

USER MANUAL

4KDPKVMXT-100M-R2

4K DP 1.2 KVM EXTENDER

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



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SAFETY INSTRUCTIONS

1. Do not expose this apparatus to rain, moisture, dripping or splashing liquids. Do not place any 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 due to 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 open 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. Do not walk on or pinch the power cord, particularly at plugs.
9. Only use attachments/accessories specified by the manufacturer.
10. Refer all servicing to qualified service personnel.



CHAPTER 1: SPECIFICATIONS

TABLE 1-1. SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Transmitter	
Technical	
Input Connectors	(1) DisplayPort, (1) Audio
Resolution Support	800 x 600, 1024 x 768, 1152 x 864, 1176 x 664, 1280 x 720, 1280 x 768, 1280 x 800, 1280 x 960, 1280 x 1024, 1360 x 768, 1366 x 768, 1440 x 900, 1600 x 900, 1600 x 1024, 1600 x 1200, 1680 x 1050, 1768 x 992, 1920 x 1080 (Recommended) , 1920 x 1200, 2048 x 1536, 2560 x 1440, 2560 x 1600, 3840 x 1080, 3840 x 2160 at 30 Hz, 4096 x 2160 at 30 Hz NOTE: Copy Mode can support resolutions up to 4096 x 2160 at 30 Hz.
Maximum Data Rate	10.2 Gbps
Output Connectors	(1) HDBT, (1) Audio
DDC Support	Real Time EDID Emulation Support
User Controls	(1) EDID switch
Environmental	
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: ±8KV (Air-gap discharge)/±4KV (Contact discharge)
Power	
Power Supply	12 VDC, 2 A, one power supply powers both TX and RX units via integrated 48-V PoE
Power Consumption	14.2 W (max.)
Mechanical	
Dimensions	0.98" H x 7.87" W x 3.94" D (2.5 x 20 x 10 cm)
Weight	1.1 lb. (0.5 kg)
Receiver	
Technical	
Input Connectors	(1) HDBT, (1) Audio
Output Connectors	(1) DisplayPort, (1) Audio
Environmental	
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: ±8KV (Air-gap discharge)/±4KV (Contact discharge)
Power	
Power Supply	Powered by the 12 VDC, 2 A power supply connected to the transmitter via integrated 48-V PoE
Power Consumption	14.2 W (max.)
Mechanical	
Dimensions	0.98" H x 7.87" W x 3.94" D (2.5 x 20 x 10 cm)
Weight	1.1 lb. (0.5 kg)



TABLE 1-2. TRANSMISSION DISTANCE

CABLE TYPE	RANGE	SUPPORTED VIDEO
CAT5e/6	330 ft. (100 m)	1080p at 60 Hz 36-bit
	295 ft. (90 m)	1080p at 60 Hz 48-bit, 1080p at 60 Hz 3D, 3840 x 2160 at 30 Hz 4:4:4 8-bit
CAT6a/7	330 ft. (100 m)	1080p at 60 Hz 48-bit, 1080p at 60 Hz 3D, 3840 x 2160 at 30 Hz 4:4:4 8-bit

NOTE: Straight-through category cable wired to T568B standard is recommended.

CHAPTER 2: OVERVIEW

2.1 INTRODUCTION

The 4KDPKVMXT-100M-R2 is a 100 m 4K DisplayPort over HDBT Extender with USB 2.0 and Audio Passthrough, and distributes uncompressed 4K at 30 Hz UHD video, audio, power, RS-232 and USB 2.0 up to 328 feet (100 m) over a single CATx cable.

With USB 2.0 passthrough, it enables users to control or monitor a remote server in a harsh environment, or operate physically inaccessible PCs, servers or workstations remotely. And bi-directional audio passthrough allows audio distribution in both directions.

The technology supports active real-time EDID Emulation, in other words, as long as the attached display is connected during operation, all computers will be able to use the monitor profile properly whether the KVM port is selected or not.

