

## Extended Range HDMI and IR Extender

Use a single CAT5e/6 cable run to extend uncompressed HD video, audio, and control signals up to 328 feet (100 m).

- Supports IR extension and CEC passthrough.
- Enables you to control source devices at the screen.



**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)

### 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 la 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.
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 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.

### Trademarks Used in this Manual

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HDMI is a registered trademark of HDMI Licensing, LLC.

UL is a registered trademark of Underwriters Laboratories.

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

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### 1. Specifications

**Approvals** — Converter Unit: FCC

Power Supply: UL®, FCC

**Input Video Signal** — 1.2 volts p-p

**Operating Frequency** — Video Amplifier Bandwidth: 3.4 Gbps/340 MHz,  
Vertical Frequency Range: 50/60 Hz

**Output Video** — HDMI

**\*Transmission Distance** — Using CAT5e/6 cable: 328 ft. (100 m) for  
1080p/60 Hz

\* *NOTE: Distance depends on the characteristics and quality of the cable and the type of HDMI source and display.*

**Resolutions (HDTV)** — Interlaced: (50 and 60 Hz) 480i, 576i, 1080i;  
Progressive: (50 and 60 Hz) 480p, 576p, 720p, 1080p

**PC Resolutions** — Up to 1920 x 1200/1920 x 1080

**Connectors** — Transmitter: (1) HDMI F input, (1) 3.5-mm IR emitter jack,  
(1) RJ-45 output (CATx interconnect);  
Receiver: (1) HDMI F output, (1) 3.5-mm IR receiver jack, (1) RJ-45 output  
(CATx interconnect)

**Indicators** — (3) LEDs on both the transmitter and receiver: Power, Link, HDCP

**Power** — For both the transmitter and receiver: AC input: 115–230 VAC,  
50–60 Hz;  
Output: 5 VDC

**Size** — Each unit: 1"H x 2.6"W x 3.9"D (2.5 x 6.6 x 4 cm)

**Weight** — Each unit: 0.4 lb. (0.2 kg)

## Chapter 2: Overview

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### 2. Overview

#### 2.1 Introduction

The Extended Range HDMI and IR Extender drives your HD display with resolutions of 1080p/60 Hz up to 328 feet (100 meters) away from your HDMI® or DVI-D source using one CAT5e/6 cable. A built-in IR extender function allows IR remote control of source devices from a remote viewing location. To do this, the extender sends IR commands received near the display back to the source devices.

#### 2.2 Features

- Supports HDCP.
- Supports uncompressed HDMI signals.
- Enables HDMI 10.2 Gbps over a single 328-ft. (100-m) CAT5e/6 cable.
- Supports 340-MHz/3.4-Gbps per channel (10.2 Gbps all channels) bandwidth.
- Supports 1080p @ 60 Hz @ 48-bit pixels.
- Enables 3D pass-through.
- Supports CEC pass-through.
- Works with uncompressed audio such as LPCM.
- Supports compressed audio such as DTS® Digital, Dolby® Digital, including DTS-HD® and Dolby True HD®.
- A built-in IR extender function allows IR remote control of source devices from a remote viewing location by sending IR commands received in the vicinity of the display back to the source devices.
- CAT5e/6 cable should conform to the IEEE-568B standard.

#### 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).

- Transmitter unit
- Receiver unit
- (2) 5-VDC power supplies
- Extender infrared receiver
- Extender infrared emitter



- (4) wallmount brackets with (8) screws
- This user's manual

## 2.4 Hardware Description

### 2.4.1 Transmitter

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

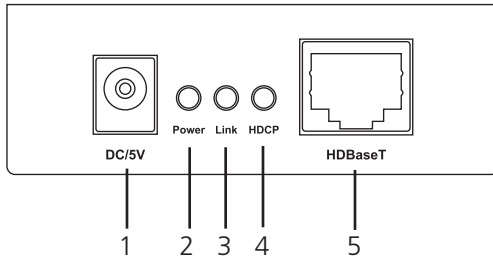


Figure 2-1. Transmitter's front panel.

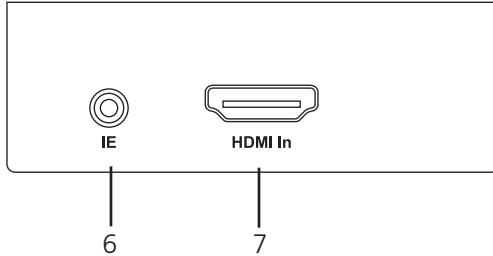


Figure 2-2. Transmitter's back panel.

