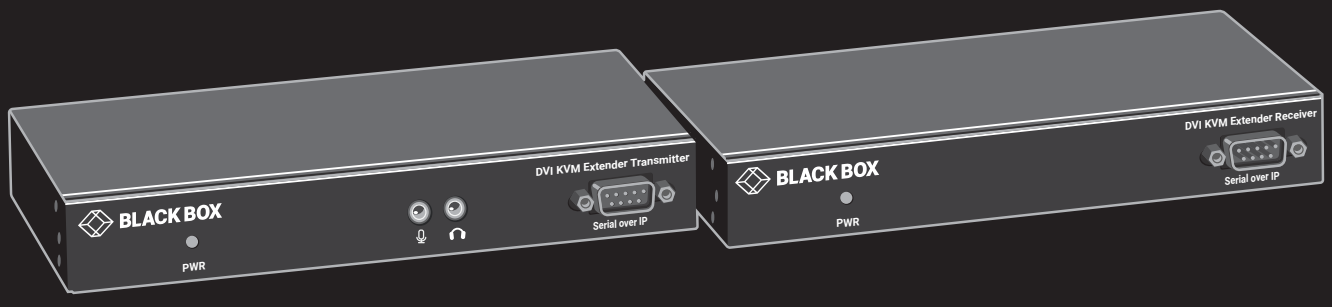
QUICK INSTALL GUIDE AND USER MANUAL

KVXLC-100, KVXLCF-100, KVXLC-200, KVXLCF-200

KVX SERIES DVI KVM EXTENDER

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



BLACK BOX®

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Follow these steps to install the extender:

1. If you have the fiber models, install the SFPs in the transmitter and receiver. Compatible SFPs from Black Box are listed in the table below.

COMPATIBLE SFP MODULES		
PART NUMBER	DESCRIPTION	DISTANCE
1-GBPS CONNECTIONS		
LFP441	SFP 1.25-Gb, 850-nm Multimode Fiber, LC	550 m
LFP442	SFP 1.25-Gb, 1310-nm Single-mode Fiber, LC	20 km
LFP412	SFP with Extended Diagnostics - 1250-Mbps Multimode Fiber, 1310-nm	2 km
LFP413	SFP with Extended Diagnostics - 1250-Mbps Single-Mode Fiber, 1310-nm	10 km
LFP414	SFP with Extended Diagnostics - 1250-Mbps, Singlemode Fiber, 1310-nm	30 km
LFP416	SFP 1250-Mbps, Extended Diagnostics, 10/100/1000BASE-T, SGMII Interface, RJ-45	100 m

NOTE: Other SFPs may work but have not been validated by Black Box, we recommend you use the suggested SFPs to avoid technical incompatibilities.

NOTE: SFP is not included, must be ordered separately.

2. Connect the video source(s) to the Transmitter (Computer Unit).
3. Connect the monitor(s) to the Receiver unit.
4. Use CATx cables (EIA/TIA 568B industry standard compliant) or fiber cables for connection between Transmitter/Receiver.
5. Apply the proper power to all connecting devices.

NOTES:

a. We recommend using the highest quality materials (cables, SFP, etc.) to ensure optimal transmission quality.

b. If the screen does not display when you connect the computer:
   1. Make sure the device cables are correctly and firmly attached.
   2. Set your display device's (TV, monitor, etc.) input source as DVI.
   3. Check the PC BIOS configuration of the video output setting.
   4. Connect your video source to the Display DIRECTLY to check if the video signal gets through.

