BZB GEAR ®

Solutions to Amplify Your World ™

BG-EXH-8KC6
Direktronik art 20124460

8K HDMI and USB over HDBaseT Extender

User Manual

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Statement

Please read these instructions carefully before connecting, operating, or configuring this product. Please save this manual for future reference.

Safety Precaution

- To prevent damaging this product, avoid heavy pressure, strong vibration, or immersion during transportation, storage, and installation.

- The housing of this product is made of organic materials. Do not expose to any liquid, gas, or solids which may corrode the shell.

- Do not expose the product to rain or moisture.

- To prevent the risk of electric shock, do not open the case. Installation and maintenance should only be carried out by qualified technicians.

- Do not use the product beyond the specified temperature, humidity, or power supply specifications.

- This product does not contain parts that can be maintained or repaired by users. Damage caused by dismantling the product without authorization from BZBGEAR is not covered under the warranty policy.

- Installation and use of this product must strictly comply with local electrical safety standards.

Introduction

The BG-EXH-8KC6 is an 8K HDMI & USB over HDBaseT Extender that can increase the range of uncompressed HD/UHD video and audio signals, eARC/ARC, RS-232, bi-directional IR, 1Gb Ethernet, and USB 2.0 signals up to 295ft (90m) via a single CAT6A/7 cable.

Video resolutions up to 8K@30 4:4:4 10bit, 4K@120Hz 4:4:4 10bit, 4K60Hz 4:4:4 are supported. It also features eARC/ARC from the receiver HDMI output pass-through to the transmitter's HDMI input or audio de-embedding to the transmitter's HDMI output port.

It further supports USB 2.0 signal transmission (Host / Device is configurable per device) and bi-directional POC functionality. The BG-EXH-8KC6 is the perfect 8K signal solution for home or commercial applications that require long-distance signal transmission.

Features

- HDMI 2.1, HDCP 2.3, and HDBaseT 3.0 compliant
- Up to 40 Gbps Fixed Rate Link (FRL) and 18Gbps Transition-Minimized Differential Signaling (TMDS) video bandwidth
- Supports video resolutions up to 8K@30 4:4:4 10bit, 4K@120Hz 4:4:4 10bit
- Support for all industry-standard video resolutions including VGA-WUXGA and 480i - 8K30
- Variable Refresh Rate (VRR), Fast as Possible V-active (FVA), Auto Low Latency Mode (ALLM) support
- HDR, HDR10, HDR10+, Dolby Vision and HLG pass-through
- HDMI audio formats: Dolby Atmos, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio
- Signal transmission distance up to 295ft (90m) via a single CAT 6A/7 cable
- Support for eARC/ARC (from RX to TX) sound systems
- Advanced EDID management through EDID DIP switches
- CONFIG DIP switches allow for RS-232 serial port feature control
- USB 2.0 transmission (with speeds up to 350Mbps). The transmitter or receiver can be configured as either Host or Device.
- Bi-directional support for Ethernet (1Gb), analog audio, IR, RS-232 signal pass-through and 24V POC.
- HDMI re-clocking on the HDBaseT Receiver to help resolve HDMI HDCP compatibility and handshaking issues with displays.

Packing List

- 1x BG-EXH-8KC6 Transmitter
- 1x BG-EXH-8KC6 Receiver
- 1x 24V / 2.7A Locking Power Supply
- 1x IR Blaster Cable (1.5m)
- 1x IR Receiver Cable (1.5m)

- 2x 3-pin 3.81mm Phoenix connectors
- 4x Mounting ears
- 8x KM3*4 Machine Screws
- 8x Rubber feet
- 1x User Manual

