

## Compact Media Converter User Manual

### Convert 10/100/1000-Mbps twisted pair to 100/1000-Mbps fiber.

Models available with an SFP slot, or with fixed SC dual-strand multimode fiber or SC dual-strand single-mode fiber connectors.



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### FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

### Normas Oficiales Mexicanas (NOM) Electrical Safety Statement INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.

4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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## 1. Specifications

<b>Mechanical</b>	
Connectors	LGC5150A: (2) RJ-45, (1) SFP cage; LGC5251A: (2) RJ-45, (1) multimode SC; LGC5152A: (2) RJ-45, (1) single-mode SC
Dimensions	0.8"H x 4"W x 4"D (2.032 x 10.16 x 10.16 cm)
Shipping Weight	0.7 lb. (0.3 kg)
<b>Interface</b>	
RJ-45	10/100/1000BASE-T; Auto-negotiating; AutoCross; Maximum Frame Size: 10240;
SFP or SC	Full Line-Rate Forwarding
<b>Electrical</b>	
Power Rating	100–240 VAC, 50-60 Hz, 7 W maximum working power
<b>Environmental</b>	
Temperature Tolerance	Operating: +14 to +122° F (-10 to +50° C); Storage: -31 to +167° F (-35 to +75° C)
Humidity Tolerance	Operating: 5 to 95%, noncondensing
Altitude	0 to 10,000 ft.
<b>Approvals</b>	
Compliance	FCC Class A, UL/cUL, CSA, CE

## 2. Overview

### 2.1 Introduction

The Compact Media Converter provides two conversions between 10/100/1000BASE-T twisted pair and 100/1000BASE-SX/FX fiber. This device automatically negotiates speed and duplex on the copper port and the fiber 100/1000 Mbps, full-duplex port.

The Compact Media Converter, SFP (LGC5150A) is an SFP port-based model that includes two 10/100/1000 Mbps RJ-45 connectors and one SFP port. It supports MSA-compliant 1000- or 100-Mbps SFPs. A DIP switch enables LFPT (Link Fault Passthrough), a diagnostic feature for troubleshooting a fault fiber. An SFP version is available; both support jumbo frames up to 10240 MTU. The media converter will detect the SFP and run over single-mode fiber or multimode fiber at the speed for which the SFP was designed. Compatible SFPs include the LFP401–LFP403 and LFP411–LFP414 (see Table 2-4).

The Compact Media Converter, TX/FX (LGC5151A) is a fixed fiber transceiver model that includes two 10/100/100 Mbps RJ-45 connectors and one 1000-Mbps SC fiber connector. The LGC5151A supports dual-strand multi-mode fiber. A DIP Switch enables LFPT (Link Fault Passthrough), a diagnostic feature for troubleshooting a fault condition on a segment.

The Compact Media Converter, TX/FX (LGC5152A) is a fixed fiber transceiver model that includes two 10/100/100 Mbps RJ-45 connectors and one 1000-Mbps SC fiber connector. The LGC5152A supports dual-strand single-mode fiber. A DIP Switch enables LFPT (Link Fault Pass-Through), a diagnostic feature for troubleshooting a fault condition on a segment.

### 2.2 Features

- All models have (2) 10/100/1000 Mbps copper ports.
- Specific models have (1) SFP port or fixed fiber port (single-mode or multimode).
- Compact, rugged device includes an internal AC power supply.
- Easy to install.
- Unmanaged device, requires no software installation.
- Supports link fault passthrough.
- Auto-negotiates speed and duplex.



- Auto-cross function means you don't need to specify either a crossover or straight-through cable.