CHAPTER 1: SPECIFICATIONS

TABLE 1-1. TRANSMITTER SPECIFICATIONS

Console Connection	
Video Output	N/A
Serial Control Port	N/A
Host Connection	
Video Input	KVXLC-100, KVXLCF-100: (1) DVI-I female; KVXLC-200, KVXLCF-200: (2) DVI-I female
Local Out Video Connection	
Local Out	KVXLC-100, KVXLCF-100: (1) DVI-I female; KVXLC-200, KVXLCF-200: (2) DVI-I female
Link Port	
RJ-45	KVXLC-100: (1) RJ-45 using CATx cable – max. length: 330 feet (100 meters); KVXLC-200: (2) RJ-45 using CATx cable – max. length: 330 feet (100 meters)
SFP	KVXLCF-100: (1) SFP cage using Fiberoptic cable – max. length: 18.6 miles (30 km), depending on SFP; KVXLCF-200: (2) SFP cages using Fiberoptic cable – max. length: 18.6 miles (30 km), depending on SFP NOTE: SFP is not included. Must be ordered separately.
USB Interface	
Host	(1) USB Type B female
Device	N/A
Audio	
2-way analog audio	(1) Line In, (1) Line Out
General	
LED indicator	Power: White LED
DDC Supported	DDC, DDC2, DDC2B
Max. Video Resolution	1920 x 1200 @ 60 Hz
OS Compatibility	OS Independent
Housing material	Chassis Metal
Operating Temperature	32 to 122° F (0 to 50° C)
Storage Temperature	-4 to +140° F (-20 to +60° C)
Relative Humidity	0 to 80%
Power Supply	External 5-VDC, 2-A power supply
Dimensions	KVXLC-100, KVXLCF-100 transmitters: 1.06" H x 7.09" W x 3.27" D (2.7 x 18.0 x 8.3 cm); KVXLC-200, KVXLCF-200 transmitters: 1.71" H x 7.09" W x 3.27" D (4.4 x 18.0 x 8.3 cm)
Weight	KVXLC-100 transmitter: 0.79 lb. (0.36 kg); KVXLCF-100 transmitter: 0.77 lb. (0.35 kg); KVXLC-200, KVXLCF-200 transmitter: 1.12 lb. (0.51 kg)

TABLE 1-2. RECEIVER SPECIFICATIONS

Console Connection	
Video Output	KVXLC-100, KVXLCF-100: (1) DVI-I female; KVXLC-200, KVXLCF-200: (2) DVI-I female
Serial Control Port	(1) DB9 male
Host Connection	
Video Input	N/A
Link Port	
RJ-45	KVXLC-100: (1) RJ-45 using CATx cable – max. length: 330 feet (100 meters); KVXLC-200: (2) RJ-45 using CATx cable – max. length: 330 feet (100 meters)
SFP	KVXLCF-100: (1) SFP cage using Fiberoptic cable – max. length: 18.6 miles (30 km), depending on SFP; KVXLCF-200: (2) SFP cages using Fiberoptic cable – max. length: 18.6 miles (30 km), depending on SFP NOTE: SFP is not included. Must be ordered separately.
USB Interface	
Host	N/A
Device	(2) USB 2.0 Type A female for USB device extension; (2) USB HID ports for keyboard and mouse
Audio	
2-way analog audio	(1) MIC In, (1) Speaker Out
General	
LED indicator	Power: White LED
DDC Supported	DDC, DDC2, DDC2B
Max. Video Resolution	1920 x 1200 @ 60 Hz
OS Compatibility	OS Independent
Housing material	Chassis Metal
Operating Temperature	32 to 122° F (0 to 50° C)
Storage Temperature	-4 to +140° F (-20 to +60° C)
Relative Humidity	0 to 80%
Power Supply	External 5-VDC, 2-A power supply
Dimensions	KVXLC-100, KVXLCF-100 receivers: 1.06" H x 7.09" W x 3.27" D (2.7 x 18.0 x 8.3 cm); KVXLC-200, KVXLCF-200 receivers: 1.71" H x 7.09" W x 3.27" D (4.4 x 18.0 x 8.3 cm)
Weight	KVXLC-100 receiver: 0.84 lb. (0.38 kg); KVXLCF-100 receiver: 0.81 lb. (0.37 kg); KVXLC-200, KVXLCF-200 receiver: 1.12 lb. (0.51 kg)