Specifications

Technical Specifications	
HDMI Compliance	HDMI 2.1
HDCP Compliance	HDCP 2.3
Video Bandwidth	Up to 40Gbps FRL and 18Gbps TMDS
Video Resolution	Up to 8K@30 4:4:4 10bit, 4K@120Hz 4:4:4 10bit
USB Bandwidth	Up to 350Mbps
HDR	HDR, HDR10, HDR10+, Dolby Vision, HLG
Color Space	RGB 4:4:4, YCbCr 4:4:4 / 4:2:2, YCbCr 4:2:0
Color Depth	8/10/12-bit
Audio Formats	**HDMI:** PCM 2.0, LPCM 5.1, LPCM 7.1, (32K/44.1K/48K/88.2K/96K/176.4K/192K) (16/20/24); Dolby Digital, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos; DTS Surround, 96/24, ES, DTS Express, DTS-HD HRA, DTS HD Master, DTS:X **Analog:** PCM 2.0 48K
IR Level	5Vp-p/12Vp-p
IR Bandwidth	20K - 60KHz
Transmission Distance	MAX: CAT6 = 197ft (60m) / CAT6A/7 = 295ft (90m)
ESD Protection	Human body model — ±8kV (Air-gap discharge) & ±4kV (Contact discharge)
Connections	
Transmitter	**Input:** 1 x HDMI IN [Type A, 19-pin female] 1 x AUDIO IN [3.5mm Stereo Mini-jack] **Output**: 1 x HDMI OUT [Type A, 19-pin female] 1 x HDBT OUT [RJ45, 8-pin female] 1 x AUDIO OUT [3.5mm Stereo Mini-jack] **Control:** 1 x IR IN [3.5mm Stereo Mini-jack] 1 x IR OUT [3.5mm Stereo Mini-jack] 1 x RS-232 [3 pin-3.81mm Phoenix jack] 1 x USB HOST [USB Type B]

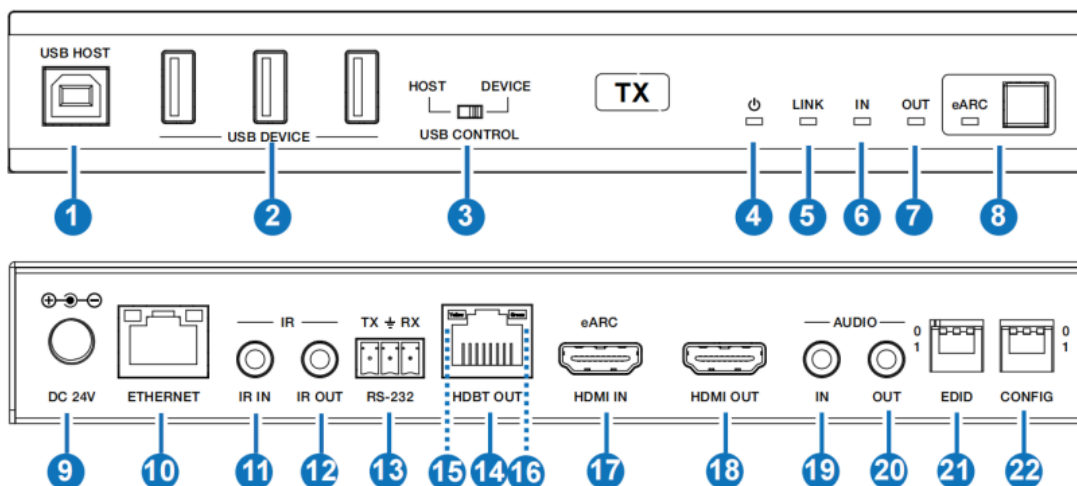|	
	3 x USB DEVICE [USB Type A] 1 x ETHERNET [RJ45]
Receiver	**Input:** 1 x HDMI IN [Type A, 19-pin female] 1 x HDBT IN [RJ45, 8-pin female] 1 x AUDIO IN [3.5mm Stereo Mini-jack] **Output:** 1 x HDMI OUT [Type A, 19-pin female] 1 x AUDIO OUT [3.5mm Stereo Mini-jack] **Control:** 1 x IR IN [3.5mm Stereo Mini-jack] 1 x IR OUT [3.5mm Stereo Mini-jack] 1 x RS-232 [3 pin-3.81mm Phoenix jack] 1 x USB HOST [USB Type B] 3 x USB DEVICE [USB Type A] 1 x ETHERNET [RJ45]
Mechanical	
Housing	Front Panel - Aluminium / Enclosure - Metal Composite
Color	Black
Dimensions (L x W x H)	200mm x 100mm x 30mm
Weight	1.25lbs (20oz)
Power Supply	Input: AC 100 - 240V 50/60Hz Output: DC 24V/2.7A (US/EU standard, CE/FCC/UL certified)
Power Consumption	Total power consumption: 20.4w (POC) TX/RX Full Load: 9.36w/9.84w; TX/RX No Load: 2.46w/3.36w
Operating Temperature	32° - 104°F / 0° - 40°C
Storage Temperature	-4° - 140°F / -20° - 60°C
Relative Humidity	20 - 90% RH (no condensation)

Resolution	8K30	4K60	4K24	1080P60
Cable Length	9.8ft / 3m	16ft / 5m	32ft / 10m	66ft / 20m

NOTE: The use of "Premium High Speed" HDMI 2.1 cables is highly recommended.