With 48 V PoE integrated inside, it just needs one power supply connected to the TX unit to power both units. Its 12-V power supply is secured with a screw-on connector to prevent the power from being accidentally disconnected. LEDs indicate that power is connected and show an established connection between devices.

2.2 FEATURES

- ◆ Using CAT6a/7 cables, outputs 4K x 2K at 30 Hz up to 328 feet (100 m) or 1080p at 60 Hz up to 328 feet (100 m)
- ◆ Using CAT5e/6 cables, outputs 4K x 2K at 30 Hz up to 295 feet (90 m) or 1080p at 60 Hz up to 328 feet (100 m)
- ◆ Supports DisplayPort 1.2 up to 4K at 30 Hz with HDCP 1.3 compliance
- ◆ Offers USB 2.0 passthrough over HDBaseT, with USB-Host built in TX and USB-Device built in RX
- ◆ Enables bi-directional stereo line audio passthrough over HDBaseT
- ◆ Supports RS-232
- ◆ Supports static EDID for up to 4096 x 2160 at 30 Hz, or 2K resolutions at 60 Hz; Copy Mode can support resolutions up to 4096 x 2160 at 30 Hz
- ◆ Provides one-way PoE, TX (PSE) with a PSU to power both TX and RX (PD)
- ◆ All connectors are on one side for easy installation

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

- ◆ (1) Transmitter
- ◆ (1) Receiver
- ◆ (1) 12-VDC, 2 A power supply
- ◆ (2) 2-pin 3.5-mm Phoenix male connectors
- ◆ (4) mounting brackets



CHAPTER 2: OVERVIEW

2.4 HARDWARE DESCRIPTION

Section 2.4.1 describes the front panels of the TX and RX units. Section 2.4.2 explains the back panel of the TX unit. Section 2.4.3 shows the back panel of the RX unit.

2.4.1 FRONT PANELS, TX AND RX UNITS

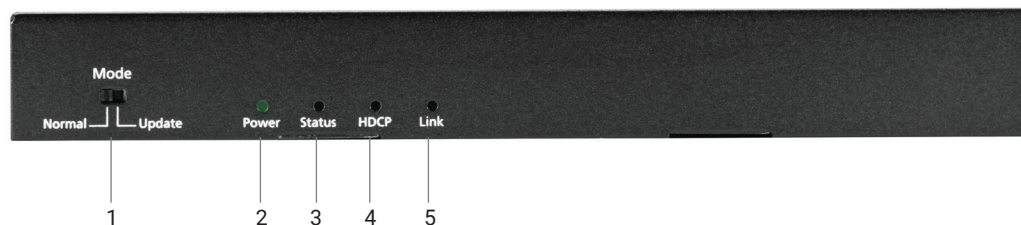


FIGURE 2-1. FRONT PANEL, TX OR RX UNIT

TABLE 2-1. TX UNIT OR RX UNIT FRONT-PANEL COMPONENTS

NUMBER IN FIGURE 2-1	COMPONENT	DESCRIPTION
1	Mode button	Switches the mode for the RS-232 port Normal: RS-232 HDBaseT passthrough Update: RS-232 firmware update
2	Power LED	On: The device is powered on Off: The device is powered off
3	Status LED	Blinking: The device is working properly Off: The device is not working properly
4	HDCP LED	On: Audio and Video signal is HDCP protected Blinking: Audio and Video signal is not HDCP protected Off: No Audio and Video signal
5	Link LED	On: Link between transmitter and receiver has been established Off/Blinking: Connection exceptions exist between the transmitter and receiver

