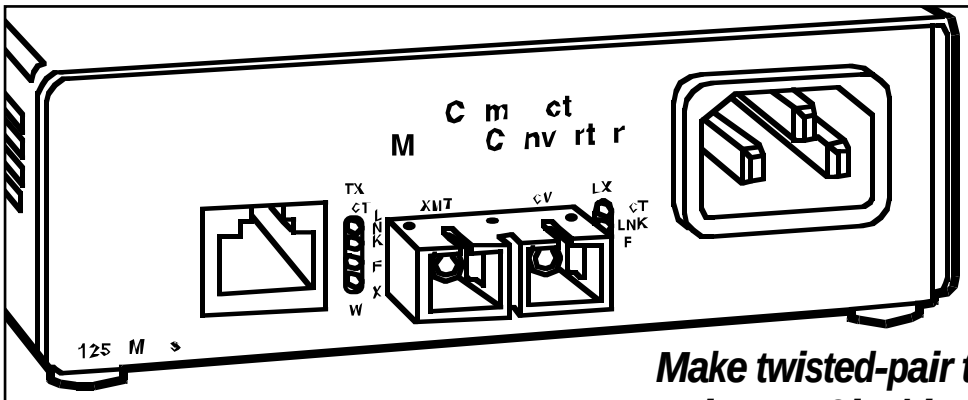
BLACK BOX®
NETWORK SERVICES

Black Box Network Services • 464 Basingstoke Road • Reading, Berkshire, RG2 0BG • Tech Support: 0118 965 6000 • **www.blackbox.co.uk** • **e-mail: techhelp@blackbox.co.uk**

LAYER 1 GIGABIT MEDIA CONVERTERS



Make twisted-pair to fibre conversions in your Gigabit Ethernet network.

Key Features

- ***Copper-to-fibre conversions at Gigabit speeds.***
- ***Single-mode and multimode versions available.***
- ***Distances up to 40 km (24.9 miles) with the single-mode model.***
- ***Configures automatically for correct UTP cabling.***
- ***Internal autosensing power supply.***
- ***Compact chassis fits tight spaces.***
- ***Uplink and downlink fault detection.***
- ***Autonegotiates half- or full-duplex.***

This easy-to-install, standalone media converter enables you to connect your copper network to a fibre optic segment while keeping data flowing at Gigabit Ethernet speeds.

Compact enough to fit on the desktop and made of durable sheet metal, the BLACK BOX® Layer 1 Gigabit Media Converter provides seamless 1000BASE-TX to 1000BASE-SX or 1000BASE-LX conversion. We offer two models: the LG5134A for connecting to 850-nm multimode fibre; and the LGC5135A that supports 1300-nm single-mode connections.

In the electrical-to-optical conversion, the media converter bridges the gap between copper and fiber optic wiring systems. It not only brings fibre to the desktop user but offers access to fibre-based services for the enterprise. Use the Layer 1 Gigabit Media Converter, for instance, to share your legacy network equipment and wiring with today's newer technologies without having to undertake a costly upgrade.

By supporting Gigabit Ethernet speeds, the media converter not only brings greater bandwidth to your network, but it gives you an easy way to connect an enterprise backbone with a more-demanding metropolitan area network (MAN) or wide area network (WAN). With the converter, enterprise and service provider networks can deliver speeds of 1.25 Gbps* over both copper and fibre optic cabling infrastructures.

What's more, with a Layer 1 Gigabit Media Converter, you can extend the reach of your Gigabit Ethernet greater distances—up to *40 kilometres (24.8 miles)* with the single-mode LGC5135A model!—while using standard 1000BASE-T switch ports at both ends of your fibre run. This way, you can keep using your twisted-pair cable plant on your local side and connect an optical switch to your network.

The LGC5134A operates across distances of up to 200 metres (656.2 ft.) on multimode fibre optic cable.

Because the box performs its conversions at Layer 1 (the Physical Layer), the device is transparent to the network's higher-level protocols. In addition, there's no bulky external power transformer to make installation of the Layer 1 Gigabit Media Converter cumbersome; the device has a built-in universal power supply.

And you won't need any crossover cables for the twisted-pair side. You can get away with using just straight-through cabling to connect your copper devices. That's because the converter has an MDI/MDIX function that automatically determines whether the converter has to cross over between the four pairs on the 1000BASE-TX port's RJ-45 connector.