Operation Controls and Functions

Transmitter

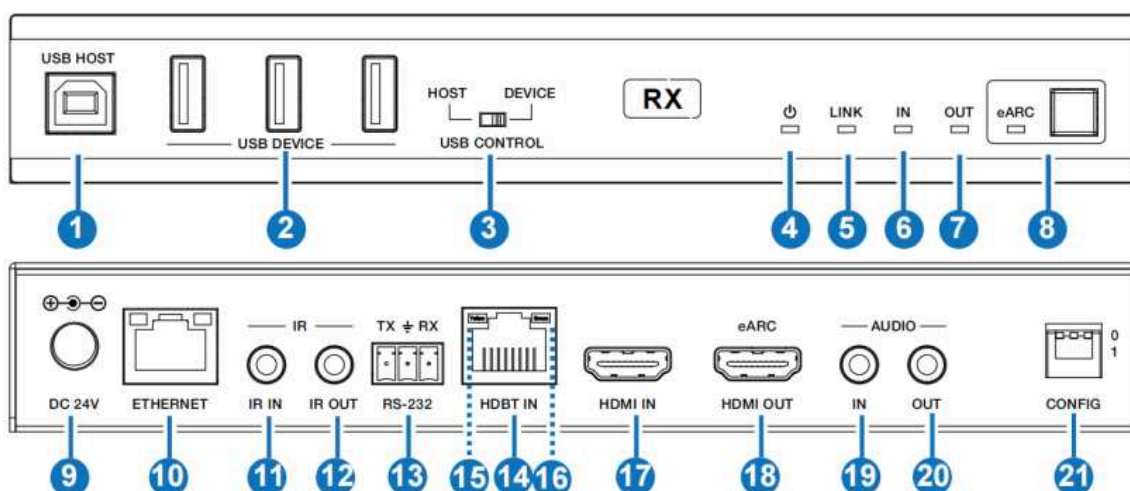| No	Name	Description
1	USB Host	Connect to a PC
2	USB Device	3 USB extension ports; connect a flash drive, mouse, or keyboard
3	Host/Device USB Control Switch	Switch to left (HOST), the USB HOST mode is enabled; Switch to right (DEVICE), the USB DEVICE mode is enabled. *Note: If the transmitter is set to USB HOST mode, the receiver must be set to USB DEVICE mode.*
4	Power LED	**Light on:** The transmitter is powered on. **Light off:** The transmitter is powered off.
5	Link LED	**Light on**: Transmitter and receiver are in good connection status. **Light flashing:** Transmitter and receiver are in poor connection status or connected to the same device. **Light off:** Transmitter and receiver are not connected.
6	In LED	Video signal input indicator. **Light on:** There is HDMI signal input. **Light off:** There is no HDMI input or the system is powered off.

7	Out LED	Video signal output indicator. **Light on:** There is HDMI signal output. **Light off:** There is no HDMI output or the system is powered off.
8	eARC LED & Button	Press the eARC button to enable/disable the eARC/ARC function, and the eARC LED will indicate the status as following: **Light on:** The eARC/ARC mode is enabled, and the device is working normally. **Light flashing:** The eARC/ARC mode is enabled, but the device is working abnormally. **Light off:** The eARC/ARC mode is disabled.
9	DC 24V	DC 24V/2.7A power supply input port. **Note** *The extenders support POC functionality which means that either the transmitter or receiver is powered on by the 24V/2.7A power adapter, the other one does not need a power supply.*
10	Ethernet Indicators	Ethernet port with adaptive broadband rate. For example, if the transmitter is connected to a PC with a 100Mbps, and the receiver is connected to a Gigabit router, the device can automatically switch the 100Mbps of the transmitter to Gigabit rate. (**Note:** *If the connected device only supports 100Mbps, the extender cannot switch to Gigabit.*) Ethernet Indicators: **Light in green:** the Ethernet rate is 1000 Mbps. **Light in yellow:** the Ethernet rate is 100 Mbps.
11	IR In	IR signal input port, connect to IR Receiver cable.
12	IR Out	IR signal output port, connect to IR Blaster cable.
13	RS-232	The RS-232 serial port features different functions by setting the CONFIG DIP switch: 1. RS-232 signal pass-through 2. Control & FW upgrade 3. VS3000 FW upgrade 4. Debug
14	HDBT Out	HDBaseT Network port, connect to the HDBT IN port of the receiver with a CAT 6A/7 cable. It is used for various signal pass-through.
15	Data Signal Indicator (Yellow)	**Light on:** HDMI signal with HDCP. **Light flashing:** HDMI signal without HDCP. **Light off:** No HDMI signal.
16	Link Signal Indicator (Green)	**Light on:** Transmitter and receiver are in good connection status. **Light flashing:** Transmitter and receiver are in poor connection status or connected to the same device.