### 2.3 What's Included

- LGC5150A: Compact Media Converter, 2 ports 10/100/1000 Mbps copper, 1 port 100/1000 Mbps, SFP,

or

LGC5151A: Compact Media Converter, 2 ports 10/100/1000 Mbps copper, 1 port 1000 Mbps, 550m, 850nm, MM, SC

or

LGC5152A: Compact Media Converter, 2 ports 10/100/1000 Mbps copper, 1 port 1000 Mbps, 10km, 1310nm, SM, SC

- DIN rail clips (not included)
- Wallmount brackets (not included)

To download this user manual from the Black Box Web site:

1. Go to [www.blackbox.com](http://www.blackbox.com)
2. Enter the part number (LGC5150A, LGC5151A, or LGC5152A) in the search box:
3. Click on the "Resources" tab on the product page, and select the document you wish to download.

If you have any trouble accessing the Black Box site to download the manual, you can contact our Technical Support at 724-746-5500 or [info@blackbox.com](mailto:info@blackbox.com).

## 2.4 Hardware Description

### 2.4.1 Compact Media Converters

Figures 2-1 through 2-6 show the side panels of the media converters. Tables 2-1 through 2-3 describe the components.

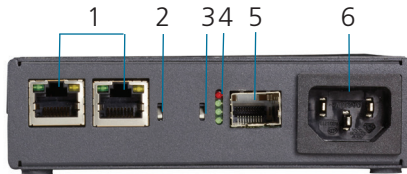


Figure 2-1. LGC5150A side panel.



Figure 2-2. LGC5150A side panel with power cord attached.

Table 2-1. LGC5150A components.

Number in Figure 2-1	Component	Description
1	(2) RJ-45 connectors	10/100/1000BASE-T twisted pair
2	(1) DIP switch	Link Fault Passthrough (LFPT)
3	(1) DIP switch	Low SPD
4	(4) LED indicators	FLT, LNK, 100 Mbps, and PWR
5	(1) SFP cage	Holds 100/1000BASE-SX/FX fiber module
6	(1) 3-pole power outlet	Links to 100–240 VAC, 50-60 Hz, 7 W power cord

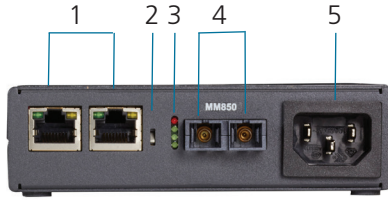


Figure 2-3. LGC5151A side panel.



Figure 2-4. LGC5151A side panel with power cord attached.

Table 2-2. LGC5151A components.

Number in Figure 2-3	Component	Description
1	(2) RJ-45 connectors	10/100/1000BASE-T twisted pair
2	(1) DIP switch	Link Fault Passthrough (LFPT)
3	(4) LED indicators	FLT, LNK, 100 Mbps, and PWR
4	(1) SC connector	Links to 850-nm multimode fiber
5	(1) 3-pole power outlet	Links to 100–240 VAC, 50–60 Hz, 7 W power cord

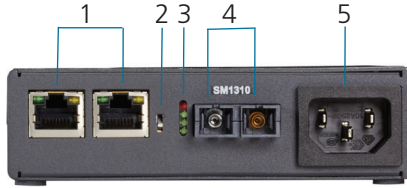


Figure 2-5. LGC5152A side #1 panel.



Figure 2-6. LGC5152A side #2 panel.

Table 2-3. LGC5152A components.

Number in Figure 2-5	Component	Description
1	(2) RJ-45 connectors	10/100/1000BASE-T twisted pair
2	(1) DIP switch	Link Fault Passthrough (LFPT)
3	(4) LED indicators	FLT, LNK, 100 Mbps, and PWR
4	(1) SC connector	Links to 1310-nm single-mode fiber
5	(1) 3-pole power outlet	Links to 100–240 VAC, 50-60 Hz, 7 W power cord

## 2.4.2 Compatible SFP Modules (Use With LGC5150A Media Converter Only)

Table 2-4. SFP modules.