The media converter uses autonegotiation to configure each of its ports for full- or half-duplex and master or slave modes of operation. It does this by determining which clock will be used between the media converter

* *NOTE:* Although the Layer 1 Gigabit Media Converter supports a base signalling rate of 1.25 Gbps, the maximum available bandwidth to users is 1 Gbps.

and its connected device, whether it's a switch, a network interface card (NIC), or another Layer 1 Gigabit Media Converter. To avoid conflicts with devices connected to the media converter, it senses which mode is appropriate and chooses either slave or master mode.

To override the factory defaults of duplex settings and slave/master modes, you need only to change an 8-position DIP switch on the bottom of the converter box and activate the front-panel reset button.

Fault-detection features

The Layer 1 Gigabit Media Converter has Link Integrity features that prevent "silent failures" on your network. What this means is, that the converter identifies lost cable links. No more time wasted searching for them! A link can be checked by physically observing the status of the media converter's Link LED.

One feature, FiberAlert™, signals to you when a fault occurs on one fiber strand and the link is, in turn, incapable of carrying bidirectional communications between two fibre devices. If a strand isn't available, and you have FiberAlert enabled, the device at the receiver end notes the loss of the link and stops transmitting data until it receives a signal or link pulse.

Essentially, with FiberAlert, the link status of one end is mirrored at the opposite end. This means that the link status can be seen at *both ends* through the respective Link LEDs, thus helping you to identify and isolate faults anywhere in the fibre loop. FiberAlert works even if the fibre devices are separated by great distances.

LinkLoss™ is a feature that's similar to FiberAlert in that faults on one port are mirrored on the other. But in the case of LinkLoss, a fault on the fibre port is mirrored to an Ethernet twisted-pair port rather than another fibre port. So if the fibre link is lost at the converter, the converter disables the twisted-pair Link LED. With LinkLoss enabled, the link status of the fibre segment will always be reflected by the twisted-pair segment so you're informed quickly of fibre problems.

LEDs show activity, signal alerts

All selectable features on the Layer 1 Gigabit Media Converter are externally accessible, and each port includes diagnostic LEDs for easy monitoring of activity on both connected cable segments. In all, the box has seven LEDs on its faceplate—four to the right of the shielded RJ-45 UTP jack and three to the right of the fibre optic SC connectors.

The first set of LEDs signal: when data is detected on the twisted-pair port, when you establish a twisted-pair link, when it's operating in full-duplex mode, and when the unit has power.

The second LED set informs you: when the converter detects data on the fibre port, when you establish a fibre link, and when FiberAlert is enabled.

Specifications

Approvals: FCC part 15, subpart B class A; UL®; CSA; CE

Standards: IEEE802.3ab 1000BASE-T, IEEE802.3z 1000BASE-SX or -LX

Distance (Maximum): LGC5134A: 200 m (656.2 ft.); LGC5135A: 40 km (24.9 mi.)
NOTE: Actual distances depend on quality of the fibre optic cable, including the fibre budget and loss of the installation in which its used.

Data Rate: 1.25 Gbps of signalling which derives 1 Gbps of user bandwidth

Connectors: (1) RJ-45, (1) pair SC

Indicators: (7) LEDs:
TX side: (1) for data sensed on TX port ; (1) indicating TX link is established; (1) indicating operation in full-duplex mode; (1) indicating that the unit is receiving power;
LX side: (1) for data sensed on LX port; (1) indicating LX link is established; (1) indicating FiberAlert is enabled

Temperature Tolerance: Operating: 32 to 104ºF (0 to 40ºC); Storage: 0 to 160ºF (-18 to +71ºC)

Humidity Tolerance: Up to 95% noncondensing

Power: 100/240 ± 10% VAC, 50/60 Hz, internal, autosensing

Size: 1.5"H x 4.6"W x 4.4"D (3.8 x 11.7 x 11.2 cm)

Weight: 1.3 lb. (0.6 kg)

Package Includes

- Media converter
- (1) power cord
- Users' manual

Ordering Information

ITEM	CODE
Layer 1 Gigabit Media Converters	
1000BASE-SX/850-nm Multimode	LGC5134A
1000BASE-LX/1300-nm Single-Mode	LGC5135A
For optimum performance, order…	
Multimode Duplex Fibre Optic Cable, PVC, SC–SC, Custom Lengths	EFN4025
Single-Mode Duplex Fibre Optic Cable, PVC, SC–SC, Custom Lengths	EFN5010
CAT5 Patch Cable, 100-MHz, 4-Pair, Straight-Pinned, PVC, Beige, 10-ft. (3-m)	EVMSL05-0010