

Extended Range DVI-D Extender with Audio and RS-232

Extends your PC DVI transmission distance up to 330 feet (100 m).

Includes two compact units: transmitter and receiver.



**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](http://www.blackbox.com) • E-mail: [info@blackbox.com](mailto: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.
4. Todas las instrucciones de operación y uso deben ser seguidas.

## NOM Statement

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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.

# Safety Instructions

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## Safety Instructions

The Extended Range DVI-D Extender has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipment, the extender should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device away from it and be sure to place this unit on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

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# Chapter 1: Specifications

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## 1. Specifications

**Audio Support** — Stereo 2-channel analog audio

**Approvals** — Converter Unit: FCC, CE, RoHS, WEEE  
Power Supply: UL®, FCC

**Compliance** — HDMI, DVI 1.1, HDCP

**Computer Interface** — DVI-D

**ESD Protection** — Human body model:  $\pm 19$  kV (air-gap discharge) and  $\pm 12$  kV (contact discharge);  
Core chipset:  $\pm 8$  kV

**Equalization** — Automatic

**Heat Dissipation** — 3.41 BTU/hr.

**Input DDC Signal** — 5 volts p-p, TTL

**Input TMDS Signal** — 1.2 volts p-p

**Input TMDS Signal** — 1.2 volts p-p

**Maximum Distance between TX and RX** — 328 ft. (100 m) using CAT5e/CAT6/CAT7 cable

**Operating System Support** — All known operating systems, all known hardware that supports/follows the HDMI/DVI spec

**Rackmount Kits** — Wallmount brackets and hardware included

**RS-232 Support** — Transmitter: Acts as DCE device;  
Receiver: Acts as DTE device;  
RX and TX: additional control signals not supported

**Video Bandwidth** — 340 MHz (10.2 Gbps)

**Video Support** — 480p/720p/1080p60/1920x1200 @ 60 Hz/  
1600 x 1200 @60 Hz

**Connectors** — Transmitter: (1) DVI F input, (1) 3.5-mm audio input, (1) 2.5-mm barrel connector for power, (1) RJ-45 8P8C output, (1) RS-232 DB9 F for serial extension;

Receiver: (1) DVI F output, (1) 3.5-mm audio output, (1) 2.5-mm barrel connector for power, (1) RJ-45 8P8C input, (1) RS-232 DB9 M for serial extension

**Indicators** — (2) LEDs on both the transmitter and receiver: Power, Link

**Temperature Tolerance** — Operating: 32 to 104° F (0 to 40° C)

**Operating Humidity** — 90%, noncondensing



## Chapter 1: Specifications

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**Power** — Source: Desktop power supply; Power supply cord length: 4 ft. (12.8 m);

For both the transmitter and receiver: AC input: 100–240 VAC, 50–60 Hz, 0.8 A,

Consumption: 20 W;

Output: 5 VDC, 4 A

**Size** — Each unit: 1.3"H x 4.1"W x 3"D (3.2 x 10.5 x 7.6 cm)

**Weight** — Each unit: 0.9 lb. (0.4 kg)

# Chapter 2: Overview

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## 2. Overview

### 2.1 Introduction

The Extended Range DVI-D Extender extends your PC DVI transmission distance up to 330 ft. (100 m) at up to 1920 x 1200 or 1080p resolution. With the extender, users can transmit high quality digital video from PC applications over one inexpensive CAT5e/6/7 LAN cable to a remote monitor or projector, instead of using short and expensive DVI cables. You can disconnect the monitor, place it in a remote location, and reconnect it without rebooting the operating system. The XR DVI Extender also supports serial port RS-232 (TXD and RXD) control.

The extender includes two compact units: a transmitter and a receiver. The transmitter unit connects to your PC DVI output and serial port, such as COM1, and the receiver unit connects to a monitor with serial control (such as touch panels). While successfully connected, the two LED lights on the RJ-45 connector will blink.

### 2.2 Features

- Complies with DVI 1.0 standard.
- Supports EDID and HDCP bypass.
- Extends the transmission length from the sources up to 330 ft. (100 m) at 1920 x 1200 or 1080p resolutions.
- Features auto equalization.
- Supports HDTV resolutions and VESA standards.
- Supports serial port RS-232 (TXD and RXD) control.
- Direct plug-in at TX and wall-mounting with screws at RX.

### 2.3 What's Included

Your package should contain the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or [info@blackbox.com](mailto:info@blackbox.com).

- (1) DVI Transmitter with built-in wallmount brackets
- (1) DVI Receiver with built-in wallmount brackets
- (2) 5-VDC, 4-A power supplies with power cords
- (4) screws
- This user manual

### 2.4 Hardware Description

#### 2.4.1 Transmitter

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

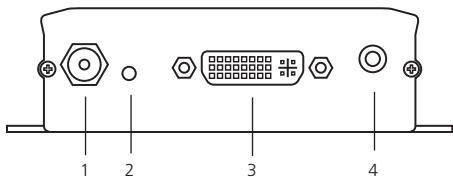


Figure 2-1. Transmitter's front panel.

