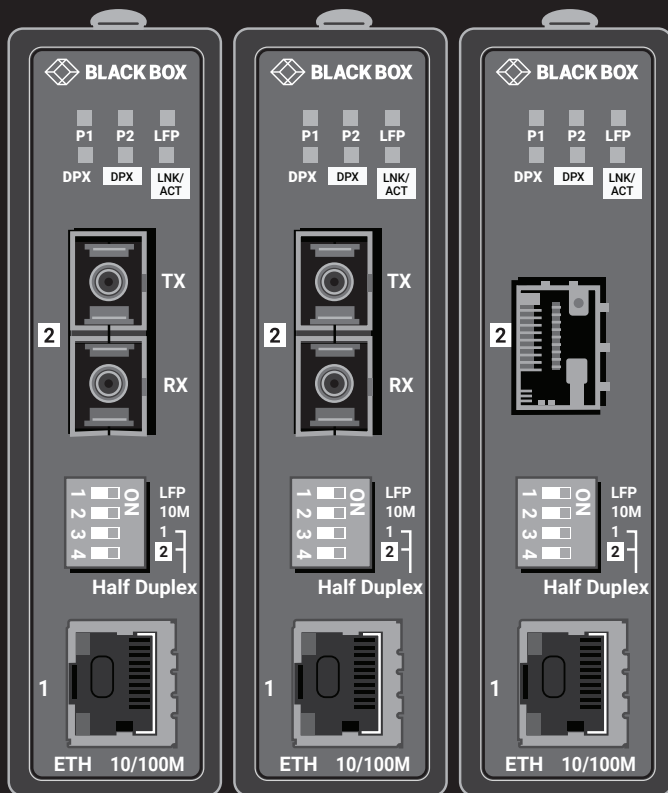


# QUICK INSTALL GUIDE/USER MANUAL

LMC280A, LMC281A, LMC282A, LGC280A, LGC281A, LGC282A

# INDUSTRIAL MEDIA CONVERTERS

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



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## QUICK INSTALLATION GUIDE

### STEP 1: CHECK THE PACKAGE CONTENTS

Before installation, make sure you have all of the package contents available.

#### Package Contents

- ◆ (1) Fast Ethernet or Gigabit Industrial Media Converter unit
- ◆ (1) Wallmounting kit (2 brackets, 8 screws)
- ◆ (1) DIN Rail kit (installed)
- ◆ (1) 4-position terminal block (LMC280A, LMC281A, LMC282A models only)
- ◆ (1) 6-position terminal block (LGC280A, LGC281A, LGC282A models only)
- ◆ (1) Dust cover

#### You Will Also Need

- ◆ (1) Power supply
- ◆ (1) Fiber SFP module (required for LMC280A and LGC280A models only)

### STEP 2: DIN RAIL MOUNTING

NOTE: The DIN rail kit is already installed on the media converter.

### STEP 3: WALLMOUNTING

1. Screw the two pieces of the wallmount kit onto both sides of the media converter. A total of eight screws are required, as shown below.

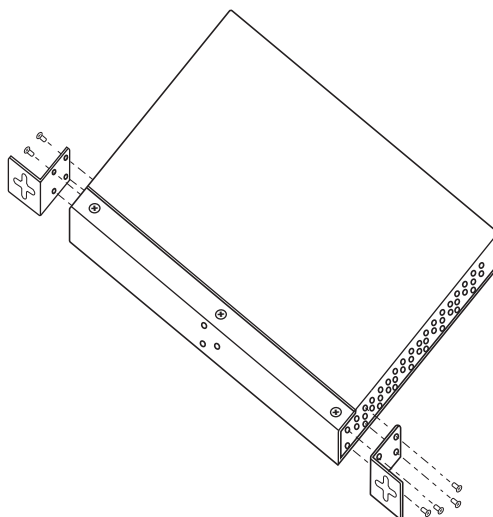


FIGURE Q-1. ATTACHING THE WALLMOUNT BRACKETS

2. Use the media converter, with wallmount plates attached, as a guide to mark the correct locations of the four screws.
3. Insert four screw heads through the large parts of the keyhole-shaped apertures, and then slide the media converter downwards. Tighten the four screws for added stability.

## QUICK INSTALLATION GUIDE

### STEP 4: NETWORK CONNECTION

The device has a standard Ethernet port. According to the link type, the device uses CAT3, 4, 5, 5e UTP cables to connect to any other network devices (PCs, servers, switches, routers, or hubs).

### STEP 5: DIP SWITCH SETTINGS

Set the DIP switches as described in the tables shown next.

#### LFP (LINK FAULT PROTECTION) DIP SWITCH ON THE LMC280A, LMC281A, LMC282A

TABLE Q-1. LFP DIP SWITCH

NUMBER	POSITION	DESCRIPTION
1	ON	LFP mode enable
	OFF	LFP mode disable
2	ON	10-Mbps Ethernet speed
	OFF	10/100 Mbps autonegotiating Ethernet speed
3	ON	Half-duplex Ethernet
	OFF	Half-duplex/full duplex autonegotiating Ethernet
4	ON	Half-duplex fiber
	OFF	Full duplex fiber

#### RELAY FUNCTION DIP SWITCH ON THE LGC280A, LGC281A, LGC282A

TABLE Q-2. RELAY FUNCTION DIP SWITCH

NUMBER	POSITION	DESCRIPTION
1, 2	OFF	Relay function disable
1	ON	PWR-1 failure, relay enable
2	ON	PWR-2 failure, relay enable
1, 2	ON	PWR-1 or PWR-2 failure, relay enable

### STEP 6: TERMINAL BLOCK WIRING

The media converter supports dual redundant power supplies (not included) connected via the 4- or 6-pin terminal block.

NOTE: To order a suitable power supply, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com)

STEP 5A: Insert the negative/positive wires into the V-/V+ terminals, respectively.

STEP 5B: To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

# CHAPTER 1: SPECIFICATIONS

## 1.1 LMC280A, LMC281A, LMC282A

See the table below.