CHAPTER 2: OVERVIEW

2.1 INTRODUCTION

The KVX Series DVI KVM Extender enables you to locally use one or two DVI/VGA monitors, USB keyboard/mouse/other devices, speaker, and microphone to operate a remote computer, server or other IT device. There are four models of the KVX Series DVI KVM Extender: a single-head KVXLC-100 and dual-head KVXLC-200 version via a CATx link, and a single-head KVXLCF-100 and dual-head KVXLCF-200 version via a fiberoptic link. Each extender consists of a transmitter (TX) and a receiver (RX).

2.2 FEATURES

- Supports DVI and VGA input/output video quality up to 1920 x 1200 @ 60 Hz.
- Provides remote access for video/USB/RS-232/audio extension distance up to 330 feet (100 meters) over CATx cable for model KVXLC-100 or KVXLC-200; up to 18.6 miles (30 km) over fiberoptic cable for model KVXLCF-100 or KVXLCF-200, depending on the SFP used.
- The DVI KVM Console Extender lets you control a server, or computer over single-mode or multimode fiber optic cable at distances of up to 30 km (depending on the SFP used, fiber type, and fiber bandwidth*).
- Single-head models with (1) DVI connector and dual-head models with (2) DVI connectors are available.
- Offers transparent USB 2.0/1.1 extension.
- Uses analog audio LINE-IN/LINE-OUT extension.
- Supports bi-directional RS-232 control communication.
- Firmware upgradable.

*NOTE: Reference the supported SFP chart on page 3.

2.3 WHAT'S INCLUDED

KVXLC-100:

- (1) Transmitter (TX)
- (1) Receiver (RX)
- (2) 5V, 2A Power Supplies (includes US, EU, and UK plug types)
- (1) DVI-D cable 1.8m (6 ft.)
- (1) 3.5mm audio cable 1.8m (6 ft.)
- (1) USB-B to USB-A cable 1.8m (6 ft.)
- (2) Deskmount Kits with Screws (KVXLC-DMK)

KVXLC-200:

- (1) Transmitter (TX)
- (1) Receiver (RX)
- (2) 5V, 2A Power Supplies (includes US, EU, and UK plug types)
- (2) DVI-D cables 1.8m (6 ft.)
- (1) USB Type A to B Cable, M/M 1.8m (6 ft.)
- (1) 3.5mm Dual Audio/Mic cable, M/M 1.8m (6 ft.)
- (2) Deskmount Kits with Screws (KVXLC-DMK)

KVXLCF-100:

- (1) Transmitter (TX)
- (1) Receiver (RX)
- (2) 5V, 2A Power Supplies (includes US, EU, and UK plug types)
- (1) DVI-D cable , M/M 1.8m (6 ft.)
- (1) USB Type A to B cable, M/M 1.8m (6 ft.)
- (1) 3.5mm Dual Audio/Mic cable, M/M 1.8m (6 ft.)
- (2) Deskmount Kits with Screws (KVXLC-DMK)

KVXLCF-200:

- (1) Transmitter (TX)
- (1) Receiver (RX)
- (2) 5V, 2A Power Supplies (includes US, EU, and UK plug types)
- (2) DVI-D cables, M/M 1.8m (6 ft.)
- (1) USB Type A to B cable, M/M 1.8m (6 ft.)
- (1) 3.5mm Dual Audio/Mic cable, M/M 1.8m (6 ft.)
- (2) Deskmount Kits with Screws (KVXLC-DMK)

2.4 HARDWARE DESCRIPTION

2.4.1 TRANSMITTER

FRONT PANEL

Figure 2-1 shows the front panel that is common to the single-head CATx and fiber transmitters. Table 2-1 describes its components.

