



BG-EXH-8K100U

**8K60/4K120 48Gbps HDMI 2.1 Extender Kit over CAT5E/6/7
with USB 2.0/Bi-Directional IR/PoC/RS-232
and Audio De-Embedding up to 328ft**

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-8K100U is a high-performance HDMI™ 2.1 HDBaseT extender designed to transmit ultra-high-definition video, audio, control signals, and USB 2.0 over a single CAT5e/6 cable up to 100 meters (328ft). Supporting bandwidths up to 48Gbps FRL and 18Gbps TMDS, it enables video resolutions up to 8K@60Hz (4:2:0 12-bit) as well as high-refresh formats such as 4K@144Hz, while maintaining full compatibility with modern HDMI™ 2.1 features including VRR, ALLM, QMS, QFT, and SBTM. The system also supports HDR formats such as HDR10, HDR10+, Dolby Vision, and HLG, ensuring full dynamic range performance across professional AV environments.

In addition to video extension, the BG-EXH-8K100U integrates USB 2.0 extension, bi-directional IR, RS-232 pass-through, and CEC control for complete system management from either end of the link. Advanced EDID management (COPY TV / STD) ensures optimal handshake and compatibility across varied source and display devices, while bi-directional PoC allows the system to be powered from either transmitter or receiver end for simplified installation. With support for audio de-embedding on the receiver and a full suite of lossless audio formats including Dolby Atmos and DTS:X, this extender is engineered for demanding applications such as conference rooms, control centers, digital signage, and high-end multimedia distribution.

Features

- **HDMI™ 2.1 Ultra-High Bandwidth Transmission:** Supports up to 48Gbps FRL and 18Gbps TMDS for full-featured 8K video and advanced HDMI™ 2.1 functionality.
- **8K60 Video Support over HDBaseT:** Transmits resolutions up to 8K@60Hz (4:2:0 12-bit) and up to 4K@144Hz over a single CAT5e/6 cable.
- **100m Long-Distance Extension:** Extends HDMI™, USB, IR, and control signals up to 100 meters (328ft) over HDBaseT.
- **USB 2.0 Extension Support:** Enables USB peripheral extension such as cameras, keyboards, mice, and storage devices between TX and RX.
- **Bi-directional IR Transmission:** Supports full IR pass-through for remote control of source or display devices from either end.
- **RS-232 Control Pass-Through:** Provides serial control extension for integration with automation and control systems.
- **CEC Pass-Through Support:** Allows HDMI™ CEC commands for simplified device control across connected equipment.
- **Advanced EDID Management:** Includes COPY TV and STD EDID modes for optimized compatibility with source and display devices.
- **HDR Format Compatibility:** Supports HDR10, HDR10+, Dolby Vision, and HLG for enhanced dynamic range and color accuracy.
- **High-Fidelity Audio Support:** Passes advanced audio formats including Dolby Atmos, DTS:X, and full HD audio codecs.





- **Audio De-Embedding (Receiver):** Extracts analog audio from HDMI™ signal for connection to external audio systems.
- **Bi-directional PoC (Power over Cable):** Allows power delivery from either transmitter or receiver for flexible installation.
- **Compact Metal Housing Design:** Durable enclosure optimized for rack, wall, or under-desk installation environments.

Packing List

- 1× 8K60 HDMI™ over HDBaseT Extender (Transmitter)
- 1× 8K60 HDMI™ over HDBaseT Extender (Receiver)
- 1× 24V/1A Locking Power Supply
- 1× USB Cable (USB-A to USB-B)
- 1× IR Blaster Cable (1.5m)
- 1× IR Wideband Receiver Cable (1.5m)
- 2× 3-pin 3.5mm Phoenix Connectors
- 4× Mounting Ears (Rack/Wall Installation)
- 8× Machine Screws (KM3×6)
- 1× User Manual





