



VX-1001-TX
VX-1001-RX

VX1000 Series HDMI Extender - 4K, HDMI, CATx, USB

Extend 3840 x 2160 @ 60Hz video, power, Ethernet, RS-232, and USB up to 328 feet (100 meters) over a single CAT5e or higher cable.



**Contact
Information**

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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.

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.

NOM Statement

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.

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Important Safety Instructions

1. Do not expose this apparatus to rain, moisture, dripping or splashing water and do not place objects filled with liquids, such as vases, on the apparatus.
2. Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Make sure the unit is well ventilated.
3. To prevent risk of electric shock or fire hazard caused by overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.
4. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
5. Do not place sources of flames, such as lighted candles, on the unit.
6. Clean this apparatus only with a dry cloth.
7. Unplug this apparatus during lightning storms or when unused for long periods of time.
8. Protect the power cord from being walked on or pinched particularly at plugs.
9. Only use attachments/accessories specified by the manufacturer.
10. Refer all servicing to qualified service personnel.

Disclaimer

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1. Specifications

Transmitter (VX-1001-TX)

Video	
Input Connector	(1) HDMI In
Input Signal Type	HDMI: HDMI 1.4 w/HDCP 2.2 passthrough
Input/Output Resolution Support	Maximum 3840 x 2160 (UHD)
Input Video Level	0.5-1.0 Vp-p
Maximum Pixel Clock	297 MHz
Output Connector	(1) RJ-45
Input Signal Type	CATx
Video Impedance	100 ohms
Audio	
Audio Format Support	Stereo, LPCM 5.1 LPCM 7.1, Dolby True HD, DTS-HD Master Audio
Control	
Control Method	(1) RS-232, (1) Ethernet, (1) USB Type B female

Chapter 1: Specifications

Receiver (VX-1001-RX)

Video	
Input Connector	(1) RJ-45
Input Signal Type	CATx
Input/Output Resolution Support	Maximum 3840 x 2160 (UHD)
Input Video Level	0.5-1.0 Vp-p
Maximum Pixel Clock	297 MHz
Output Connector	(1) HDMI Out
Output Signal Type	HDMI: HDMI 1.4 w/HDCP 2.2 passthrough
Video Impedance	100 ohms
Audio	
Audio Format Support	Stereo, LPCM 5.1 LPCM 7.1, Dolby True HD, DTS-HD Master Audio
Control	
Control Method	(1) RS-232, (1) Ethernet, (1) USB Type B female

General (VX-1001-TX and VX-1001-RX)

Environment	
Operating Temperature	32 to 113° F (0 to 45° C)
Storage Temperature	-4 to +158° F (-20 to +70° C)
Humidity	10 to 90%, noncondensing
ESD Protection	Human-body model ±8 kV (air-gap discharge)/4 kV (contact discharge)
Power	
Power Supply	12 VDC, 1.5 A with US, EU, UK, and AU power clips
Power Consumption (Maximum)	1080p @ 60 Hz: 13.08 W (pair) 3840 x 2160 @ 60 Hz: 13.2 W (pair)
Mechanical	
Dimensions	Each unit: 0.98"H x 8.66"W x 3.67"D (2.5 x 22 x 9.3 cm)
Weight	Each unit: 1.1 lb. (0.5 kg)

Chapter 1: Specifications

Cable Specifications

Cable Type	Range	Supported Video
CAT5e/6	328 ft. (100 m)	1080p @ 60 Hz, 36-bit
	230 ft. (70 m)	1080p @ 60 Hz, 4-bit; 1080p @ 60 Hz, 3D; 840 x 2160 @ 60 Hz, 4:2:0 bit
CAT6a/7	328 ft. (100 m)	1080p @ 60 Hz, 48-bit; 1080p @ 60 Hz, 3D; 3840 x 2160 @ 60 Hz, 4:2:0 bit

2. Overview

2.1 Introduction

The VX-1001-TX and VX-1001-RX are a pair of HDMI extenders with USB-HID* and PoC (Power over CATx).

*Keyboard and mouse only.

- VX1000 Series Extender Transmitter - 4K, HDMI, CATx, USB (VX-1001-TX)
- VX1000 Series Extender Receiver - 4K, HDMI, CATx, USB (VX-1001-RX)

The extender pair distributes 3840 x 2160 @ 60Hz Chroma sub-sampling 4:2:0 (8-bit only) video, power, Ethernet, RS-232, and USB up to 328 feet (100 meters) over a single CATx cable.

USB-HID passthrough enables users to control or monitor a remote server from a harsh environment or to operate a physically inaccessible PC, server, or workstation remotely.

With 48-V PoH integrated inside, the extender pair needs just one power supply connected to the RX unit to power both units. A screw-on connector secures the 12-V power supply to the transmitter to prevent the power from accidentally being disconnected. LEDs indicate power supply to units and signal status to show an established connection between connected devices.