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	Link LED	When this LED is "ON," an HDBASE-T link connection is established between the transmitter and the receiver over the CAT5e/6 cable.
4	HDCP LED	When this LED is "ON," video content with HDCP protection is being transferred. When the LED is "Blinking," video content without HDCP is being transferred. When the LED is "OFF," no video is connected.
5	HDBASE-T	Connect the transmitter to the receiver using a CAT5e/6 cable.
6	IE port	Connect the extender infrared emitter cable from this port to the HDMI source to control the source from the viewing location.
7	HDMI In port	Connect the HDMI source to this port.

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.

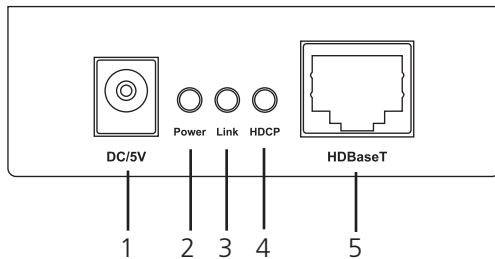


Figure 2-3. Receiver's front panel.

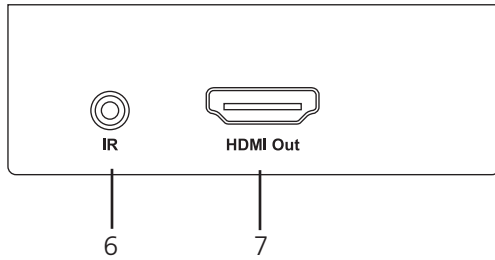


Figure 2-4. Receiver’s back panel.

Table 2-2. Receiver’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	Link LED	When this LED is “ON,” an HDBASE-T link connection is established between the transmitter and the receiver over the CAT5e/6 cable.
4	HDCP LED	When this LED is “ON,” video content with HDCP protection is being transferred. When the LED is “Blinking,” video content without HDCP is being transferred. When the LED is “OFF,” no video is connected.
5	HDBASE-T	Connect the transmitter to the receiver using a CAT5e/6 cable.
6	IR port	Connect the extender infrared receiver cable from this port to the IR command of the source.
7	HDMI Out port	Connect the HDMI sink to this port.

# Chapter 3: Connection and Operation

## 3. Connection and Operation

1. Connect the HDMI source (such as DVD, PS3, STB ) to the input of the transmitter.
2. Connect the receiver's output to an HDTV display.
3. Use a CAT5e/6 cable up to 328 feet (100 m) to connect the transmitter and receiver.
4. Plug one power supply into the transmitter and the other into the receiver.
5. Power on the HDTV display and HDMI source.

*NOTE: We recommend that you use one continuous run of CAT5e/6 cable from transmitter to receiver. Using patched connections may affect the maximum distance.*

*CAUTION: Insert or remove the cable gently.*

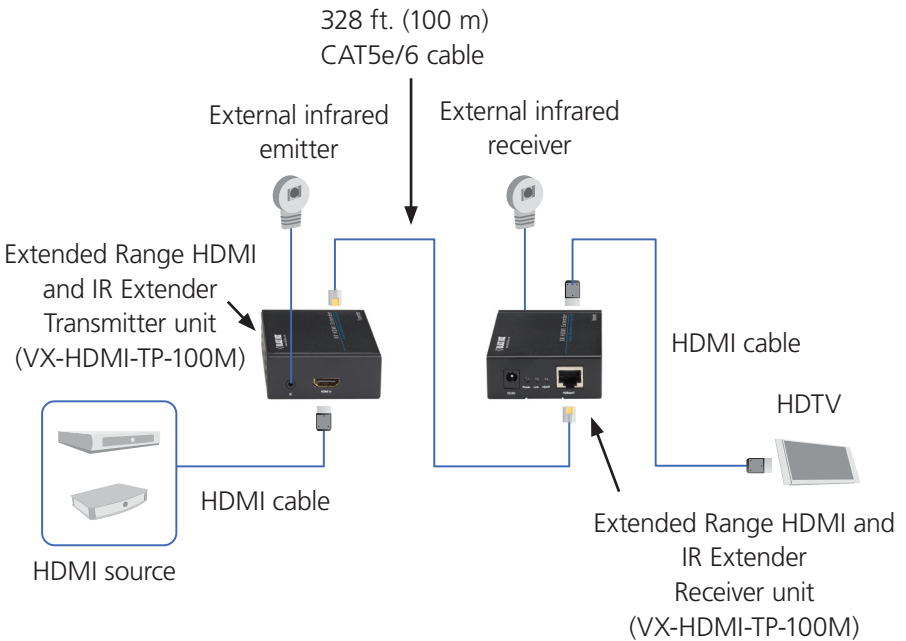


Figure 3-1. Connection diagram.

### 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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