TABLE 1-1. LMC280A, LMC281A, LMC282A SPECIFICATIONS

PHYSICAL PORTS	
CONNECTORS	(1) 10/100BASE-TX RJ-45 Auto MDI/MDIX port; LMC280A: (1) SFP cage; LMC281A: (1) Multimode SC port; LMC282A: (1) Single-mode SC port
FIBER PORT SPECIFICATIONS (LMC280A)	LMC280A: Depends on SFP installed; LMC281A, LMC282A: See below
FIBER PORTS SPECIFICATIONS (LMC281A, LMC282A)	
STANDARD	100BASE-FX
MODE	LMC281A: Multimode; LMC282A: Single-mode
FIBER DIAMETER	LMC281A: 62.5/125 $\mu\text{m}$ , 50/125 $\mu\text{m}$ ; LMC282A: 9/124 $\mu\text{m}$
TYPICAL DISTANCE	LMC281A: 2 km; LMC282A: 30 km
WAVELENGTH	LMC281A, LMC282A: 1310 nm
MAXIMUM OUTPUT OPTICAL POWER	LMC281A: -14 dBm; LMC282A: -8 dBm
MINIMUM OUTPUT OPTICAL POWER	LMC281A: -23.5 dBm; LMC282A: -15 dBm
MAXIMUM INPUT OPTICAL POWER (SATURATION)	LMC281A, LMC282A: 0 dBm
MINIMUM INPUT OPTICAL POWER (SENSITIVITY)	LMC281A: -31 dBm; LMC282A: -34 dBm
LINK BUDGET	LMC281A: 7.5 dB; LMC282A: 19 dB
TECHNOLOGY	
ETHERNET STANDARDS	IEEE 802.3 for 10BASE-T IEEE 802.3u for 100BASE-TX and 100BASE-FX IEEE 802.3x for Flow control
PROCESSING	Store-and-Forward
DIP SWITCH SETTING	DIP-Switch 1 for LFP mode selection: ON: enable; OFF: disable; DIP-Switch 2 for Ethernet speed selection: ON: 10 Mbps; OFF: 10/100 Mbps Auto-negotiate; DIP-Switch 3 for Ethernet full/half duplex selection: ON: Half-duplex; OFF: Full/Half-Duplex Auto-negotiate; DIP-Switch 4 for fiber full/half duplex selection: ON: Half-Duplex; OFF: Full-Duplex



**CHAPTER 1: SPECIFICATIONS****TABLE 1-1 (CONTINUED). LMC280A, LMC281A, LMC282A SPECIFICATIONS**

<b>LED INDICATORS</b>	
<b>POWER LED</b>	(2) Power LEDs (Green)
<b>10/100BASE-TX RJ-45 PORT LED</b>	Green for port Link/Act: ON: Link up; Blinking: Acting; OFF: Link down; Amber for 100 Mbps/10 Mbps indicator: ON: Link at 100 Mbps; OFF: Link at 10 Mbps Green for port duplex indicator: ON: Full-Duplex; OFF: Half-Duplex
<b>100BASE-FX FIBER PORT LED</b>	Green for fiber port Link/Act: ON: Link up; Flash: Acting; OFF: Link down; Green for fiber port duplex indicator: ON: Full-Duplex; OFF: Half-Duplex
<b>LFP STATUS LED</b>	Amber LED: ON: LFP function fail; OFF: LFP function disable
<b>POWER</b>	
<b>INPUT POWER</b>	Dual 12–48 VDC power input at 4-pin terminal block
<b>POWER CONSUMPTION (TYP.)</b>	2.2 Watts
<b>OVERLOAD CURRENT PROTECTION</b>	Present
<b>REVERSE POLARITY PROTECTION</b>	Present on terminal block
<b>PHYSICAL CHARACTERISTICS</b>	
<b>ENCLOSURE</b>	IP-30
<b>DIMENSIONS</b>	3.74" H x 1.03" W x 2.76" D (9.5 x 2.6 x 7.0 cm)
<b>WEIGHT</b>	LMC280A: 0.47 lb. (213 g); LMC281A, LMC282A: 0.48 lb. (218 g)
<b>ENVIRONMENTAL</b>	
<b>STORAGE TEMPERATURE</b>	-40 to +185 F (-40 to +85°C)
<b>OPERATING TEMPERATURE</b>	-40 to +158°F (-40 to +70° C)
<b>OPERATING HUMIDITY</b>	5 to 95%, noncondensing
<b>REGULATORY APPROVALS</b>	
<b>EMI</b>	FCC Part 15, CISPR (EN55022) class A
<b>EMS</b>	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (SURGE), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
<b>SHOCK</b>	IEC60068-2-27
<b>FREE FALL</b>	IEC60068-2-32
<b>VIBRATION</b>	IEC60068-2-6
<b>SAFETY</b>	EN60950-1

# CHAPTER 1: SPECIFICATIONS

## 1.2 LGC280A, LGC281A, LGC282A

See the table below.

TABLE 1-2. LGC280A, LGC281A, LGC282A SPECIFICATIONS

PHYSICAL PORTS	
CONNECTORS	(1) 10/100/1000BASE-TX RJ-45 Auto MDI/MDIX port; LGC280A: (1) SFP cage; LGC281A: (1) Multimode SC port; LGC282A: (1) Single-mode SC port
FIBER PORT SPECIFICATIONS (LGC280A)	LGC280A: Depends on SFP installed; LGC281A, LGC282A: See below
FIBER PORTS SPECIFICATIONS (LGC281A, LGC282A)	
STANDARD	LGC281A: 1000BASE-SX; LGC282A: 1000BASE-LX
MODE	LGC281A: Multimode; LGC282A: Single-mode
FIBER DIAMETER	LGC281A: 62.5/125 $\mu\text{m}$ , 50/125 $\mu\text{m}$ ; LGC282A: 9/125 $\mu\text{m}$
TYPICAL DISTANCE	LGC281A: 550 m; LGC282A: 10 km
WAVELENGTH	LGC281A: 850 nm; LGC282A: 1310 nm
MAXIMUM OUTPUT OPTICAL POWER	LGC281A: -4 dBm; LGC282A: -3 dBm
MINIMUM OUTPUT OPTICAL POWER	LGC281A, LGC282A: -9.5 dBm
MAXIMUM INPUT OPTICAL POWER (SATURATION)	LGC281A: 0 dBm; LGC282A: -3 dBm
MINIMUM INPUT OPTICAL POWER (SENSITIVITY)	LGC281A: -18 dBm; LGC282A: -20 dBm
LINK BUDGET	LGC281A: 8.5 dB; LGC282A: 10.5 dB
TECHNOLOGY	
ETHERNET STANDARDS	IEEE 802.3 for 10BASE-T IEEE 802.3u for 100BASE-TX IEEE 802.3ab for 1000BASE-T IEEE 802.3z for 1000BASE-X
JUMBO FRAME	10240 bytes
LED INDICATORS	
POWER LED	(2) Power LEDs (Green)
FAULT LED	Amber: Indicates power failure
10/100/1000BASE-TX RJ-45 PORT LED	Green for port Link/Act; Amber for 100 Mbps indicator
1000BASE-FX FIBER PORT LED	Green for port Link/Act
FAULT CONTACT	
RELAY	Relay output to carry capacity of 1A at 24 VDC
DIP SWITCH	Relay output function enable/disable by DIP switch