		Light off: Transmitter and receiver are not connected.
17	eARC/HDMI In	This port features two functions: 1. HDMI signal input port, connect to HDMI source device 2. eARC/ARC audio port, connect to eARC/ARC amplifier/sound system.
18	HDMI Out	HDMI video signal output port. It can loop out the local video signal or output the video signal returned from the receiver.
19	Audio In	Analog audio input port. The audio from this port can be output through the AUDIO OUT port of the receiver.
20	Audio Out	Analog audio output port. It can output the audio from the AUDIO IN port of the receiver.
21	EDID DIP Switch	The DIP switch is used for EDID settings. (Set to 000 by default.) **[DIP]=000**: Copy RX HDMI OUT port sink EDID *(Note: If there is no TV connected to the receiver, it will copy the EDID of the local loopout video.)* **[DIP]=001**: HDMI 1080p@60Hz, Audio 2ch PCM **[DIP]=010**: HDMI 4K@60Hz 4:4:4, Audio 2ch PCM **[DIP]=011**: HDMI 4K@60Hz 4:4:4, Audio 5.1ch PCM/DTS/DOLBY [DIP]=100: HDMI 4K@60Hz 4:4:4, Audio 7.1ch PCM/DTS/DOLBY/HD **[DIP]=101**: HDMI 8K@30Hz 4:4:4+4K@120Hz 4:4:4, Audio 2ch PCM **[DIP]=110**: HDMI 8K@30Hz 4:4:4+4K@120Hz 4:4:4, Audio 5.1ch PCM/DTS/DOLBY **[DIP]=111**: HDMI 8K@30Hz 4:4:4+4K@120Hz 4:4:4, Audio 7.1ch PCM/DTS/DOLBY/HD
22	CONFIG DIP Switch	The DIP switch is used to set IR level and serial port access. **DIP SW1=0**: The IR level is set to 12V. **DIP SW1=1**: The IR level is set to 5V. **DIP SW2/SW3=00**: The RS-232 port is used for RS-232 signal pass-through. **DIP SW2/SW3=01**: The RS-232 port is used for Control & FW upgrade. **DIP SW2/SW3=10**: The RS-232 port is used for VS3000 FW upgrade. **DIP SW2/SW3=11**: The RS-232 port is used for debugging.

Receiver

| No	Name	Description
1	USB Host	Connect to a PC
2	USB Device	3 USB extension ports; connect a flash drive, mouse, or keyboard
3	Host/Device USB Control Switch	Switch to left (HOST), the USB HOST mode is enabled; Switch to right (DEVICE), the USB DEVICE mode is enabled. **Note:** *If the transmitter is set to USB HOST mode, the receiver must be set to USB DEVICE mode.*
4	Power LED	**Light on:** The transmitter is powered on. **Light off:** The transmitter is powered off.
5	Link LED	**Light on:** Transmitter and receiver are in good connection status. **Light flashing:** Transmitter and receiver are in poor connection status or connected to the same device. **Light off:** Transmitter and receiver are not connected.
6	In LED	Video signal input indicator. **Light on:** There is HDMI signal input. **Light off:** There is no HDMI input or the system is powered off.
7	Out LED	Video signal output indicator. **Light on:** There is HDMI signal output. **Light off:** There is no HDMI output or the system is powered off.
8		Press the eARC button to enable/disable the eARC/ARC