2.2 Features

- Via CAT6a/7 cables, the extenders support 3840 x 2160 @ 60 Hz 4:2:0 8-bit or 1080p @ 60 Hz up to 328 feet (100 meters).
- Via CAT5e or higher cables, the extenders support 3840 x 2160 @ 60 Hz, 4:2:0, 8-bit output up to 224 feet (70 meters), and 1080p @ 60 Hz up to 328 feet (100 meters).
- Offers a single CATx cable solution that transmits HD Audio/Video, RS-232, Ethernet, and electrical power.
- Complies with HDMI 1.4 with 4K @ 60 Hz chroma subsampling 4:2:0, 8-bit only, and HDCP 2.2.
- Supports USB-KVM control.
- Supports Power over CATx (PoC).
- Provides RS-232 passthrough.
- Manages EDID automatically.
- Cable termination follows IEEE-568B standards.

Chapter 2: Overview

2.3 What's Included

Your package should include the following items. If anything is missing or damaged, contact Black Box Technical Support at 877-877-2269 or info@blackbox.com.

VX-1001-TX:

- VX1000 Series Extender Transmitter - 4K, HDMI, CATx, USB (VX-1001-TX)
- (1) 3.5-mm 3-pin Phoenix male connector
- (2) mounting brackets
- This user manual

VX-1001-RX:

- VX1000 Series Extender Receiver - 4K, HDMI, CATx, USB (VX-1001-RX)
- (1) 12-VDC, 1.5-A power supply with US, EU, UK, and AU power clips
- (1) 3.5-mm 3-pin Phoenix male connector
- (2) mounting brackets
- This user manual

2.4 Hardware Description

2.4.1 Transmitter

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



Figure 2-1. Transmitter front panel.

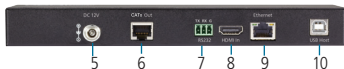


Figure 2-2. Transmitter back panel.

Table 2-1. Transmitter components.

Number	Component	Description
1	Power LED	ON: The transmitter is powered on. OFF: The transmitter is powered off.
2	Status LED	Blinking: The transmitter is working properly. OFF: The transmitter is not working properly.
3	HDCP LED	ON: HDCP video is being transmitted. Flashing quickly: Non-HDCP video is being transmitted.
4	Link LED	ON: CATx link is normal. OFF: No CATx link.
5	(1) Barrel connector	Links to 12-VDC power input.
6	CATx Out	Connects to CATx IN port of CATx receiver.
7	RS-232 port	Provides RS-232 passthrough.
8	HDMI IN port	Connects to an HDMI source.
9	(1) RJ-45 port and (2) LEDs	RJ-45 port connects to an Ethernet device. Speed LED (Amber) Link/Activity LED (Green)
10	USB Type B	Connects to a device you wish to control, such as a server or computer.

2.4.2 Receiver

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



Figure 2-3. Receiver front panel.

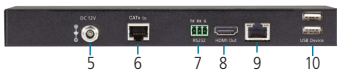


Figure 2-4. Receiver back panel.

Table 2-2. Receiver components.

Number	Component	Description
1	Power LED	ON: The receiver is powered on. OFF: The receiver is powered off.
2	Status LED	Blinking: The receiver is working properly. OFF: The receiver is not working properly.
3	HDCP LED	ON: HDCP video is being transmitted. Flashing quickly: Non-HDCP video is being transmitted.
4	Link LED	ON: CATx link is normal. OFF: No CATx link.
5	(1) Barrel connector	Links to 12-VDC power input (optional).
6	CATx IN	Connects to CATx OUT port of CATx transmitter.
7	RS-232 port	Provides RS-232 passthrough.
8	HDMI OUT port	Connects to an HDMI display device.
9	(1) RJ-45 port and (2) LEDs	RJ-45 port connects to an Ethernet device. Speed LED (Amber) Link/Activity LED (Green)
10	(2) USB Type A connectors	Connects to a USB keyboard or mouse.

Chapter 3: Initial Installation

3. Initial Installation

1. Using quality HDMI cables, connect an HDMI source (Blu-ray™ disk or PC) to the HDMI IN connector on the VX-1001-TX Transmitter.

NOTE: Make sure that the source and display are 4K compatible if you are attempting to transmit an Ultra HD signal—check that all devices are correctly configured for input/output compatibility.

2. Connect a good quality, well-terminated CAT5e or higher cable between the CATx OUT of the VX-1001-TX Transmitter to the CATx IN of the VX-1001-RX Receiver.

NOTE: The maximum transmission distances for the extenders are 230 feet (70 meters) @ 4K or 328 feet (100 meters) @1080p. This value applies to perfect transmission conditions—including straight cable runs with no electrical interference, bends, kinks, patch panels, or wall outlets.

If any of the above is a factor in your installation, transmission range may be affected—avoid this where possible.

3. Connect the HDMI display device (LED/LCD display or projector) to the HDMI OUT of the VX-1001-RX Receiver.

NOTE: We strongly recommend using the supplied mounting brackets to secure the receiver to a flat surface behind/near the display device. Sudden movement of these devices could lead to loss of picture/sound if connections loosen or strain, resulting in unnecessary service call-backs.

4. Connect the included 12-VDC power supply to the VX-1001-TX Receiver and power it on. The PoH function carries power along the length of the cable one way to power the Transmitter. No additional power supply is required at the display end of the cable run.

Power, Status, and HDCP, and Link LEDs illuminated on both units indicates a successful connection. An HDCP light illustrates the presence of encryption within the signal. The Power and Link LEDs are static lights. The Status LED should be blinking.

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