**CHAPTER 1: SPECIFICATIONS****TABLE 1-2 (CONTINUED). LGC280A, LGC281A, LGC282A SPECIFICATIONS**

<b>POWER</b>	
<b>INPUT POWER</b>	Dual 12–48 VDC power input at 4-pin terminal block
<b>POWER CONSUMPTION (TYP.)</b>	3.5 Watts
<b>OVERLOAD CURRENT PROTECTION</b>	Present
<b>REVERSE POLARITY PROTECTION</b>	Present
<b>PHYSICAL CHARACTERISTICS</b>	
<b>ENCLOSURE</b>	IP-30
<b>DIMENSIONS</b>	5.68" H x 1.03" W x 3.74" D (14.4 x 2.6 x 9.4 cm)
<b>WEIGHT</b>	LGC280A: 0.83 lb. (380 g); LGC281A, LGC282A: 0.88 lb. (400 g)
<b>ENVIRONMENTAL</b>	
<b>STORAGE TEMPERATURE</b>	-40 to +185 F (-40 to +85°C)
<b>OPERATING TEMPERATURE</b>	-40 to +158°F (-40 to +70° C)
<b>OPERATING HUMIDITY</b>	5 to 95%, noncondensing
<b>REGULATORY APPROVALS</b>	
<b>EMI</b>	FCC Part 15, CISPR (EN55022) class A
<b>EMS</b>	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
<b>SHOCK</b>	IEC60068-2-27
<b>FREE FALL</b>	IEC60068-2-32
<b>VIBRATION</b>	IEC60068-2-6
<b>SAFETY</b>	EN60950-1
<b>MTBF</b>	LGC280A: 650,069 hours; LGC281A: 597,923 hours; LGC282A: 611,417 hours

# CHAPTER 1: SPECIFICATIONS

## 1.3 COMPATIBLE FIBER SFP MODULES FOR USE WITH LMC280A, LGC280A

See the table below.

TABLE 1-3. COMPATIBLE FIBER SFP MODULES FOR USE WITH LMC280A, LGC280A

PART NUMBER	DESCRIPTION	DISTANCE
<b>100-MBPS CONNECTIONS (FOR USE WITH LMC280A)</b>		
LFP401	SFP/155 Extended Diagnostics, 850-nm, Multimode, LC	2 km
LFP402	SFP/155 Extended Diagnostics, 1310-nm, Multimode, LC	2 km
LFP403	SFP/155 Extended Diagnostics, 1310-nm, Single-mode, LC	30 km
LFP404	SFP/155 Extended Diagnostics, 1310-nm, Single-mode, LC	60 km
<b>1-GBPS CONNECTIONS (FOR USE WITH LGC280A)</b>		
LFP411	SFP 1250-Mbps, 850-nm Multimode Fiber, LC	550 m
LFP412	SFP 1250-Mbps, 1310-nm Multimode Fiber, LC	2 km
LFP413	SFP 1250-Mbps, 1310-nm Single-mode Fiber, LC	10 km
LFP414	SFP 1250-Mbps, 1310-nm Single-mode Fiber, LC	40 km
LFP418	SFP 1250, Extended Diagnostics, 1550-nm Single-mode Fiber, LC	80 km
LFP420	SFP 1250-Mbps, 1550-nm TX, 1310-nm RX, Single-Mode Fiber, Simplex LC	10 km
LFP421	SFP 1250-Mbps, 1310-nm TX, 1550-nm RX, Single-Mode Fiber, Simplex LC	10 km

NOTE: Black Box media converters will also support generic SFP modules.



## CHAPTER 2: OVERVIEW

### 2.1 INTRODUCTION

The Fast Ethernet Industrial Media Converters convert a 10/100BASE-T(X) interface to a 100BASE-FX interface to allow you to extend communication distance using optical fiber. The Gigabit Ethernet Industrial Media Converters convert a 10/100/1000BASE-T(X) interface to a 1000BASE-FX interface.

Both the Fast Ethernet and Gigabit Ethernet Media Converters are encased in a rigid IP-30 housing and have a wide operating temperature range from -40 to 158° F (-40 to 70° C) for use in harsh industrial environments. The converters have dual power inputs, each accepting a wide voltage range from 12 to 48 VDC.

The Fast Ethernet models also support the LFP (Link Fault Pass-through) feature. LFP shuts down both links when one fails. Use the DIP switch to enable the LFP function.

The Gigabit Ethernet models support the Relay Output Enable/Disable function via a DIP switch.

### 2.2 FEATURES

- ♦ Fast Ethernet models support one 10/100BASE-T(X) auto-negotiation and auto-MDI/MDI-X port
- ♦ Gigabit models support one 10/100/1000BASE-T(X) auto-negotiation and auto-MDI/MDI-X port
- ♦ Fast Ethernet models provide one 100BASE-X multimode/single-mode or SFP port
- ♦ Gigabit models provide one 1000BASE-X multimode/single-mode or SFP port
- ♦ All models support Ethernet to fiber or Ethernet to SFP port
- ♦ Fast Ethernet models offer LFP (Link Fault Pass-through) function via a DIP switch
- ♦ All models operate in full/half duplex mode
- ♦ All models use store-and-forward transmission
- ♦ All have highly reliable rigid IP-30 housing
- ♦ All mount on a DIN-Rail or wall
- ♦ Gigabit models support jumbo frame up to 10240 bytes
- ♦ Gigabit models have a relay output to carry capacity of 1 A at 24 VDC

### 2.3 AVAILABLE MODELS

Six models are available:

- ♦ Fast Ethernet Industrial Media Converter SFP (LMC280A)
- ♦ Fast Ethernet Industrial Media Converter MM SC (LMC281A)
- ♦ Fast Ethernet Industrial Media Converter SM SC (LMC282A)
- ♦ Gigabit Ethernet Industrial Media Converter SFP (LGC280A)
- ♦ Gigabit Ethernet Industrial Media Converter MM SC (LGC281A)
- ♦ Gigabit Ethernet Industrial Media Converter SM SC (LGC282A)

## CHAPTER 2: OVERVIEW

### 2.4 WHAT'S INCLUDED

#### Package Contents

- (1) Fast Ethernet or Gigabit Industrial Media Converter unit
- (1) Wallmounting kit (2 brackets, 8 screws)
- (1) DIN Rail kit (installed)
- (1) 4-position terminal block (LMC280A, LMC281A, LMC282A models only)
- (1) 6-position terminal block (LGC280A, LGC281A, LGC282A models only)
- (1) Dust cover

#### You Will Also Need

- (1) Power supply
- (1) Fiber SFP module (required for LMC280A and LGC280A models only)

### 2.5 HARDWARE DESCRIPTION

#### 2.5.1 LMC280A, LMC281A, LMC282A

Figure 2-1 shows the front panels of the LMC280A, LMC281A, and LMC282A units. Table 2-1 describes their components.

