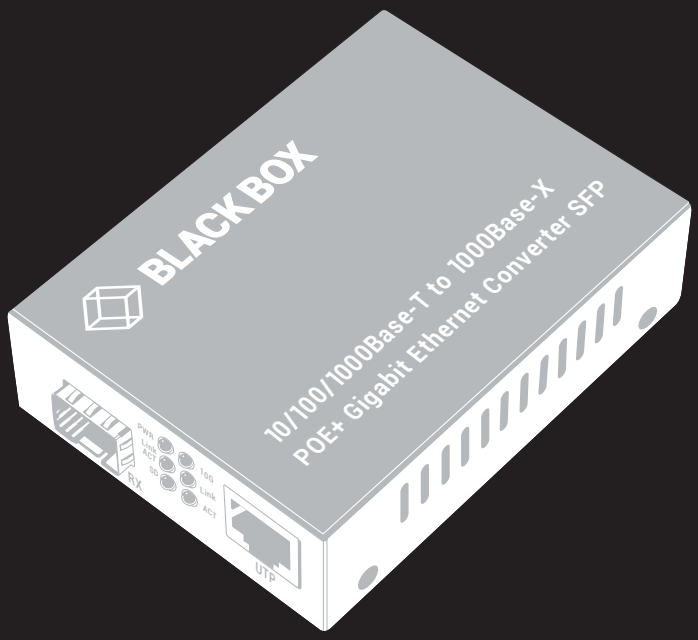
USER MANUAL

LGC215A-R2

10/100/1000BT TO 1000BX POE+ GB MEDIA CONVERTER

24/7 TECHNICAL SUPPORT AT 1.877.877.2269 OR VISIT BLACKBOX.COM



BLACK BOX®

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CHAPTER 1: SPECIFICATIONS

TABLE 1-1. SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Approvals	FCC Class B, CE, RoHS
Description	Pure Networking Copper to Fiber Media Converter - 10/100/1000BASE-TX to 1000BASE-X SFP PoE+
Connectors	(1) RJ-45, (1) SFP cage
Media Supported	UTP: CAT5/5e/6; Fiber: Multimode (MM): 50/125 µm or 62.5/125 µm; Fiber Single-mode (SM): 9/125 µm
Distance	CATx: 328 ft. (100 m)
Forwarding Rate	10 Mbps: 14,880 pps, 100 Mbps: 148,800 pps, 1000 Mbps: 1,480,000 pps
Frame Sizes	Up to 9216 bytes
Power	Media converter: 48 VDC, 72 W, barrel connector; External power adapter included: In-line type, 100-240 VAC, 50/60 Hz, 48 VDC, 1.5 A, IEC320 C13/C14, with US power cord
Standards	IEEE 802.3, IEEE 802.3U, 10/100BASE-TX, 100BASE-FX, IEEE 802.3x flow control for full-duplex mode, 802.3ab 1000BASE-T, 802.3z 1000BASE-X, 802.3at PoE+ (25W)
Dimensions	1" H x 3.7" W x 2.7" D (2.5 x 9.4 x 6.9 cm)
Weight	0.7 lb. (0.3 kg)
Temperature	Operating: 32 to 122° F (0 to 50° C); Storage: -4 to +158° F (-20 to +70° C)
Mounting	Standalone

CHAPTER 2: OVERVIEW

2.1 INTRODUCTION

The 10/100/1000BASE-T to 1000BASE-X-PoE+ Gigabit Ethernet Converter SFP supports Gigabit copper and fiber media for network connection. This converter can be used as a standalone unit.

2.2 WHAT'S INCLUDED

Before you start installing the Converter, verify that the package contains the following:

- 10/100/1000BASE-T to 1000BASE-X-PoE+ Gigabit Ethernet Converter SFP
- 48-VDC power adapter
- Power cord

If anything is missing or damaged, contact Black Box Technical Support at 877-877-2269 or info@blackbox.com

2.3 HARDWARE DESCRIPTION

Figures 2-1 and 2-2 show the front and back panels of the converter. Table 2-1 describes its components.