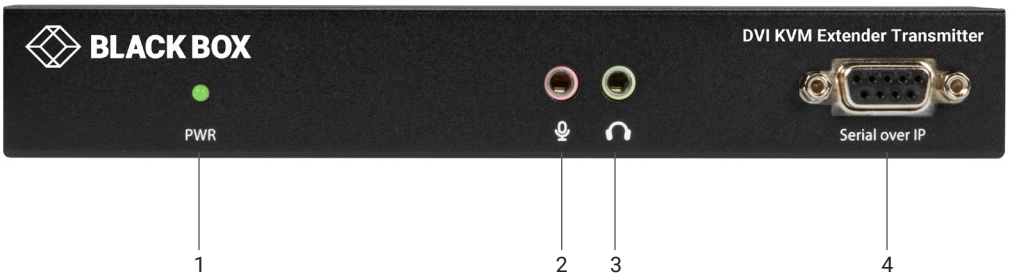

FIGURE 2-1. TRANSMITTER FRONT PANEL

Figure 2-2 shows the front panel that is common to the dual-head CATx and fiber transmitters. Table 2-1 describes its components.

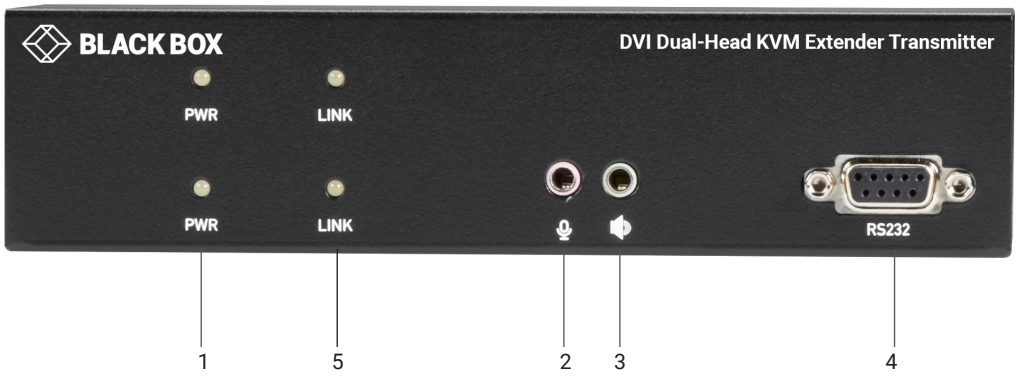

FIGURE 2-2. DUAL-HEAD TRANSMITTER FRONT PANEL

TABLE 2-1. TRANSMITTER FRONT-PANEL COMPONENTS

NUMBER IN FIGURE 2-1 OR 2-2	COMPONENT	DESCRIPTION
1	PWR LED	Lights when power to the transmitter is ON
2	Audio jack	Connects to analog audio input for audio extension
3	Audio jack	Connects to analog audio output for audio extension
4	DB9 female connector	Connects to source device's RS-232 port for serial extension
5	Link LED	Lights when the TX/RX link is active

BACK PANEL

Figures 2-3 and 2-4 show the back panels of the single-head CATx and fiber transmitters. Table 2-2 describes their components.