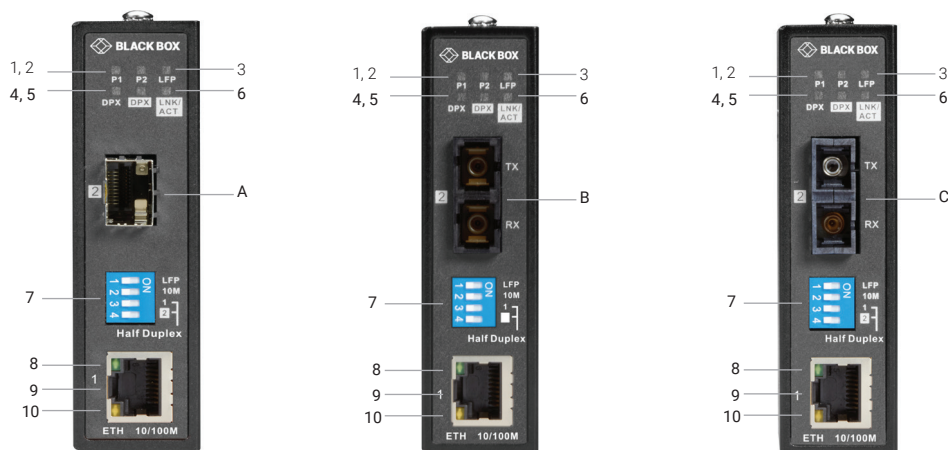


FIGURE 2-1. FRONT PANELS OF THE FAST ETHERNET MEDIA CONVERTERS

## CHAPTER 2: OVERVIEW

TABLE 2-1. FRONT-PANEL COMPONENTS

NUMBER	COMPONENT	DESCRIPTION
1	(1) P1 LED	Lights when power to the unit is on
2	(1) P2 LED	Lights when redundant power to the unit is on
3	(1) LFP LED	Lights when link fault is detected
4	(1) DPX LED	Copper port duplex LED: Green for port duplex indicator: ON: Full-Duplex, OFF: Half-Duplex
5	(1) DPX LED	Fiber port duplex LED: Green for port duplex indicator: ON: Full-Duplex, OFF: Half-Duplex
6	(1) Link/Activity LED	Link/Activity LED: Green for fiber port Link/Act: ON: Link up, Flashing: Acting, OFF: Link down
A	(1) SFP Slot	Fiber SFP module installs here
B	(2) SC connectors	Provides multimode fiber connection
C	(2) SC connectors	Provides single-mode fiber connection
7	(1) 4-position DIP switch	Sets Link Fault Protection (LFP) enable/disable
8	(1) Link/Activity LED	Green for Link/Act: ON: Link up, Flashing: Acting, OFF: Link down
9	(1) Speed LED	Amber for 100 Mbps/10 Mbps indicator: ON: Link at 100 Mbps, OFF: Link at 10 Mbps
10	(1) RJ-45 port	10/100 RJ-45 port links to Fast Ethernet

Figure 2-2 shows the top panel common to all of the LMC280A, LMC281A, and LMC282A units. Table 2-2 describes its components.

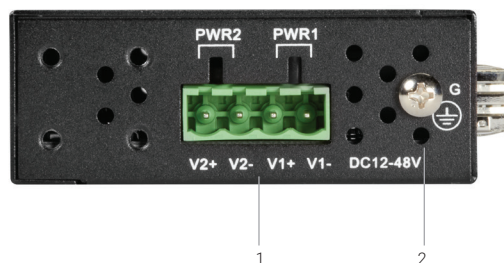


FIGURE 2-2. TOP PANEL COMMON TO ALL OF THE FAST ETHERNET MEDIA CONVERTERS

TABLE 2-2. TOP-PANEL COMPONENTS

NUMBER	COMPONENT	DESCRIPTION
1	(1) 4-position terminal block	Carries 12-48 VDC power to the media converter
2	(1) Grounding screw	Connects to chassis ground

# CHAPTER 2: OVERVIEW

Figure 2-3 shows the back panel common to all of the LMC280A, LMC281A, and LMC282A units. Table 2-3 describes its components.

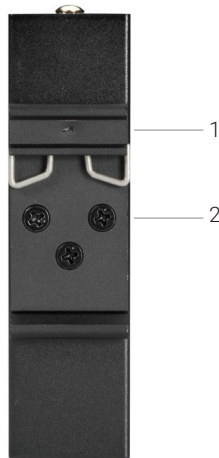


FIGURE 2-3. BACK PANEL COMMON TO ALL OF THE FAST ETHERNET MEDIA CONVERTERS

**TABLE 2-3. BACK-PANEL COMPONENTS**

NUMBER	COMPONENT	DESCRIPTION
1	(1) DIN rail bracket	Use to mount the media converter on a DIN rail
2	(3) screws	Attaches the DIN rail bracket to the media converter

## 2.5.2 LGC280A, LGC281A, LGC282A

Figure 2-4 shows the front panels of the LGC280A, LGC281A, and LGC282A units. Table 2-4 describes their components.

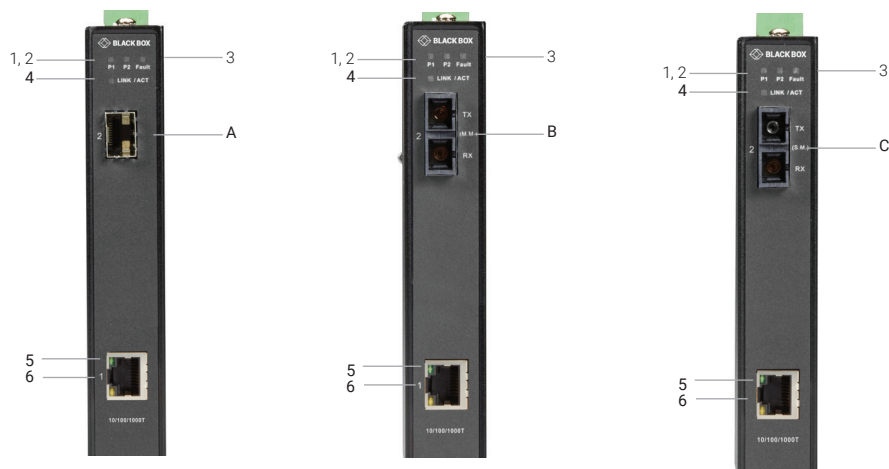


FIGURE 2-4. FRONT PANELS OF THE GIGABIT ETHERNET MEDIA CONVERTERS

**TABLE 2-4. FRONT-PANEL COMPONENTS**

NUMBER	COMPONENT	DESCRIPTION
1	(1) P1 LED	Lights when power to the unit is on
2	(1) P2 LED	Lights when redundant power to the unit is on
3	(1) Fault LED	Amber: Indicates power failure
4	(1) Link/Activity LED	10/100/1000BASE-T(X) RJ-45 Port Indicator: Green for port Link/Act.; Amber for 100 Mbps indicator
A	(1) SFP Slot	Fiber SFP module installs here
B	(2) SC connectors	Provides multimode fiber connection
C	(2) SC connectors	Provides single-mode fiber connection
5	(1) Link/Activity LED	1000BASE-X port indicator: Green for port Link/Act
6	(1) RJ-45 port	10/100/1000 RJ-45 port links to Gigabit Ethernet

Figure 2-5 shows the top panel common to all of the LGC280A, LGC281A, and LGC282A units. Table 2-5 describes its components.