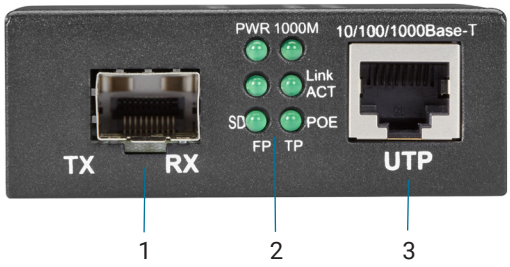


FIGURE 2-1. FRONT PANEL

FIGURE 2-2. BACK PANEL

TABLE 2-1. MEDIA CONVERTER COMPONENTS

NUMBER IN FIGURE 2-1 OR 2-2	COMPONENT	DESCRIPTION
1	SFP cage	SFP module installs here
2	LED indicators	See Table 2-2
3	RJ-45 connector	Links to RJ-45 cable
4	Barrel connector for power	Links to 47–57-VDC power supply
5	4-position DIP switch	Set for LFP or 10M operation

TABLE 2-2. LED INDICATORS

LED NAME	STATUS	DESCRIPTION
PWR	ON	Power is ON and normal
FX Link/ACT	ON	Connection Status display for fiber link. ON indicates that the fiber link is correctly connected
	Blinking	Packet is being transmitted through the FX end
	OFF	Port link is down
SD	ON	Fiber signal is detected
	OFF	No fiber signal detected
1000M	ON	Link is operating at 1000 Mbps
	OFF	Link is operating at 10/100 Mbps
TX Link/Act	ON	Connection status display for copper link. ON indicates that the link is correctly connected
	Blinking	Active status display of copper link. Packet is being transmitted through the TX end
	OFF	Port link is down
PoE	ON	Port is provided 52-VDC power toa remote powered device (PD)
	OFF	Port is not providing 52-VDC power to a remote powered device (PD)

TABLE 2-3. DIP SWITCHES

DIP SWITCH NAME	NUMBER (S)	STATUS	DESCRIPTION
LFP	1, 2	Both ON	Turn ON the Link Fault Passthrough (LFP) detection
	1, 2	Both OFF	Turn OFF the Link Fault Passthrough (LFP) detection
10M	3, 4	Both ON	Twisted-pair link is operating at 10 Mbps
	3, 4	Both OFF	Twisted-pair link is operating at 100/1000 Mbps

CHAPTER 3: LINK FAULT PASSTHROUGH (LFP)

The Link Fault Pass-Through (LFPT) is a troubleshooting feature that combines TX and FX LinkLoss from both the local and remote media converters, 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.

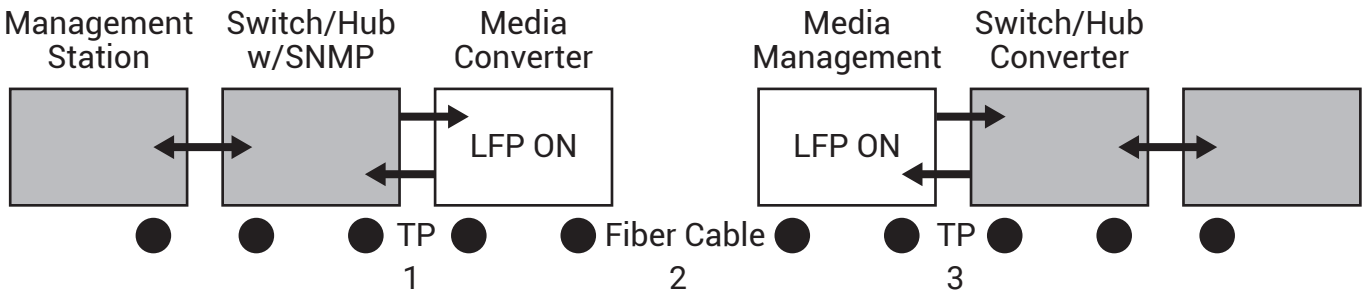


FIGURE 3-1. LFP FUNCTION

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 is passed through the media conversion and is observed at each end. It acts just like it would if the devices were directly connected.