	eARC LED & Button	function, and the eARC LED will indicate the status as follows: **Light on:** The eARC/ARC mode is enabled, and the device is working normally. **Light flashing:** The eARC/ARC mode is enabled, but the device is working abnormally. **Light off:** The eARC/ARC mode is disabled.
9	DC 24V	DC 24V/2.7A power supply input port. **Note** *The extenders support POC functionality which means that either the transmitter or receiver is powered on by the 24V/2.7A power adapter, the other one does not need a power supply.*
10	Ethernet Indicators	Ethernet port with adaptive broadband rate. For example, if the transmitter is connected to a PC with a 100Mbps, and the receiver is connected to a Gigabit router, the device can automatically switch the 100Mbps of the transmitter to Gigabit rate. (**Note:** *If the connected device only supports 100Mbps, the extender cannot switch to Gigabit.*) Ethernet Indicators: **Light in green**: the Ethernet rate is 1000 Mbps. **Light in yellow:** the Ethernet rate is 100 Mbps.
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16	Link Signal Indicator (Green)	**Light on:** Transmitter and receiver are in good connection status. **Light flashing:** Transmitter and receiver are in poor connection status or connected to the same device. **Light off:** Transmitter and receiver are not connected.
17	HDMI In	HDMI Signal input port, connect to HDMI source device. IT can transmit video with resolutions of 1080p@24Hz in reverse to the HDMI OUT port of the transmitter, **Note:** *This port is reserved and closed by default. Before using this port, users will need to turn it on through RS232*

		commands and ensure that the eARC function is disabled.
18	eARC/HDMI Out	This port features two functions: 1. HDMI signal output port, connect to HDMI display device 2. eARC/ARC audio port, connect to TV with eARC/ARC function.
19	Audio In	Analog audio input port. The audio from this port can be output through the AUDIO OUT port of the transmitter.
20	Audio Out	Analog audio output port. It can output the audio from the AUDIO IN port of the transmitter.
21	CONFIG DIP Switch	The DIP switch is used to set IR level and serial port access. **DIP SW1=0**: The IR level is set to 12V. **DIP SW1=1**: The IR level is set to 5V. **DIP SW2/SW3=00**: The RS-232 port is used for RS-232 signal pass-through. **DIP SW2/SW3=01**: The RS-232 port is used for Control & FW upgrade. **DIP SW2/SW3=10**: The RS-232 port is used for VS3000 FW upgrade. **DIP SW2/SW3=11**: The RS-232 port is used for debugging.

IR Pin Definition
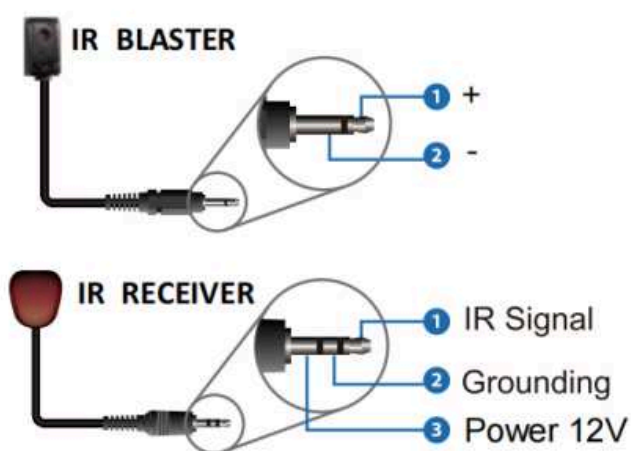
Note: When the angle between the IR receiver and the remote control is ± 45°, the transmission distance is 0-5 meters; when the angle between the IR receiver and the remote control is ± 90°, the transmission distance is 0-8 meters.

Connection Diagrams

USB Modes

The BG-EXH-8KC6 supports USB 2.0 transmission and the Host / Device is configurable.

