



ServSwitch™ Fiber DVI + USB Extender EC

Provides Full HD and USB extension
up to 1640 feet (500 m) over multimode fiber.

Supports resolutions up to 1920 x 1200.



**Customer
Support
Information**

Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500) • FREE technical support 24 hours a day, 7 days a week: Call 724-746-5500 or fax 724-746-0746 • Mailing address: Black Box Corporation, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com • E-mail: info@blackbox.com

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Trademarks Used in this Manual

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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 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.

NOM Statement

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 debe 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.

Table of Contents

Table of Contents

1. Specifications	7
2. Overview	9
2.1 Introduction	9
2.2 Features.....	9
2.3 What's Included	9
2.4 Hardware Description	10
2.4.1 Transmitter (Local Unit).....	10
2.4.2 Receiver (Remote Unit).....	12
3. Installation and Operation	14
3.1 Cable Requirements.....	14
3.2 Installing the Transmitter and the Receiver.....	14
3.3 Initial Operation	14
4. Enhanced Operation	15
5. Troubleshooting	18
5.1 Contacting Black Box.....	18
5.2 Shipping and Packaging.....	18

1. Technical Specifications

Approvals	TUV, CE, UL, CSA, RoHS, WEEE, FCC
Cascadable	No
Computer Interface	DVI video, USB
DDC Support	Internal DDC table
Distance	From CPU to TX: 16 feet (5 m), maximum DVI-D and USB limitations; Between TX and RX: 328 feet (100 m), maximum
Encryption	No
Heat Dissipation	40.92 BTU/hr. maximum
Leads Supported	DVI video, USB
Connectors	ACX310F Transmitter: (1) DVI-I input (physical connector supports DVI-D only), (1) DVI-I output (physical connector supports DVI-D only), (1) USB Type B F, (1) SFP cage, LC connectors, multimode, (1) barrel connector for power; ACX310FIA Transmitter also includes: (2) 3.5-mm bidirectional audio connectors; ACX310F Receiver: (1) DVI-I output (physical connector supports DVI-D only), (4) USB Type A F, (1) SFP cage, LC connectors, multimode, (1) barrel connector for power; ACX310FIA Receiver also includes: (2) 3.5-mm bidirectional audio connectors; <i>NOTE: ACX310FIA supports DVI-I (both VGA and DVI-D).</i>

1. Technical Specifications (continued)

Indicators	Each unit (Transmitter or Receiver): (1) Power/Online LED
Environment	Temperature Tolerance: Operating: 32 to 113° F (0 to 45° C); Storage: -4 to 158° F (-20 to +70° C); Operating Humidity: 80%, noncondensing
Altitude	10,000 feet maximum
Power	External in-line power supply; Input: 100–240 VAC, 50/60 Hz, 0.5 A; Output: 12 VDC, 1 A, 12 W; Power supply cord length: 5 ft. (1.5 m)
Dimensions	Each unit (Transmitter or Receiver): 1.6"H x 3.85"W x 4.17"D (4.1 x 9.8 x 10.6 cm)
Weight	Each unit: 0.61 lb. (0.27 kg) (Total: 1.22 lb. [0.55 kg])

2. Overview

2.1 Introduction

The ServSwitch™ Fiber DVI + USB Extender EC provides lossless Full HD and USB extension up to 1640 feet (500 m) over 62.5- μ m multimode fiber cable. It consists of two units: a transmitter and a receiver. The extender is plug-and-play, so there aren't any complex installation instructions. And you don't need to configure the unit, either.

NOTE: SFP modules are included with the extenders, but any SFP should work with the extender.

2.2 Features

- Supports USB keyboard/mouse, USB touchscreen, and other Human Interface Devices (HIDs).
- Uses multimode 62.5- μ m duplex fiber optic cable.
- Provides local monitoring.
- Supports USB 2.0 extension.
- Plug-and-play installation with DDC/EDID reading.
- An optional mounting option for 19" racks with four units in (1) rack unit (RU) is available.
- Can also be wall-, table-, or DIN-rail-mounted. Mounting options accessories are:
 - ACX300-RMK: 19" Rackmounting Kit for up to 4 local or remote units.
 - ACX300-TMK: Table and Wallmount Kit for either local or remote unit.
 - ACX300-DRM: DIN-rail Mounting Kit for either local or remote unit.
- ACX310FIA also features:
 - Bidirectional audio/microphone.
 - VGA/DVI support.

2.3 What's Included

Your package should include the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

- (1) transmitter
- (1) receiver
- (1) DVI-I cable
- (2) multimode SFPs with LC connectors

Chapter 2: Overview

- (1) USB Type A-B cable
- (2) power supplies with US/UK/EU and AU power clips
- This user's manual

2.4 Hardware Description

2.4.1 Transmitter (Local Unit)

Front Panel

The transmitter's (ACX310F or ACX310FIA) front panel is blank except for a Power Status LED, which is described in Table 2-1.