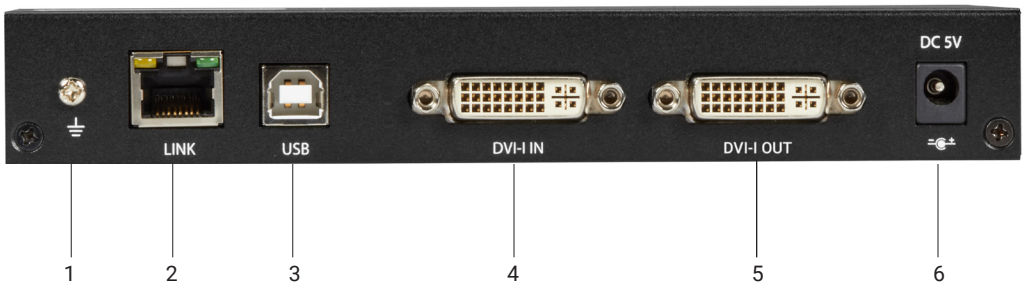

FIGURE 2-3. SINGLE-HEAD CATX TRANSMITTER BACK PANEL

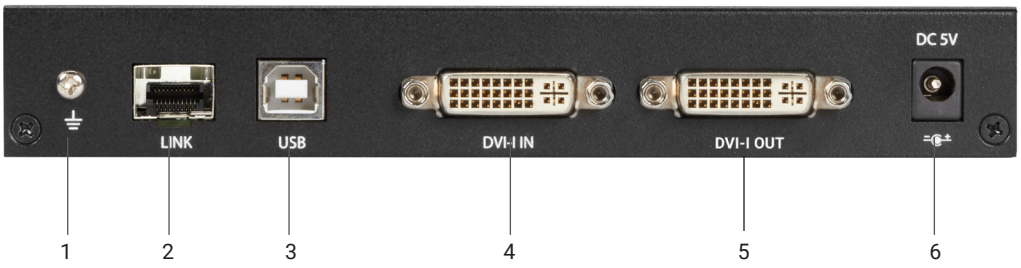

FIGURE 2-4. SINGLE-HEAD FIBER TRANSMITTER BACK PANEL

TABLE 2-2. SINGLE-HEAD TRANSMITTER BACK-PANEL COMPONENTS

NUMBER IN FIGURE 2-3 OR 2-4	COMPONENT	DESCRIPTION
1	Ground screw	Links to ground
2	For CATx model: RJ-45 connector For Fiber model: SFP cage	For CATx Model: CATx link For Fiber model: Install fiber SFP module here
3	USB Type B connector	Connects to source device's USB port
4	DVI In port	Connects to source device's signal for DVI/VGA extension
5	DVI Out port	Connects to local out
6	Power connector	Links to 5-VDC power supply

Figures 2-5 and 2-6 show the back panels of the dual-head CATx and fiber transmitters. Table 2-3 describes their components.