Mode 1: USB from TX to RX
1. Switch the HOST/DEVICE USB control switch to the left and then power off and reboot the transmitter (TX) to set it to USB Host mode.
2. Next, switch the HOST/DEVICE USB control switch to the right on the receiver (RX) and then power off and reboot the unit to set it to USB Device mode.
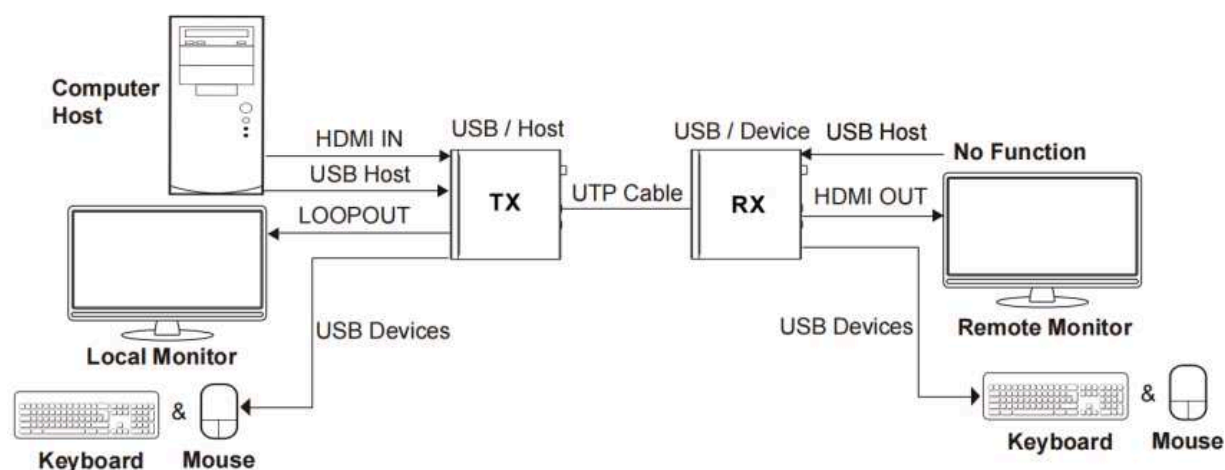

Mode 2: USB Reverse from RX to TX
1. Switch the HOST/DEVICE USB control switch to the right and then power off and reboot the transmitter (TX) to set it to USB Device mode.
2. Next, switch the HOST/DEVICE USB control switch to the left on the receiver (RX) and then power off and reboot the unit to set it to USB Host mode.
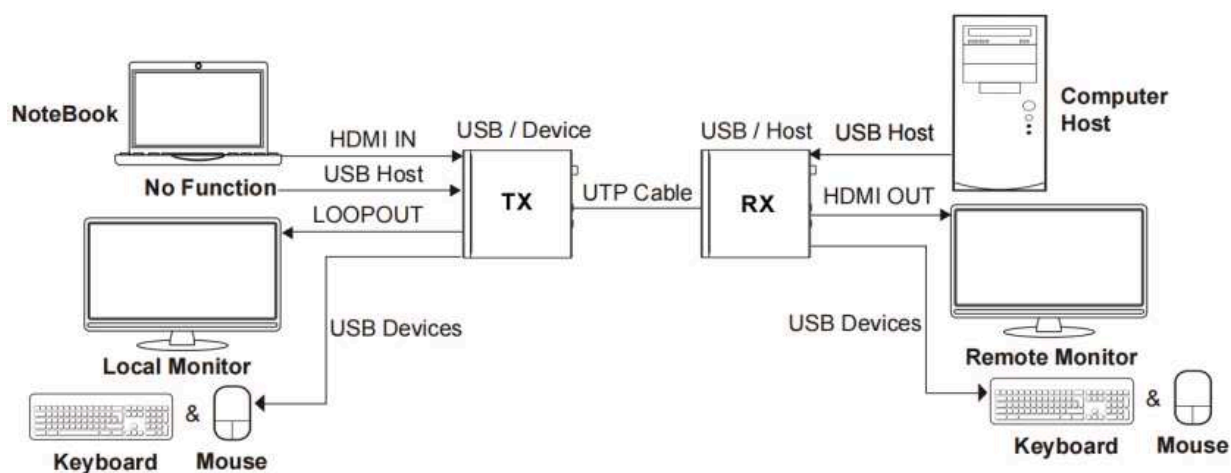
eARC/ARC Applications