Back Panel

The transmitter's (ACX310F or ACX310FIA) back panel is shown in Figures 2-1 and 2-2. Table 2-1 describes its components.

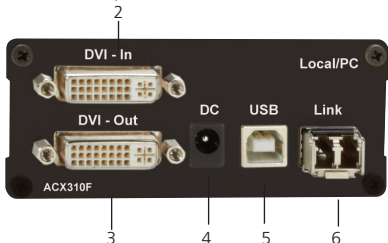


Figure 2-1. ACX310F transmitter's back panel.

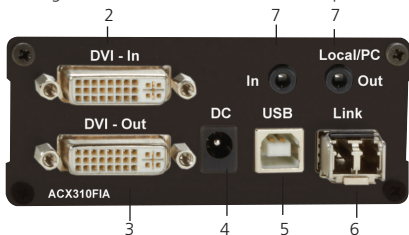


Figure 2-2. ACX310FIA transmitter's back panel.

Table 2-1. Transmitter's components.

Number	Component	Description
1	Power Status LED (not shown, located on the front panel of the transmitter)	Lights when power to the transmitter is on.
2	(1) DVI connector	Connects to the PC.
3	(1) DVI connector	Connects to a local monitor.
4	(1) barrel connector	Links to 12-VAC, 1-A power.
5	(1) USB Type B connector	Links to USB port on the PC.
6	(1) SFP module cage for multimode fiber connector	Connects one end of the 1640-foot (500-m) link between the transmitter and receiver.
7	(2) 3.5-mm connectors	Links to audio in and audio out.

Chapter 2: Overview

2.4.2 Receiver (Remote Unit)

Front Panel

The receiver's front panel is blank except for a Power Status LED, which is described in Table 2-2.

Back Panel

The receiver's back panel is shown in Figures 2-3 and 2-4. Table 2-2 describes its components.

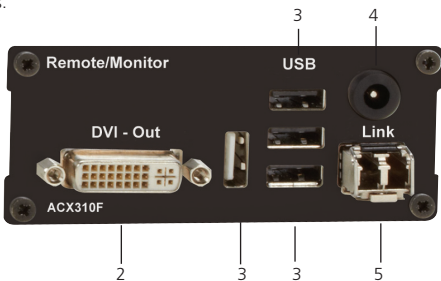


Figure 2-3. ACX310F receiver's back panel.

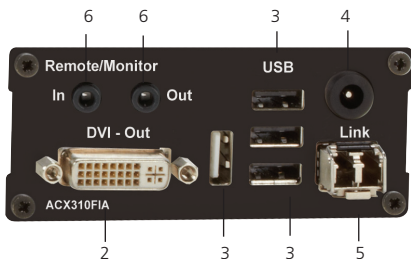


Figure 2-4. ACX310FIA receiver's back panel.

Table 2-2. Receiver's components.

Number	Component	Description
1	Power Status LED (not shown, located on the front panel of the receiver)	Lights when power to the receiver is on.
2	(1) DVI connector	Connects to DVI monitor.
3	(4) USB Type A connectors	Link to keyboard/mouse and two USB peripheral devices.
4	(1) barrel connector	Links to 12-VAC, 1-A power.
5	(1) SFP module cage for multimode fiber connector	Connects one end of the 1640-foot (500-m) link between the receiver and transmitter.
6	(2) 3.5-mm connectors	Links to audio in and audio out.

Chapter 3: Installation and Operation

3. Installation and Operation

3.1 Cable Requirements

Use 62.5- μm multimode fiber optic cable with the included SFPs; otherwise, use the designated cable for the SFPs you are using.

3.2 Installing the Transmitter and Receiver

The extender is plug-and-play. Simply plug in the following connections as shown in Figure 3-1.

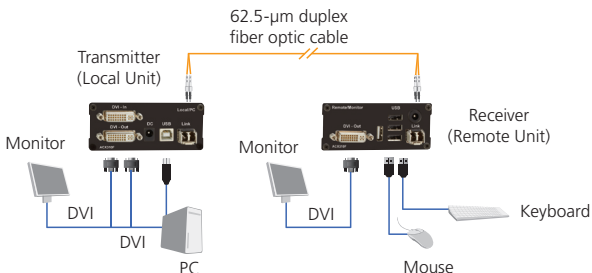


Figure 3-1. Connecting the extender units.

3.3 Initial Operation

Switch on the device. Both extenders start working automatically. For about five seconds, the LED will blink red. When the LED turns green, the device is ready to use.

NOTE: The extender does not require any additional configuration. It's a plug-and-play device.

4. Enhanced Operation

Via an OSD in the Remote Unit, the ACX310F enables the following configuration options:

1. Updating the Extender.
2. Set Backlight.
3. Locking OSD.
4. Enabling/disabling Monitor Sync.
5. DDC options.

Entering the OSD

To enter the Extenders OSD, press the ScrollLock key on the attached keyboard five times quickly.

The OSD menu appears on the remote unit's attached display (see Figure 4-1).