2.4.2 BACK PANEL, TX UNIT

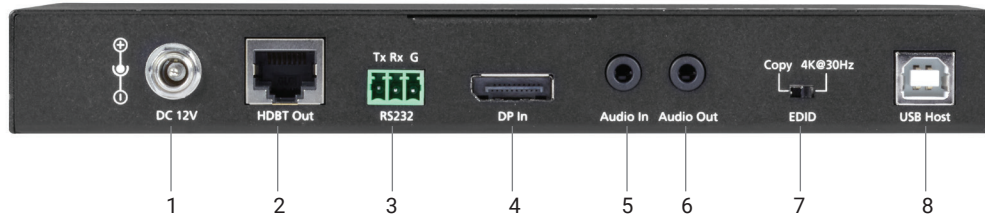


FIGURE 2-2. BACK PANEL, TX UNIT

TABLE 2-2. TX UNIT BACK-PANEL COMPONENTS

NUMBER IN FIGURE 2-2	COMPONENT	DESCRIPTION
1	12-VDC connector	12-VDC power input
2	HDBT Out	Connects to the HDBT In port of an HDBT receiver
3	RS-232 connector	Used for RS-232 passthrough or firmware update
4	DP In	Connects to a DisplayPort source
5	AUDIO In	Connects to an audio source, such as a PC
6	AUDIO Out	Connects to an audio device, such as an amplifier
7	EDID switch	Copy: Copies EDID from monitor Copy Mode can support resolutions up to 4096 x 2160 at 30 Hz 4K at 30 Hz: Internal Emulated EDID
8	USB Type B connector	Connects to a USB host device, such as a server, computer, etc.

2.4.3 BACK PANEL, RX UNIT

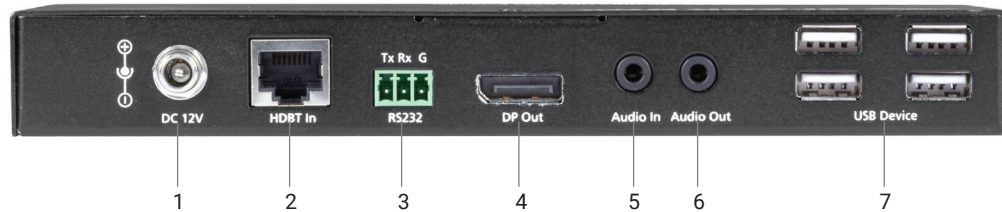


FIGURE 2-3. BACK PANEL, RX UNIT

TABLE 2-3. RX UNIT BACK-PANEL COMPONENTS

NUMBER IN FIGURE 2-3	COMPONENT	DESCRIPTION
1	12-VDC connector	12-VDC optional power input for receiver, not required if TX has power and RX is connected to TX
2	HDBT In	Connects to the HDBT Out port of an HDBT transmitter
3	RS-232 connector	Used for RS-232 passthrough or firmware update
4	DP Out	Connects to a DisplayPort display device
5	AUDIO In	Connects to an audio source, such as a PC
6	AUDIO Out	Connects to an audio device, such as an earphone
7	(4) USB Type A connectors	Connects to USB devices such as mouse, keyboard, USB camera, etc.

CHAPTER 3: INSTALLATION AND WIRING

1. Set the EDID switch on the Transmitter:

- ◆ COPY - Used for specific resolutions/display types. This is useful if you know your resolution requirement (or you are using non-standard type resolutions).
- ◆ 4K@30Hz - Use this position for a generic display setup (mostly used for standard monitor resolutions such as 1920 x 1080).

2. Using a quality DisplayPort cable, connect a DisplayPort source to the DP in connector on the Transmitter.

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

3. Connect a good quality, well-terminated CAT5e/6/7 cable between the HDBT Out connector of the Transmitter to the HDBT In connector of the Receiver.

NOTE: 230 feet (70 meters) at 4K or 328 feet (100 meters) at 1080p video are maximum recommended transmission distances for this model under perfect transmission conditions – including straight cable runs with no electrical interference, bends, kinks, patch panels or wall outlets. If any of the above factors are marginal in your installation, transmission range may be affected – be careful to avoid where possible.