FIGURE 2-5. TOP PANEL COMMON TO ALL OF THE GIGABIT ETHERNET MEDIA CONVERTERS

**TABLE 2-5. TOP-PANEL COMPONENTS**

NUMBER	COMPONENT	DESCRIPTION
1	(1) 6-position terminal block	Carries 12-48 VDC power to the media converter
2	(1) 2-position DIP switch	Enables or disables Relay function
3	(1) Grounding screw	Connects to chassis ground

Figure 2-6 shows the back panel common to all of the LGC280A, LGC281A, and LGC282A units. Table 2-6 describes its components.

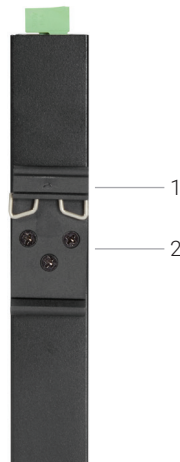


FIGURE 2-6. BACK PANEL COMMON TO ALL OF THE GIGABIT ETHERNET MEDIA CONVERTERS

**TABLE 2-6. BACK-PANEL COMPONENTS**

NUMBER	COMPONENT	DESCRIPTION
1	(1) DIN rail bracket	Use to mount the media converter on a DIN rail
2	(3) screws	Attaches the DIN rail bracket to the media converter



# CHAPTER 3: CONFIGURATION

## 3.1 POWER CONNECTION GUIDE (LMC280A, LMC281A, LMC282A)

See the diagram below.

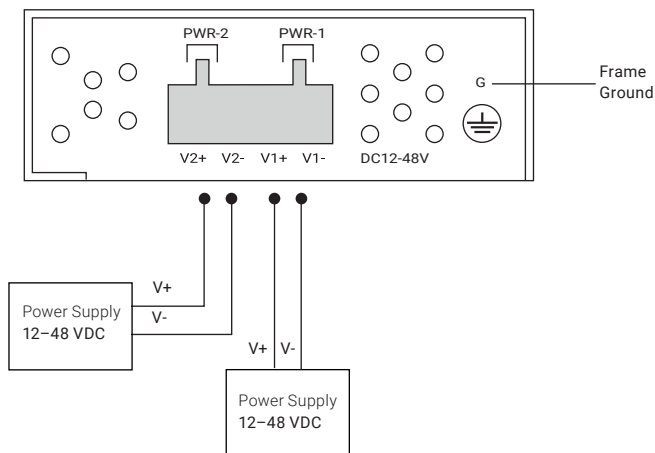


FIGURE 3-1. POWER CONNECTION GUIDE FOR FAST ETHERNET MEDIA CONVERTERS

## 3.2 POWER CONNECTION GUIDE (LGC280A, LGC281A, LGC282A)

See the diagram below.

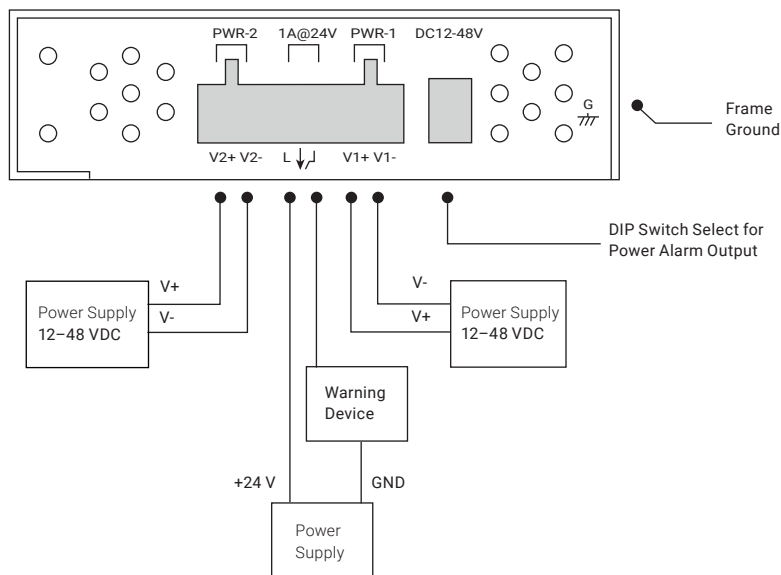


FIGURE 3-2. POWER CONNECTION GUIDE FOR GIGABIT ETHERNET MEDIA CONVERTERS

## CHAPTER 3: CONFIGURATION

### 3.3 10/100BASE-TX OR 1000BASE-T ETHERNET PORT CONNECTIONS

#### 3.3.1 10/100BASE-TX ETHERNET PORT CONNECTIONS

TABLE 3-1. RJ-45 (8-PIN, MDI) PORT PINOUTS

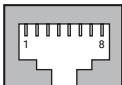
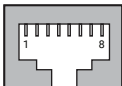
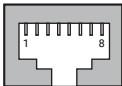
PIN NUMBER	SIGNAL	CONNECTOR
1	TX+	
2	RX-	
3	RX+	
6	RX-	

TABLE 3-2. RJ-45 (8-PIN, MDIX) PORT PINOUTS

PIN NUMBER	SIGNAL	CONNECTOR
1	RX+	
2	RX-	
3	TX+	
6	TX-	

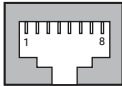
#### 3.3.2 1000BASE-T ETHERNET PORT CONNECTIONS

TABLE 3-3. RJ-45 (8-PIN, MDI) PORT PINOUTS

PIN NUMBER	SIGNAL	CONNECTOR
1	BI_DA+	
2	BI_DA-	
3	BI_DB+	
4	BI_DC+	
5	BI_DC-	
6	BI_DB-	
7	BI_DD+	
8	BI_DD-	

# CHAPTER 3: CONFIGURATION

**TABLE 3-4. RJ-45 (8-PIN, MDIX) PORT PINOUTS**

PIN NUMBER	SIGNAL	CONNECTOR
1	BI_DB+	
2	BI_DB-	
3	BI_DA+	
4	BI_DD+	
5	BI_DD-	
6	BI_DA-	
7	BI_DC+	
8	BI_DC-	

### 3.3.3 RJ-45 (8-PIN) TO RJ-45 (8-PIN) STRAIGHT-THROUGH CABLE WIRING

See the diagram below.