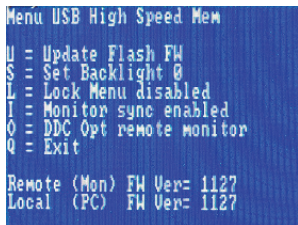


Figure 4-1. OSD menu.

NOTE: If the OSD is locked via Option L, the OSD is only available for the first 10 minutes after power up.

U = Update Flash FW

To update the extender's firmware, you will need to open a graphic file (update file) on the target device, and then enter the command "U" and wait for the update to be performed.

Chapter 4: Enhanced Operation

S = Set Backlight

Enter 0–9.

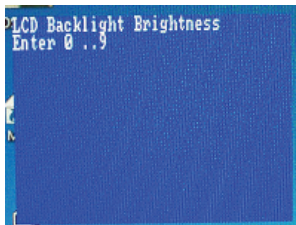


Figure 4-2. USB high-speed memory option.

L = Lock Menu enabled/disabled

Once enabled, you can only enter the OSD during the first 10 minutes after the remote unit powers up. It will be locked afterwards.

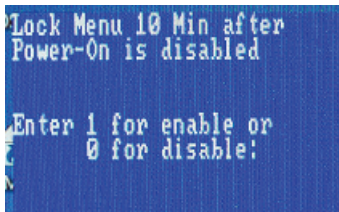


Figure 4-3. Lock menu.

The default setting is disabled.

I = Monitor sync enabled/disabled

You can activate or deactivate the monitor synchronization.

If enabled, the graphics card refresh rates are synchronized with the (Rx) attached monitors.

This will optimize motion picture content applications, but might not work properly with all monitors (flicker may occur).

The default setting is disabled.

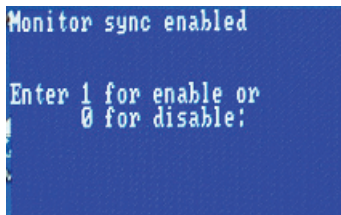


Figure 4-4. Monitor sync disabled screen.

Chapter 5: Troubleshooting

5. Troubleshooting

5.1 Contacting Black Box

If you determine that your ServSwitch Fiber DVI + USB Extender EC is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support:

- Email in the US: info@blackbox.com
in the UK: techhelp@blackbox.co.uk
- Phone in the US: 724-746-5500
in the UK: +44 (0)118 965 6000

NOTE: See Table 5-1 for a list of international contact information.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

5.2 Shipping and Packaging

If you need to transport or ship your ServSwitch Fiber DVI + USB Extender EC:

- Package it carefully. We recommend that you use the original container.
- If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.

Chapter 5: Troubleshooting

Table 5-1. International Contact Information.

Country	Web site/E-mail	Phone	Fax
United States	www.blackbox.com info@blackbox.com	724-746-5500	724-746-0746
Austria	www.black-box.at support@black-box.at	+43 1 256 98 56	+43 1 256 98 56
Belgium	www.blackbox.be support.nederlands@blackbox.be support.french@blackbox.be support.english@blackbox.be	+32 2 725 85 50	+32 2 725 92 12
Denmark	www.blackbox.dk support@blackbox.dk	+45 56 63 30 10	+45 56 65 08 05
Finland	www.blackbox.fi tuki@blackbox.fi	+358 201 888 800	+358 201 888 808
France	www.blackbox.fr tech@blackbox.fr	+33 1 45 606 717	+33 1 45 606 747
Germany	www.black-box.de techsupp@black-box.de	+49 811 5541 110	+49 811 5541 499

Chapter 5: Troubleshooting

Table 5-1 (continued). International Contact Information.

Country	Web site/E-mail	Phone	Fax
Italy	www.blackbox.it supporto.tecnico@blackbox.it	+39 02 27 404 700	+39 02 27 400 219
Netherlands	www.blackbox.nl techsupport@blackbox.nl	+31 30 241 7799	+31 30 241 4746
Norway	www.blackboxnorge.no support@blackboxnorge.no	+47 55 300 710	+47 55 300 701
Spain	www.blackbox.es tecnico@blackbox.es	+34 9162590732	+34 916239784
Sweden	www.blackboxab.se support@blackboxab.se	+46 8 44 55 890	+46 08 38 04 30
Switzerland	www.black-box.ch support@black-box.ch	+41 55 451 70 71	+41 55 451 70 75
UK	www.blackbox.co.uk techhelp@blackbox.co.uk	+44 118 965 6000	+44 118 965 6001
Ireland	www.blackbox.co.uk techhelp@blackbox.co.uk	+353 1 662 2466	+353 1 662 2477

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at 724-746-5500 or blackbox.com.



About Black Box

Black Box provides an extensive range of networking and infrastructure products. You'll find everything from cabinets and racks and power and surge protection products to media converters and Ethernet switches all supported by free, live 24/7 Tech Support available in 30 seconds or less.

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ACX310F, version 1

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