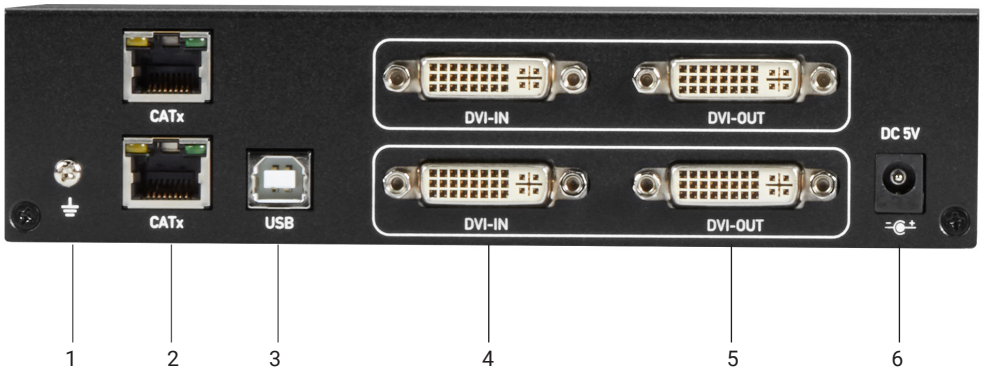

FIGURE 2-5. DUAL-HEAD CATX TRANSMITTER BACK PANEL

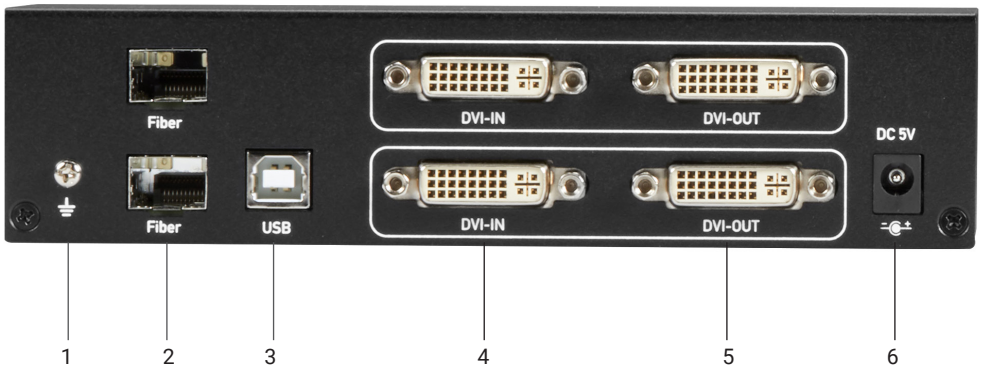

FIGURE 2-6. DUAL-HEAD FIBER TRANSMITTER BACK PANEL

TABLE 2-3. DUAL-HEAD TRANSMITTER BACK-PANEL COMPONENTS

NUMBER IN FIGURE 2-5 OR 2-6	COMPONENT	DESCRIPTION
1	Ground screw	Links to ground
2	For CATx model: (2) RJ-45 connectors For Fiber model: (2) SFP cages	For CATx Model: CATx links For Fiber model: Install fiber SFP modules here
3	USB Type B connector	Connects to source device's USB port
4	(2) DVI In ports	Connect to source devices' signals for DVI/VGA extension
5	(2) DVI Out ports	Connect to local out
6	Power connector	Links to 5-VDC power supply

2.4.2 RECEIVER

FRONT PANEL

Figure 2-7 shows the front panel that is common to the single-head CATx and fiber receivers. Figure 2-8 shows the front panel that is common to the dual-head CATx and fiber receivers. Table 2-4 describes the components.

FIGURE 2-7. SINGLE-HEAD RECEIVER FRONT PANEL

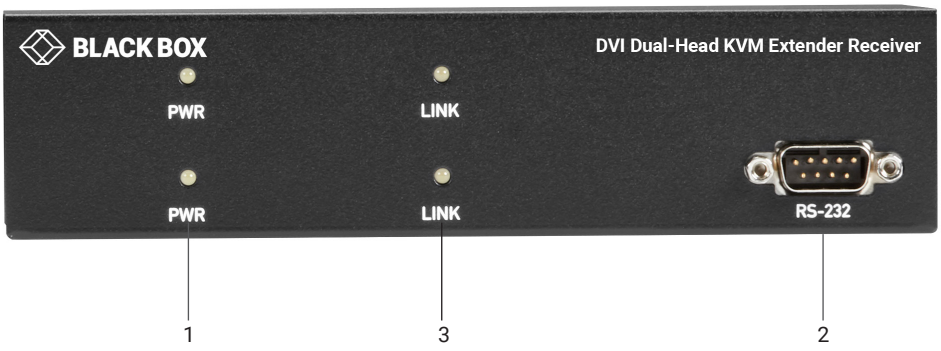

FIGURE 2-8. DUAL-HEAD RECEIVER FRONT PANEL

TABLE 2-4. RECEIVER FRONT-PANEL COMPONENTS

NUMBER IN FIGURE 2-7 OR 2-8	COMPONENT	DESCRIPTION
1	PWR LED	Lights when power to the receiver is ON
2	DB9 male connector	Connects to sink device's RS-232 port for serial extension
3	Link LED	Lights when the TX/RX link is active

BACK PANEL

Figures 2-9 and 2-10 show the back panels of the single-head CATx and fiber receivers. Table 2-5 describes their components.

