media, and vice versa.

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 IEEE 802.3af PoE standard calls for 48 volts of AC power over any grade of UTP wire, including Category 3, 5, 5e, and 6. The specification covers power sourcing equipment (PSE) and powered devices (PDs). The PSE puts power onto the UTP cable, and the PD picks it 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 PSE Power Feeding — Endpoint via twisted-pair Pins 1, 2, 3, 6

Standards — IEEE 802.3u 10/100ASE-TX, 100BASE-FX, IEEE 802.3af

Power over Ethernet

CE Approval — Yes

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

Fiber side: (1) pair of SC or ST®

Indicators — LEDs: (1) PWR (+5-V power; PoE feeding power is active);

(1) PoE PSE-TP (disrupted PoE feed power);

(1) TP LNK/ACT (good twisted-pair link/twisted-pair data is present);

(1) 100 (twisted-pair speed is 100 Mbps);

(1) FX LNK/ACT (good fiber link/fiber data is present);

(1) FDX/COL (duplex mode/collision is present);

(1) 4W (PD is Class 1 type);

(1) 7W (PD is Class 2 type);

(1) 15.4W (PD is Class 0 or 3)

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

Humidity: 5 to 90%, noncondensing

Power — Input: 100–240 VAC, 50–60 Hz, autosensing;

Consumption: 24 watts

Size — 1.6"H x 6.25"W x 5.25"D (4.1 x 15.9 x 13.3 cm)

Item	Code
PoE PSE Media Converters, 10BASE-T/100BASE-TX to 100BASE-FX	
Multimode	SC ST LPM600A LPM601A
Single-Mode	SC LPM602A

For copper-side links, you may need...

GigaBase® CAT5e 350-MHz Patch Cable, 4-Pair, Straight-Pinned, PVC, Blue with Snagless Boots, 10-ft. (3-m)

EVNSL81-0010

For help ordering compatible PoE equipment (including PoE hubs, PoE PD media converters, and PoE compatible access points and other end devices), contact our FREE Tech Support.