Specifications

TECHNICAL	
HDMI™ Compliance	HDMI™ 2.1
HDCP Compliance	HDCP 2.3
Video Bandwidth	48Gbps FRL / 18Gbps TMDS
Max Video Resolution	Up to 8K@60Hz (4:2:0 12-bit)
High Refresh Support	4K@144Hz, 4K@120Hz, 8K@60Hz
Color Space	RGB, YCbCr 4:4:4 / 4:2:2 / 4:2:0
Color Depth	8/10/12-bit
HDR Support	HDR10, HDR10+, Dolby Vision, HLG
HDMI™ Features	VRR, ALLM, QMS, QFT, SBTM
Audio Formats	LPCM, Dolby Digital/Plus/EX, Dolby TrueHD, Dolby Atmos, DTS, DTS-EX, DTS-96/24, DTS-HD Master Audio, DTS:X
CEC Support	Yes (pass-through)
EDID Management	COPY TV / STD modes
CONNECTIONS	
Transmitter Inputs	1× HDMI™ Type-A, 1× USB-B (Host), 1× IR IN, 1× IR OUT, 1× RS-232, 1× USB-C (Service)
Transmitter Output	1× HDBaseT (RJ45)
Receiver Input	1× HDBaseT (RJ45)
Receiver Outputs	1× HDMI™ Type-A, 1× Audio Out (3.5mm), 4× USB-A (USB 2.0 Device)
Receiver Control Ports	1× IR IN, 1× IR OUT, 1× RS-232, 1× USB-C (Service)
USB Support	USB 2.0 extension (Host/Device)
IR Support	Bi-directional IR (20–60kHz)
RS-232 Control	3-pin Phoenix connector (bi-directional)



MECHANICAL	
Housing	Metal enclosure
Dimensions (W × D × H)	6.2in × 3.5in × 0.79in [157mm × 88mm × 20mm]
Weight	TX: 0.82lb [371g] / RX: 0.83lb [378g]
Power Supply	DC 24V/1A locking adapter
Power Consumption	21.2W (PoC operation)
Operating Temperature	32°F to 104°F / 0°C to 40°C
Storage Temperature	-4°F to 140°F / -20°C to 60°C
Operating Humidity	20%–80% RH (non-condensing)
Storage Humidity	10%–90% RH (non-condensing)
ESD Protection	IEC 61000-4-2: ±8kV air, ±4kV contact

Supported Input / Output Resolutions

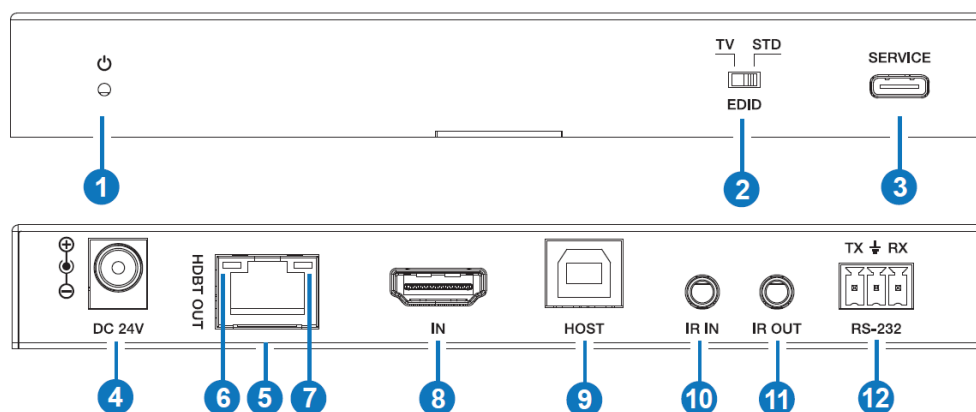
Resolution Type	Supported Formats
SD / VESA PC	640×480p60, 800×600p60, 1024×768p60, 1280×1024p60, 1360×768p60, 1440×900p60, 1440×1050p60, 1600×1200p60
SD Video (Interlaced & Progressive)	720×480i59.94, 720×480p59.94, 720×576i50, 720×576p50
HD (720p)	1280×720p50, 1280×720p59.94, 1280×720p60
Full HD (1080i)	1920×1080i50, 1920×1080i59.94, 1920×1080i60
Full HD (1080p)	1920×1080p23.98, 1920×1080p24, 1920×1080p25, 1920×1080p29.97, 1920×1080p30, 1920×1080p50, 1920×1080p59.94, 1920×1080p60
4K UHD (3840×2160)	3840×2160p23.98, 24, 25, 29.97, 30, 50, 59.94, 60, 100, 120, 144
4K DCI (4096×2160)	4096×2160p23.98, 24, 25, 29.97, 30, 50, 59.94, 60, 100, 120, 144
Ultra-Wide (5K)	5120×2160p50, 5120×2160p60
8K UHD	7680×4320p23.98, 24, 25, 29.97, 30, 50, 60