Product Code	Description
LFP401	SFP, 155-Mbps Fiber with Extended Diagnostics, 850-nm Multimode, LC, 2 km
LFP402	SFP, 155-Mbps Fiber with Extended Diagnostics, 1310-nm Multimode, LC, 2 km
LFP403	SFP, 155-Mbps Fiber with Extended Diagnostics, 1310-nm, Single-Mode, LC, 30 km
LFP404	SFP, 155-Mbps Fiber with Extended Diagnostics, 1310-nm Single-Mode, Plus, 60 km, LC
LFP411	SFP, 1.25-Gbps Fiber with Extended Diagnostics, 850-nm Multimode, LC, 300 m
LFP412	SFP, 1.25-Gbps Fiber with Extended Diagnostics, 1310-nm Multimode, LC, 2 km
LFP413	SFP, 1.25-Gbps Fiber with Extended Diagnostics, 1310-nm Single-Mode, LC, 10 km
LFP414	SFP, 1.25-Gbps Fiber with Extended Diagnostics, 1310-nm Single-Mode, LC, 30 km
LFP416	SFP with SGMII Interface, 1.25 Gbps, Copper, 10/100/1000BASE-T, Extended Diagnostics

### 3. Installing the Compact Media Converter

The Compact Media Converter installs virtually anywhere as a standalone, table-top device, or using a wallmount bracket.

#### Hardware Mounting

You can mount the Compact Media Converter on a DIN rail using DIN rail clips, or on a wall using wallmount brackets.



Figure 3-1. Wallmount brackets (optional).

## 4. Operating the Compact Media Converter

### 4.1 Powering the Compact Media Converter

The Compact Media Converter is powered via an industry-standard IEC connector and will support 100–240 VAC, 50/60 Hz, 7 Watts maximum working power.

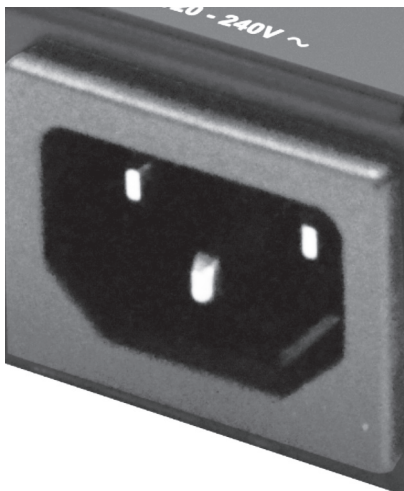


Figure 4-1. Power connector.

### 4.2 LED Indicators

Each Compact Media Converter includes four top-panel and side-panel LEDs.



Figure 4-2. Top-panel LEDs on the Media Converter.

Table 4-1. LEDs on the top of the media converter.

LED	Description
FLT	Lights red when a fault has been detected on the unit.
LNK	Lights green with a valid link.
1000 Mbps	Lights green when media converter is running at 1000 Mbps
PWR	Lights green when media converter is powered on.

Each Compact Media Converter includes two LEDs located on each RJ-45 connector.

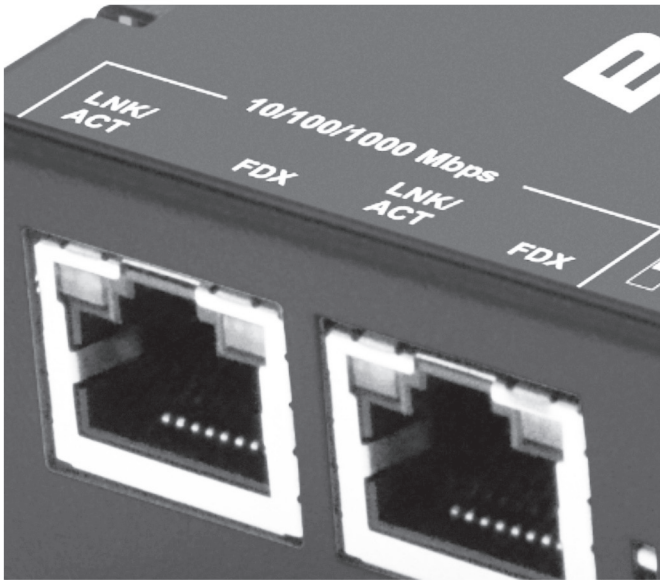


Figure 4-3. Side-panel LEDs on the Media Converter.