4. Connect the DisplayPort display device (LED/LCD display or projector) to the DP Out connector of the Receiver.

NOTE: We strongly recommended 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 become loose or strained, resulting in unnecessary service callbacks.

5. Connect the included 12-V power supply to the Transmitter. The PoE function carries power along the length of the cable one-way to power the Receiver. No additional power supply is required at the display end of the cable run.

Check that the Power, Status, and HDCP and Link lights are illuminated on both units to indicate successful connection, with a lit HDCP light illustrating the presence of encryption within the signal. Power and Link are static lights. The Status LED should be blinking.

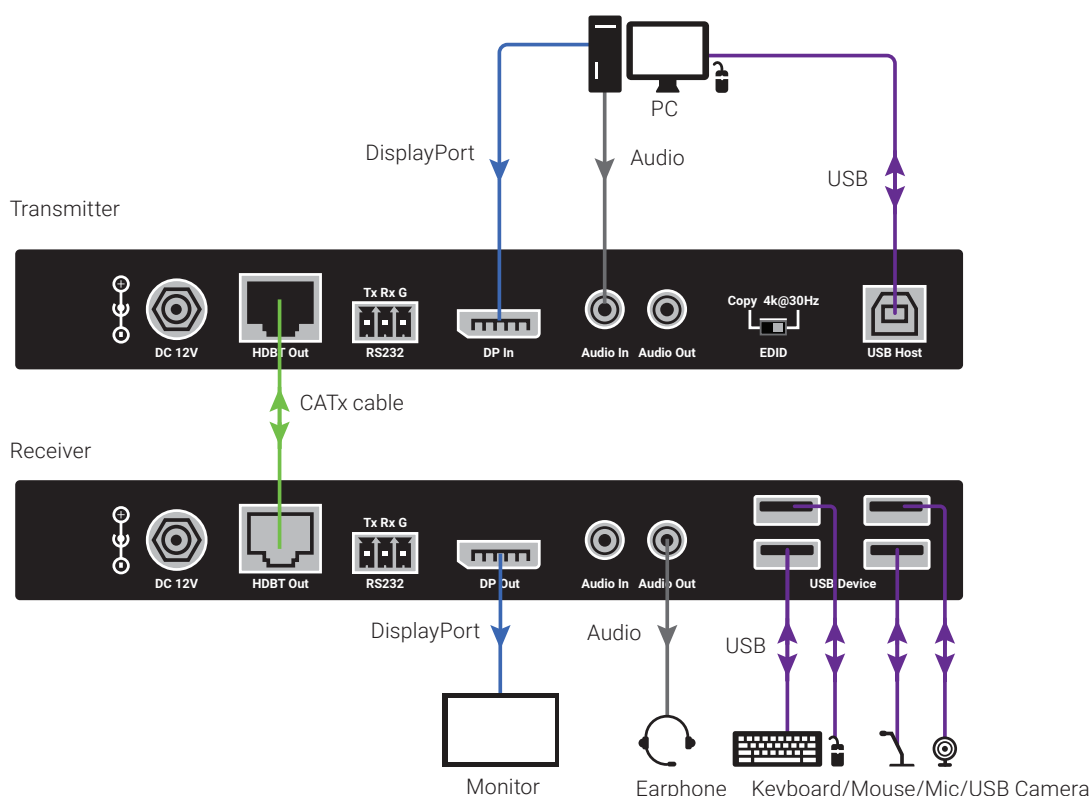


FIGURE 3-1. SAMPLE INSTALLATION

APPENDIX A: REGULATORY INFORMATION

A.1 FCC CLASS B STATEMENT

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- ♦ Reorient or relocate the receiving antenna.
- ♦ Increase the separation between the equipment and receiver.
- ♦ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ♦ Consult an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To meet FCC requirements, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

This digital apparatus does not exceed the Class B 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 B 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 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.



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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