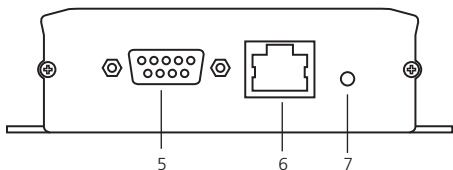


Figure 2-2. Transmitter's back panel.

## Chapter 2: Overview

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Table 2-1. Transmitter's components.

| Number | Component        | Description  |
|--------|------------------|--|
| 1      | Barrel connector | Links to 5-VDC power supply.                                       |
| 2      | Power LED        | Lights when the unit is receiving power.                           |
| 3      | DVI-D input      | Connect to a DVI source with a DVI female-to-male cable.           |
| 4      | Audio input      | Connect to audio input.  |
| 5      | RS-232 input     | Connect to a PC's serial port with a DB9 female-to-male cable.     |
| 6      | RJ-45 connector  | Plug a CAT5/5e/6 cable in that needs to be linked to the receiver. |
| 7      | Link LED         | Data is being transmitted.   |

### 2.4.2 Receiver

Figures 2-3 and 2-4 show the front and back panels of the receiver unit. Table 2-2 describes its components.

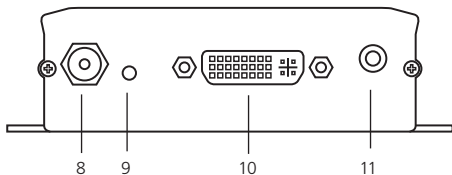


Figure 2-3. Receiver's front panel.

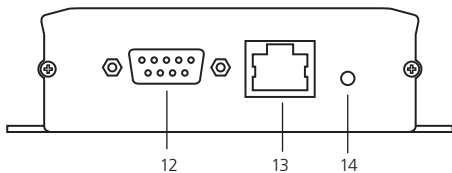


Figure 2-4. Receiver's back panel.

## Chapter 2: Overview

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Table 2-2. Receiver's components.

| Number | Component        | Description  |
|--------|------------------|--|
| 8      | Barrel connector | Links to 5-VDC power supply.   |
| 9      | Power LED        | Lights when the unit is receiving power.                                     |
| 10     | DVI-D output     | Connect to a DVI display with a DVI male-to-male cable.                      |
| 11     | Audio output     | Connect to audio output.   |
| 12     | RS-232 output    | Connect to an RS-232 enabled device or touch panel with serial port control. |
| 13     | RJ-45 connector  | Plug a CAT5/5e/6 cable in that needs to be linked to the transmitter.        |
| 14     | Link LED         | Data is being received.  |

### 3. Hardware Installation

1. Connect the transmitter to your DVI source (PC).
2. Connect the transmitter to your serial controlled device.
3. Connect the receiver to the remote DVI monitor.
4. Connect the receiver to the serial control device or monitor.
5. Make sure your CAT5/5e/6 cable is tightly connected and not loose.
6. High quality PC video displays on the screen.

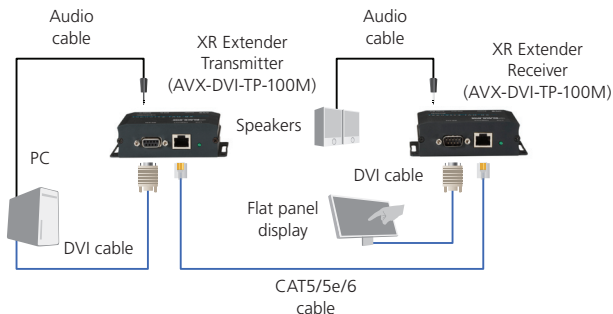


Figure 3-1. Connection diagram.

## Chapter 4: Cable

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### 4. Cable

1. The transmission length is largely affected by the type of LAN cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid LAN cables (usually bulk cable (100 ft. [300 m]) can transmit a lot longer signals than stranded LAN cables (usually in patch cord form). Shielded STP cables are better suited than unshielded UTP cables. For long extension users, choose solid core LAN cables.
2. We recommend using EIA/TIA-568-B termination (T568B) for LAN cables for better performance.
3. To reduce the interference among the unshielded twisted pairs of wires in LAN cable, you can use shielded LAN cables to improve EMI problems, which are worse in long transmissions.



### Appendix. Troubleshooting

#### A.1 Contacting Black Box

If you determine that your extender is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 724-746-5500 or [info@blackbox.com](mailto:info@blackbox.com).

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.

#### A.2 Shipping and Packaging

If you need to transport or ship your extender:

- 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.





**Black Box Tech Support: FREE! Live. 24/7.**

Tech support the  
way it should be.



Great tech support is just 30 seconds away  
at 724-746-5500 or [blackbox.com](http://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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