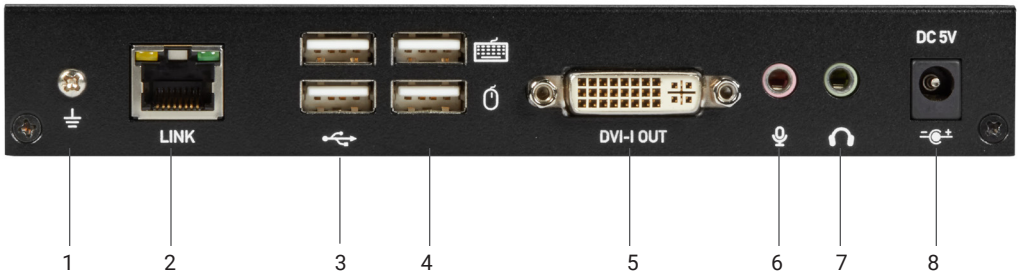

FIGURE 2-9. SINGLE-HEAD CATX RECEIVER BACK PANEL

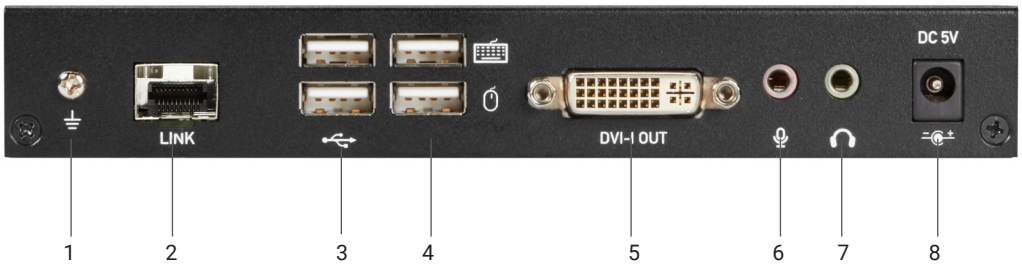

FIGURE 2-10. SINGLE-HEAD FIBER RECEIVER BACK PANEL

TABLE 2-5. SINGLE-HEAD RECEIVER BACK-PANEL COMPONENTS

NUMBER IN FIGURE 2-9 OR 2-10	COMPONENT	DESCRIPTION
1	Ground screw	Links to ground
2	For CATx model: (1) RJ-45 connector For Fiber model: (1) SFP cage	For CATx Model: CATx link For Fiber model: Install fiber SFP module here
3	(2) USB 2.0 ports	Connects to USB device's ports for extension
4	(2) USB HID ports	Connects to USB keyboard and mouse
5	DVI Out port	Connects to sink device's signal for DVI/VGA extension
6	Audio jack	Links to analog audio input for audio extension
7	Audio jack	Links to analog audio output for audio extension
8	Power connector	Links to 5-VDC power supply

Figures 2-11 and 2-12 show the back panels of the dual-head CATx and fiber receivers. Table 2-6 describes their components.