CHAPTER 4: INSTALLING THE CONVERTER

Follow these steps to install the PoE+ Media converter:

1. Turn off the power of the device/station in a network to which the Switch will be attached.
2. Ensure that there is no activity in the network.
3. Install the SFP module.

TABLE 4-1. COMPATIBLE SFPS

PART NUMBER	DESCRIPTION
LFP411	SFP - 1250-Mbps, Extended Diagnostics, 850-nm Multimode Fiber, 550-m, LC
LFP412	SFP - 1250-Mbps, Extended Diagnostics, 1310-nm Multimode Fiber, 2-km, LC
LFP413	SFP - 1250-Mbps, Extended Diagnostics, 1310-nm Single-Mode Fiber, 10-km, LC
LFP414	SFP - 1250-Mbps, Extended Diagnostics, 1310-nm Single-Mode Fiber, 30-km, LC
LFP418	SFP - 1250-Mbps, Extended Diagnostics, 1550-nm Single-Mode Fiber, 80-km, LC
LFP420, LFP421	SFP - 1250-Mbps, Extended Diagnostics, 1550-nm TX, 1310-nm RX, Simplex, Single-Mode Fiber, 10-km, LC; SFP - 1250-Mbps, Extended Diagnostics, 1310-nm TX, 1550-nm RX, Simplex Single-Mode Fiber, 10-km, LC
LFP416	SFP - 1250-Mbps, Extended Diagnostics, 10/100/1000BASE-T, SGMII Interface, RJ-45

NOTE: LFP420, LFP421 are single-strand fiber SFPs, so they must be used in pairs.

NOTE: Use the LFP416 for a copper interface.

NOTE: Only the built-in copper interface will do PoE.

4. Attach a fiber cable from the Switch to the fiber network.
5. Attach a CAT5/5e/6 UTP cable from the 10/100/1000BASE-T network to the RJ-45 port on the switch.
6. Connect the 48-VDC power adapter to the switch and verify that the Power LED lights up.
7. Turn on the power of the device/station, the TX Link and FX Link LEDs should light when all cables are attached.

CHAPTER 5: POE FUNCTION

Before your installation, we recommended that you check your network environment. If there is an IEEE 802.3at/802.3af device you need to power on, the switch can provide a way to supply power for this Ethernet device conveniently and easily. The Switch equips an AC-DC adapter with 52-VDC input and it injects the DC power into the pin of the twisted pair cable (Pin 1, 2, 3 and 6).

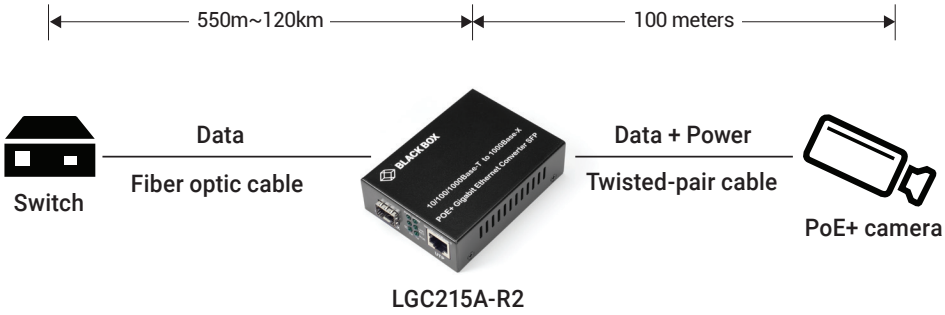


FIGURE 5-1. POE INSTALLATION

APPENDIX A: TWISTED-PAIR AND FIBER CABLES

A.1 RJ-45 CABLE PIN ASSIGNMENT

There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following diagrams show the pin allocation and color of straight cable and crossover cable connections.