The Audio Return Channel (ARC) in HDMI 2.1 enables a display, via a single HDMI cable or audio cable, to send audio data "upstream" to an A/V receiver. The BG-EXH-8KC6 will send the upstream audio from the receiver (RX) unit to the transmitter (TX) where it can be connected to a compatible device via HDMI ARC.
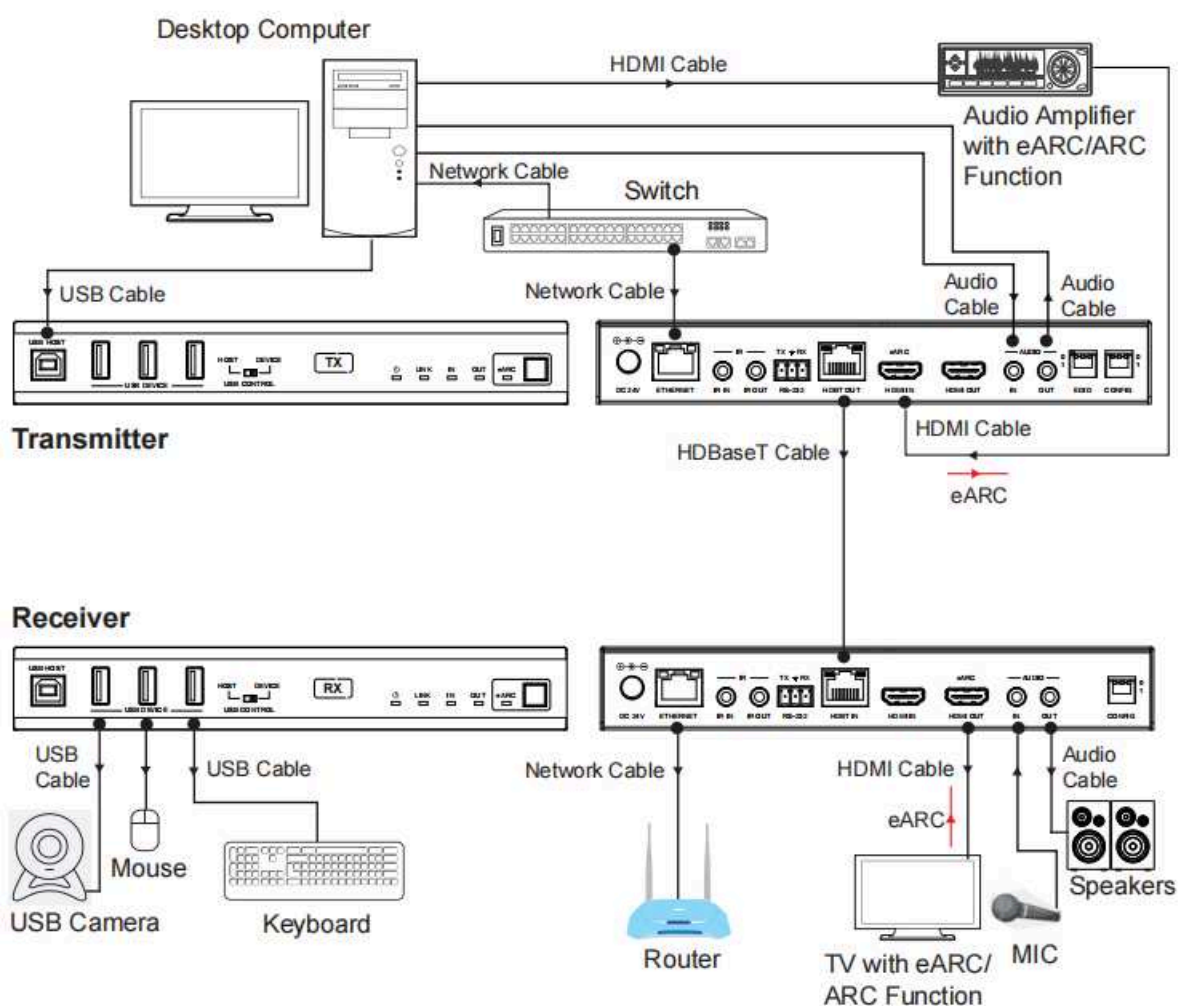
Note: Press the eARC buttons on the front panel of the transmitter and receiver to enable the eARC/ARC functions before trying to operate the system.