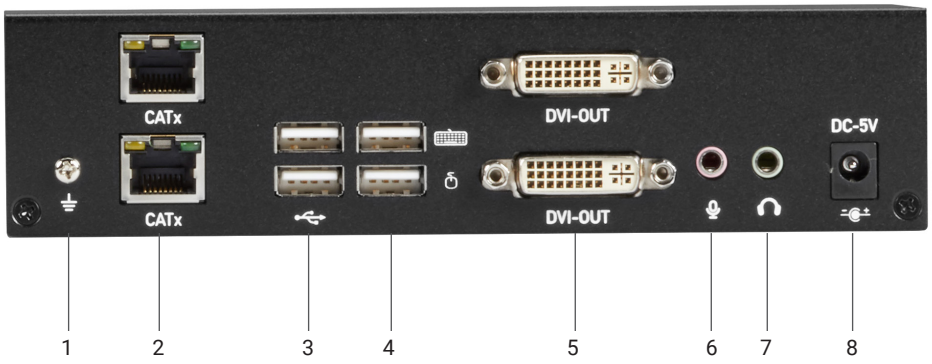

FIGURE 2-11. DUAL-HEAD CATX RECEIVER BACK PANEL

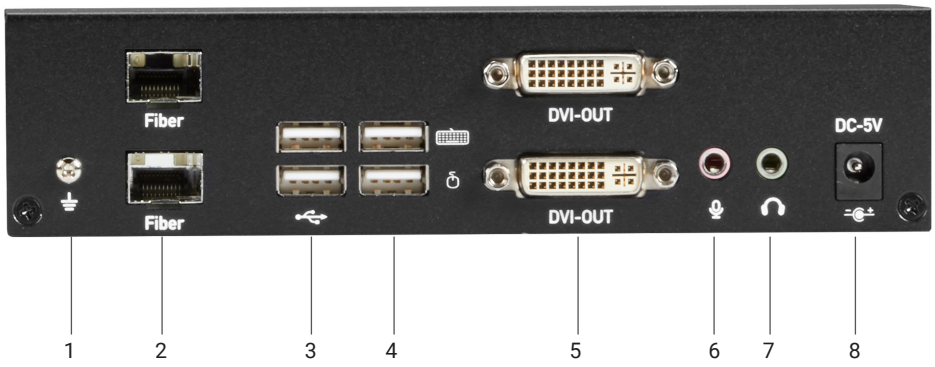

FIGURE 2-12. DUAL-HEAD FIBER RECEIVER BACK PANEL

TABLE 2-6. DUAL-HEAD RECEIVER BACK-PANEL COMPONENTS

NUMBER IN FIGURE 2-11 OR 2-12	COMPONENT	DESCRIPTION
1	Ground screw	Links to ground
2	For CATx model: (2) RJ-45 connectors For Fiber model: (2) SFP cages	For CATx Model: CATx links For Fiber model: Install fiber SFP modules here
3	(2) USB 2.0 ports	Connects to USB device's ports for extension
4	(2) USB HID ports	Connects to USB keyboard and mouse
5	(2) DVI Out ports	Connect to sink devices' signals for DVI/VGA extension
6	Audio jack	Links to analog audio input for audio extension
7	Audio jack	Links to analog audio output for audio extension
8	Power connector	Links to 5-VDC power supply

CHAPTER 3: CONNECTION DIAGRAM

Figure 3-1 shows a typical connection.

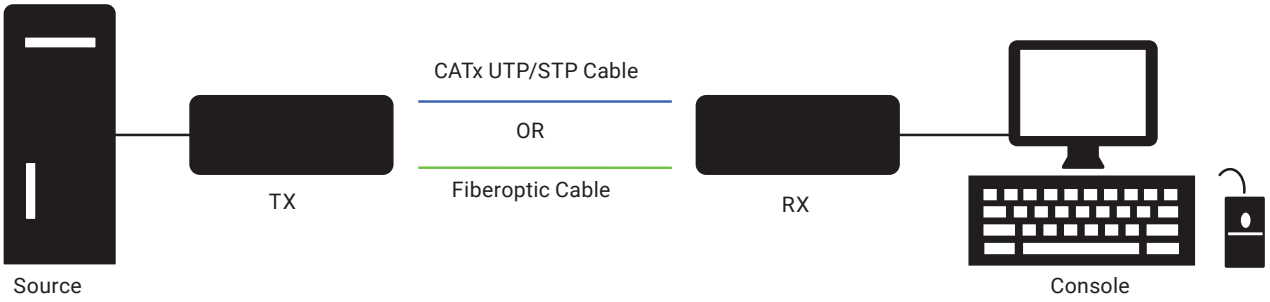

FIGURE 3-1. CONNECTION DIAGRAM

CHAPTER 4: INSTALLATION

4.1 FACTORY DEFAULT SETTINGS

Below are the factory default baud rate settings for the DVI KVM Extender's serial ports.

- Baud rate: 115,200 bps
- Data bits: 8
- Parity: None
- Stop bits: 1

APPENDIX A: REGULATORY INFORMATION

A.1 FCC CLASS A 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.

APPENDIX A: REGULATORY INFORMATION

A.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 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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NOTES

NOTES

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