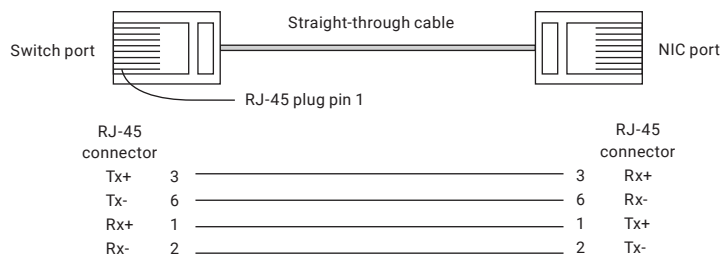


FIGURE 3-3. RJ-45 STRAIGHT-THROUGH WIRING DIAGRAM

### 3.3.4 RJ-45 (8-PIN) TO RJ-45 (8-PIN) CROSSOVER CABLE WIRING

See the diagram below.

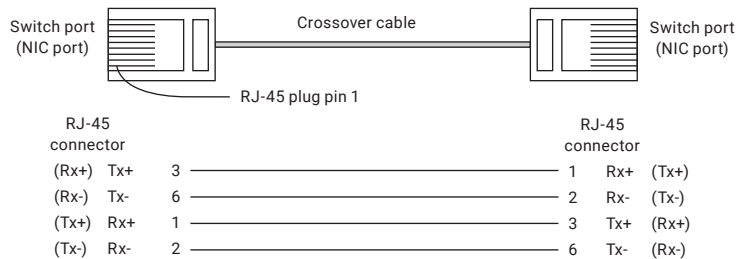


FIGURE 3-4. RJ-45 CROSSOVER WIRING DIAGRAM

# CHAPTER 3: CONFIGURATION

## 3.4 100BASE-FX OR 1000BASE-SX/LX ETHERNET PORT CONNECTIONS

### 3.4.1 SC PORT TO SC PORT CABLE WIRING

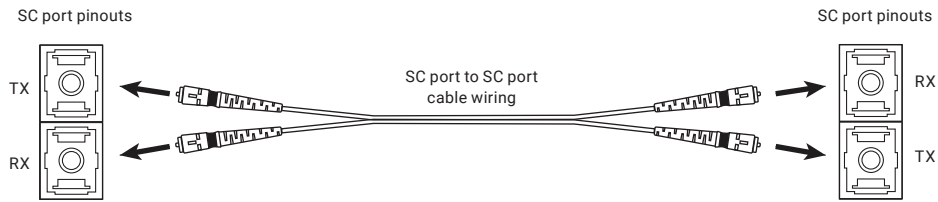


FIGURE 3-5. SC PORT TO SC PORT CABLE WIRING

### 3.4.2 ST PORT TO ST PORT CABLE WIRING

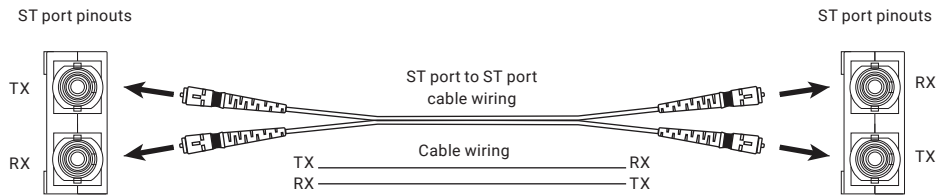


FIGURE 3-6. ST PORT TO ST PORT CABLE WIRING

### 3.4.3 LC PORT TO LC PORT CABLE WIRING

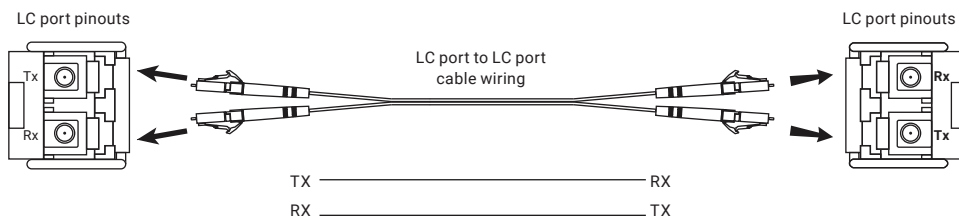


FIGURE 3-7. LC PORT TO LC PORT CABLE WIRING

## CHAPTER 3: CONFIGURATION

### 3.5 SETTING THE DIP SWITCHES

#### 3.5.1 LFP (LINK FAULT PROTECTION) DIP SWITCH ON THE LMC280A, LMC281A, LMC282A

**TABLE 3-5. LFP DIP SWITCH**

NUMBER	POSITION	DESCRIPTION
1	ON	LFP mode enable
	OFF	LFP mode disable
2	ON	10-Mbps Ethernet speed
	OFF	10/100 Mbps autonegotiating Ethernet speed
3	ON	Half-duplex Ethernet
	OFF	Half-duplex/full duplex autonegotiating Ethernet
4	ON	Half-duplex fiber
	OFF	Full duplex fiber

#### 3.5.2 RELAY FUNCTION DIP SWITCH ON THE LGC280A, LGC281A, LGC282A

**TABLE 3-6. RELAY FUNCTION DIP SWITCH**

NUMBER	POSITION	DESCRIPTION
1, 2	OFF	Relay function disable
1	ON	PWR-1 failure, relay enable
2	ON	PWR-2 failure, relay enable
1, 2	ON	PWR-1 or PWR-2 failure, relay enable

## CHAPTER 4: INSTALLATION

### 4.1 DIN RAIL MOUNTING

NOTE: The DIN rail kit is already installed on the media converter.

### 4.2 WALLMOUNTING

1. Screw the two pieces of the wallmount kit onto both sides of the media converter. A total of eight screws are required, as shown below.

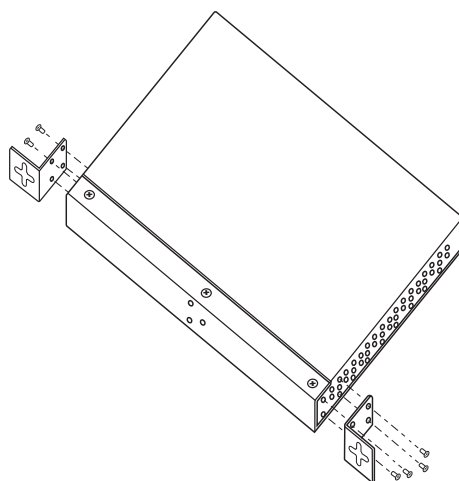


FIGURE 4-1. INSTALLING THE WALLMOUNT BRACKETS ON THE MEDIA CONVERTER

2. Use the media converter, with wallmount plates attached, as a guide to mark the correct locations of the four screws.
3. Insert four screw heads through the large parts of the keyhole-shaped apertures, and then slide the media converter downwards. Tighten the four screws for added stability.