Table 4-2. RJ-45 connector LEDs functions.

LED	Description
LNK/ACT	Glows green with a valid link. Blinks green when activity is detected.
FDX	Glows amber when port is running full duplex.



### 4.3 LFPT

The Compact Media Converter includes an LFPT DIP switch, located on the front of the unit.



Figure 4-4. LFPT DIP switch.

Table 4-3. LFPT DIP switch functions.

LFPT DIP Switch Position	Description
Switch Up	LFPT ON
Switch Down	LFPT OFF

Link Fault Pass-Through (LFPT) is a troubleshooting feature that combines TX and FX link loss from both the local and remote Compact Media Converter, TX-FX/SFP modules. LFPT is enabled by turning on the DIP switch on both modules. This feature allows either end of the conversion to detect a link fault occurring at the other end of the media conversion chain. On the Compact Media Converter, LFPT is supported on the connector closest to the DIP switch.

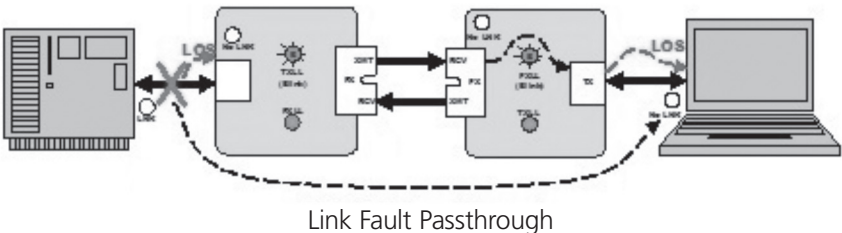


Figure 4-5. Link Fault Passthrough (LFPT) function.

Regardless if there is a break in segment 1, 2, or 3, the link will drop on the switches at both ends. The link fault passes through the media converter and is observed at each end. It acts just as it would if the devices were directly connected.

*NOTE: Dropping the link on the supported copper port will disable the fiber port. This will break the connection from the other copper port to the fiber port.*

### 4.4 Low SPD Switch on the LGC5150A

The SFP version of the Compact Media Converter (LGC5150A) supports a low-speed (LOW SPD) DIP Switch. If a Gigabit SFP is installed in the SFP port and you set the switch to the ON position, it will force the SFP to operate at 100 Mbps. This DIP switch setting is available only on the LGC5150A model, on its fiber SFP port.

The fixed fiber port models (LGC5151A and LGC5152A) do not have this DIP switch.

Table 4-4. Low-Speed (LOW SPD) DIP switch.

Low SPD DIP Switch Position	Description
Switch ON	SFP forced to 100 Mbps
Switch OFF	SFP not forced

## 5. Maintenance

### 5.1 Fiber Optic Cleaning Guidelines

Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust, which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1. Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.
2. Dust caps are installed at Black Box to ensure factory-clean optical devices. Do not remove these protective caps until the moment you connect the fiber cable to the device. If you need to disconnect the fiber device, reinstall the protective dust caps.
3. Store spare caps in a dust-free environment, such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.
4. If you suspect that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove particles of dirt.

### 5.2 Electrostatic Discharge (ESD)

Electrostatic discharge (ESD) can cause damage to any product, add-in modules or standalone units, containing electronic components. Always observe the following precautions when installing or handling these kinds of products.

1. Do not remove unit from its protective packaging until ready to install.
2. Wear an ESD wrist grounding strap before handling any module or component. If the wrist strap is not available, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.
3. Hold the units by the edges; do not touch the electronic components or gold connectors.
4. After removal, always place the boards on a grounded, static-free surface, ESD pad, or in a proper ESD bag. Do not slide the modules or standalone units over any surface.

*WARNING: Integrated circuits and fiber optic components are extremely susceptible to electrostatic discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.*







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