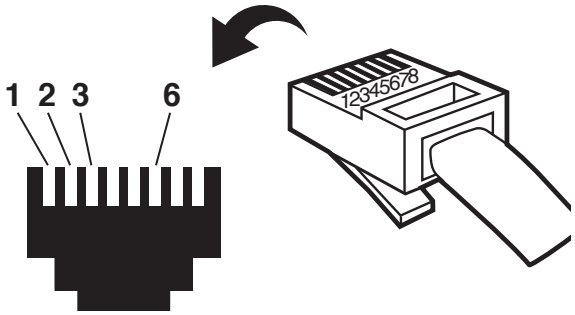
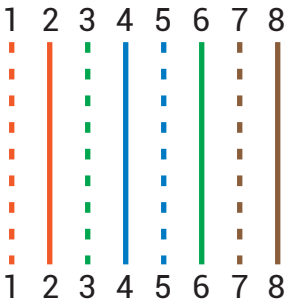


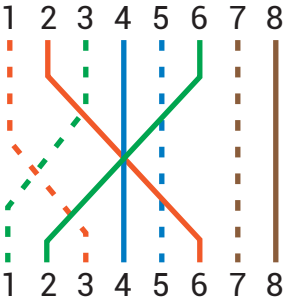
FIGURE A-1. RJ-45 CONNECTOR PINNING

STRAIGHT- THROUGH CABLE PINNING



SIDE 1	SIDE 2
1 - White/Orange	1 - White/Orange
2 - Orange	2 - Orange
3 - White/Green	3 - White/Green
4 - Blue	4 - Blue
5 - White/Blue	5 - White/Blue
6 - Green	6 - Green
7 - White/Brown	7 - White/Brown
8 - Brown	8 - Brown

CROSSOVER CABLE PINNING



SIDE 1	SIDE 2
1 - White/Orange	1 - White/Green
2 - Orange	2 - Green
3 - White/Green	3 - White/Orange
4 - Blue	4 - Blue
5 - White/Blue	5 - White/Blue
6 - Green	6 - Orange
7 - White/Brown	7 - White/Brown
8 - Brown	8 - Brown

FIGURE A-1. STRAIGHT-THROUGH AND CROSSOVER CABLE PINNING

NOTE: Make sure your connected cables have the correct pin assignment and color as above picture before deploying the cables into your network.

APPENDIX A: TWISTED-PAIR AND FIBER CABLES

A.2 FIBER OPTIC CABLE

TABLE A-1. FIBER OPTIC PATCH CABLE

STANDARD	FIBER TYPE	CABLE SPECIFICATION
1000BASE-SX (850 nm)	Multimode	50/125 µm or 62.5/125 µm
1000BASE-LX (1300 nm)	Multimode	50/125 µm or 62.5/125 µm
	Single-mode	9/125 µm

APPENDIX B: REGULATORY INFORMATION

B.1 FCC STATEMENT

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an experienced radio/TV technician for help.

CAUTION:

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

To meet FCC requirements, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

This digital apparatus does not exceed the Class B 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 classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

APPENDIX B: REGULATORY INFORMATION

B.2 NOM STATEMENT

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.
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 a 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 connectado 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 fisica 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 lineas de energia.
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 objectos liquidos 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: Objectos 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.

APPENDIX C: DISCLAIMER/TRADEMARKS

C.1 DISCLAIMER

Black Box Corporation shall not be liable for damages of any kind, including, but not limited to, punitive, consequential or cost of cover damages, resulting from any errors in the product information or specifications set forth in this document and Black Box Corporation may revise this document at any time without notice.

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NOTES

NOTES

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