### 4.3 NETWORK CONNECTION

The device has a standard Ethernet port. According to the link type, the device uses CAT3, 4, 5, 5e UTP cables to connect to any other network devices (PCs, servers, switches, routers, or hubs).

### 4.4 TERMINAL BLOCK WIRING

The media converter supports dual redundant power supplies (not included) connected via the 4- or 6-pin terminal block.

NOTE: To order a suitable power supply, contact Black Box Technical Support at 877-877-2269 or [info@blackbox.com](mailto:info@blackbox.com)

STEP 5A: Insert the negative/positive wires into the V-/V+ terminals, respectively.

STEP 5B: To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

# CHAPTER 5: APPLICATION DIAGRAMS

## 5.1 LMC280A, LMC281A, LMC282A LINK FAULT PASSTHROUGH (LFP) APPLICATION

The Fast Ethernet media converters support the Link Fault Passthrough (LFP) function. If one side of the link fails, the other side continues transmitting packets. An application diagram for this feature is shown below.

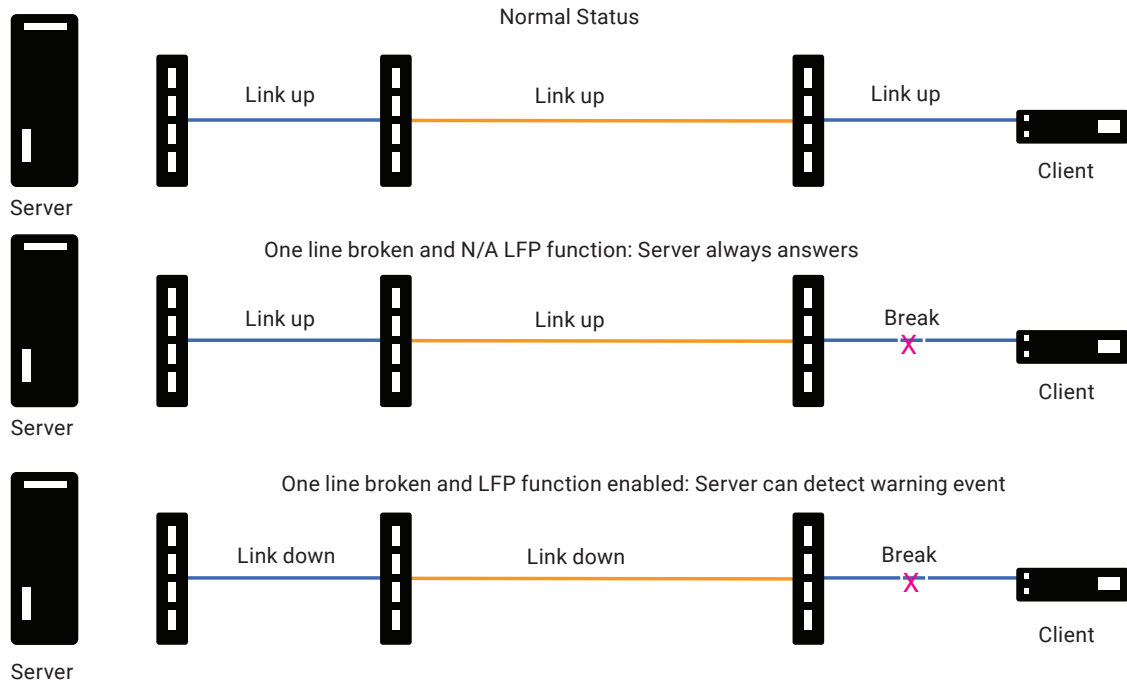


FIGURE 5-1. LFP FUNCTION

## 5.2 LGC280A, LGC281A, LGC282A POINT-TO-POINT APPLICATION

A point-to-point application is shown in the illustration below.