Standard Connection
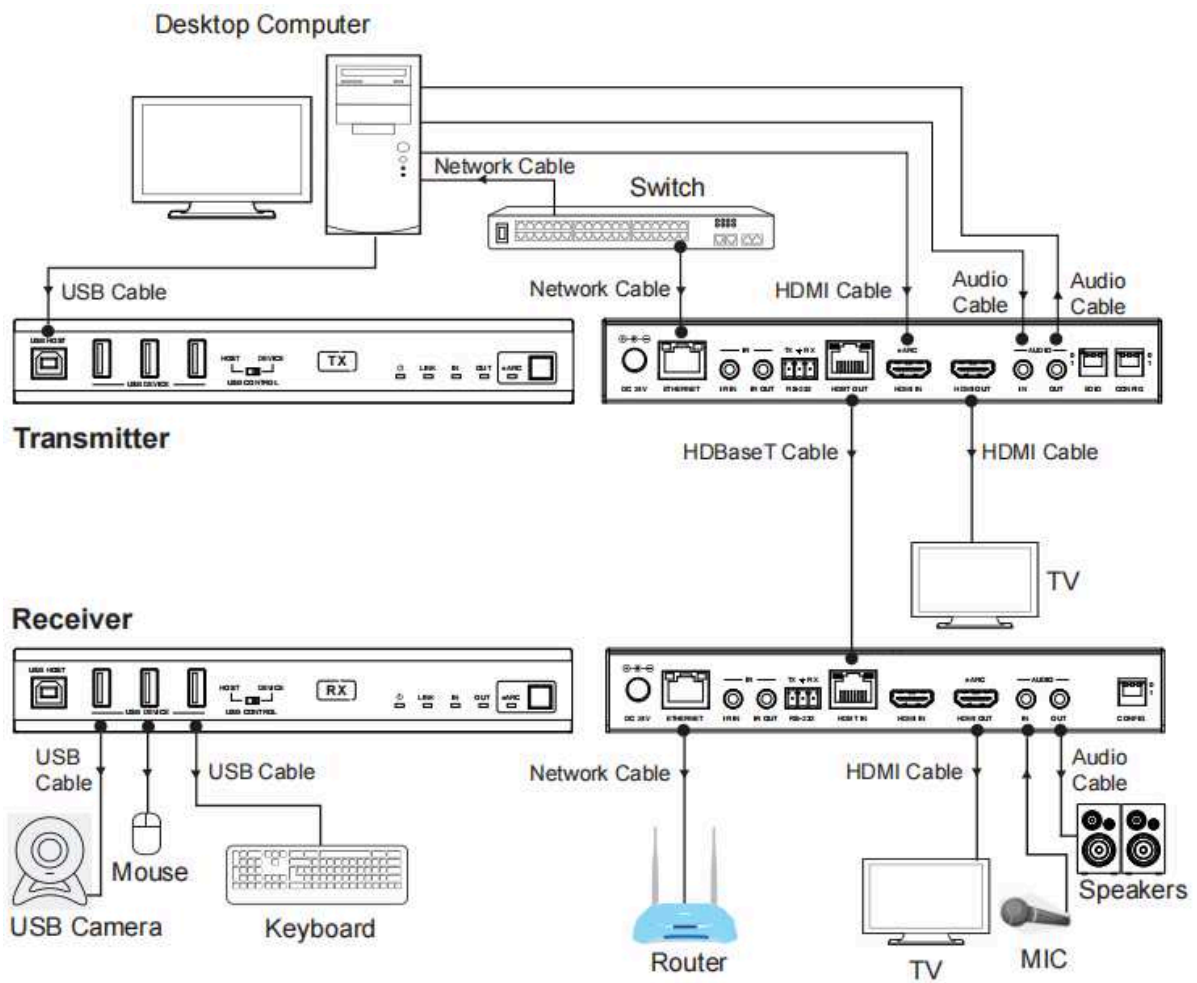
Tech Support

Have technical questions? We may have answered them already!

Please visit BZBGEAR's support page (bzbgear.com/support) for helpful information and tips regarding our products. Here you will find our Knowledge Base (bzbgear.com/knowledge-base) with detailed tutorials, quick start guides, and step-by-step troubleshooting instructions. Or explore our YouTube channel, BZB TV (youtube.com/c/BZBTVchannel), for help setting up, configuring, and other helpful how-to videos about our gear.

Need more in-depth support? Connect with one of our technical specialists directly:

Phone	**Email**	**Live Chat**
1.888.499.9906	support@bzbgear.com	bzbgear.com

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Limited Product Warranty Terms

Pro Line: 5-year warranty from the date of purchase for AV/Broadcasting products bought on or after August 1, 2024.

Essential Line: 3-year warranty from the date of purchase for AV/Broadcasting products bought on or after August 1, 2024.

Cables: Lifetime Limited Product Warranty.

For complete warranty information, please visit bzbgear.com/warranty.

For questions, please call 1.888.499.9906 or email support@bzbgear.com.

Mission Statement

BZBGEAR is a breakthrough manufacturer of high-quality, innovative audiovisual equipment ranging from AVoIP, professional broadcasting, conferencing, home theater, to live streaming solutions. We pride ourselves on unparalleled customer support and services. Our team offers system design consultation, and highly reviewed technical support for all the products in our catalog. BZBGEAR delivers quality products designed with users in mind.

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