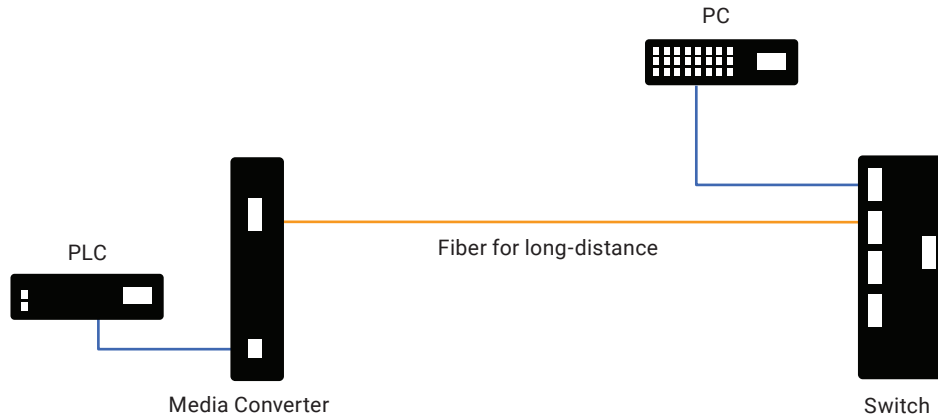


FIGURE 5-2. POINT-TO-POINT APPLICATION



# CHAPTER 6: DIMENSIONAL DIAGRAMS

## 6.1 LMC280A, LMC281A, LMC282A

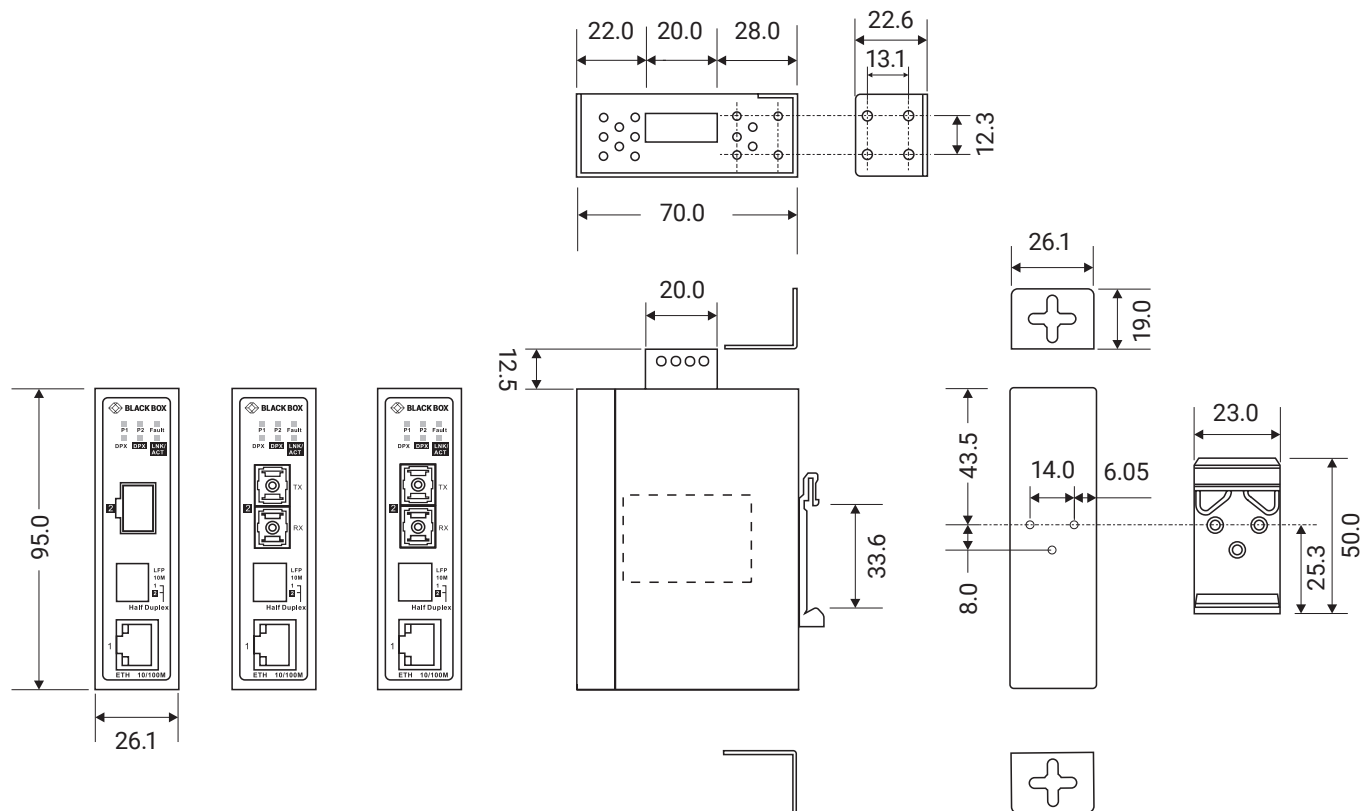


FIGURE 6-1. DIMENSIONAL DIAGRAM FOR FAST ETHERNET MEDIA CONVERTERS

NOTE: Dimensions are in millimeters (mm).

# CHAPTER 6: DIMENSIONAL DIAGRAMS

## 6.2 LGC280A, LGC281A, LGC282A

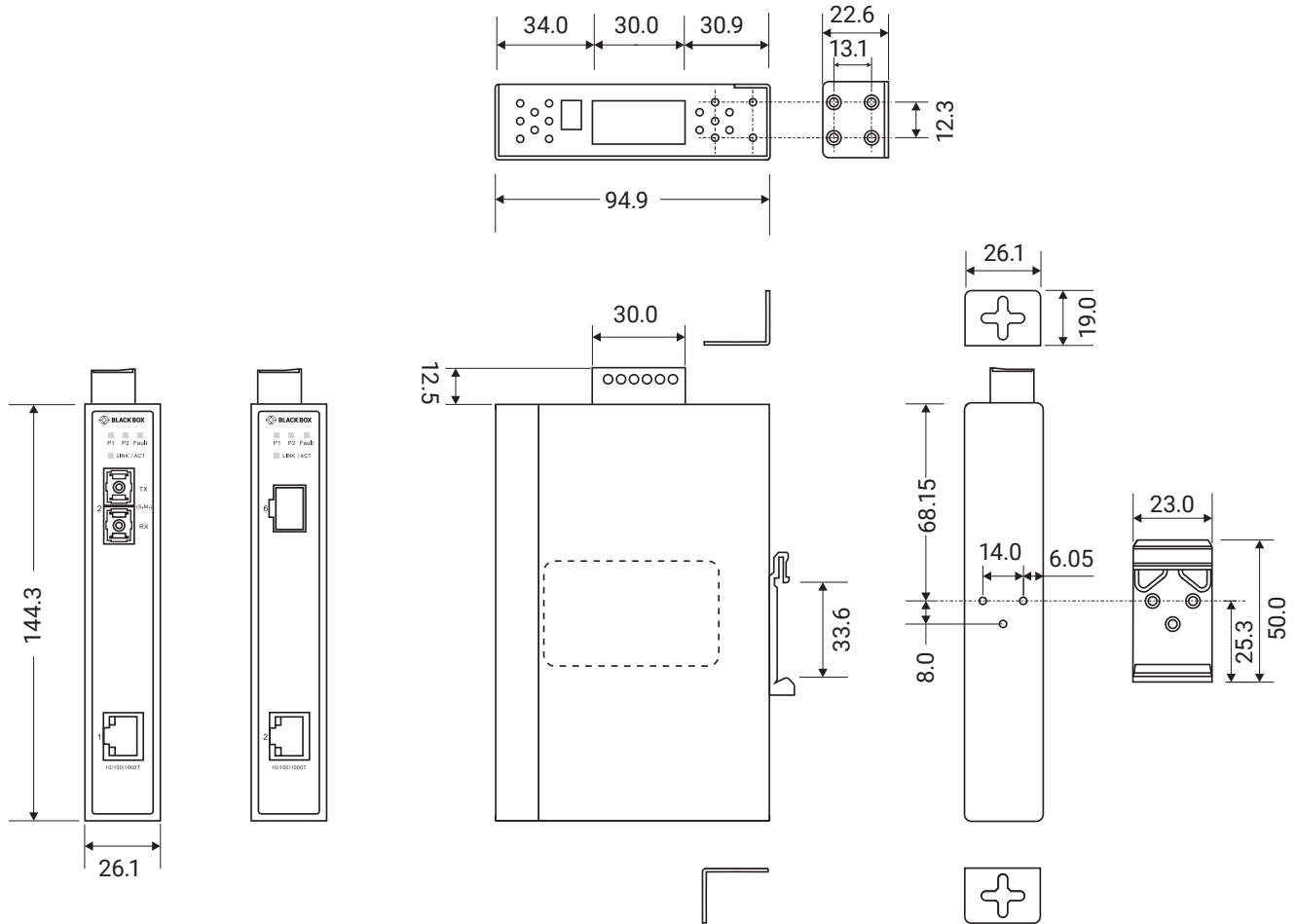


FIGURE 6-2. DIMENSIONAL DIAGRAM FOR GIGABIT ETHERNET MEDIA CONVERTERS

NOTE: Dimensions are in millimeters (mm).

## APPENDIX A: REGULATORY INFORMATION

### A.1 FCC STATEMENT

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.

### A.2 CE

This product complies with CE certifications.

### A.3 ROHS/WEEE

This product complies with ROHS/WEEE certifications.

## APPENDIX A: REGULATORY INFORMATION

### A.4 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 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.



## APPENDIX B: DISCLAIMER/TRADEMARKS

### B.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.

### B.2 TRADEMARKS USED IN THIS MANUAL

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Any other trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.



**NOTES**

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Lined area for notes, consisting of multiple horizontal dashed lines.





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