Operation Controls and Functions

Front and Rear Panel

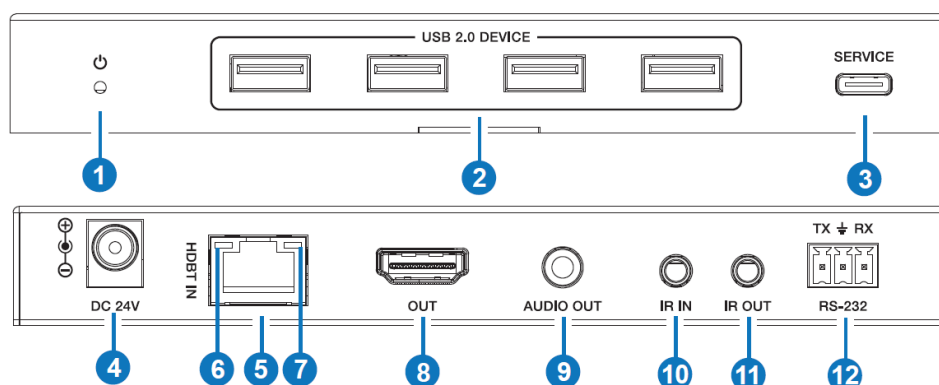
Transmitter Panel



No.	Name	Function Description
1	PWR LED	Green LED illuminates when the transmitter is powered on.
2	EDID DIP Switch	Selects EDID mode: TV (COPY) copies EDID from the connected display; STD uses built-in standard EDID (4K60 4:4:4 SDR 2CH).
3	SERVICE (USB-C)	Firmware update port for system maintenance and upgrades.
4	DC 24V	Locking 24V/1A power input. Supports PoC operation (powering RX from TX or vice versa).
5	HDBT OUT	HDBaseT output (RJ45) connection to receiver unit.
6	LINK LED (Green)	ON: TX and RX are linked. OFF: No HDBaseT link.
7	DATA LED (Yellow)	ON: HDMI signal with HDCP. Flashing: HDMI signal without HDCP. OFF: No HDMI signal.
8	HDMI IN	HDMI™ input from source device.
9	HOST (USB-B)	USB host connection to PC for USB 2.0 extension.
10	IR IN	Connects IR receiver cable for sending IR to receiver side IR OUT.
11	IR OUT	Connects IR blaster cable for receiving IR from receiver IR IN.
12	RS-232	3-pin Phoenix connector for serial control pass-through.



Receiver Panel

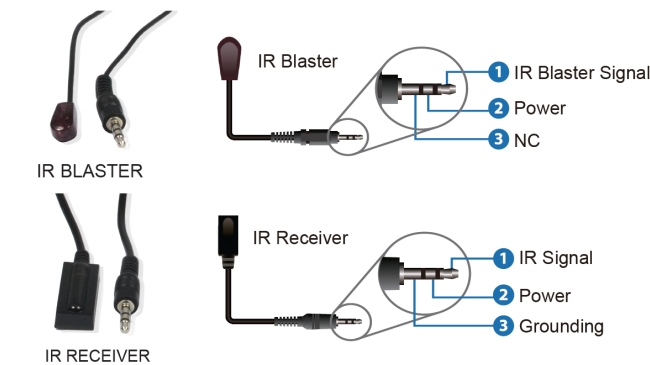


No.	Name	Function Description
1	PWR LED	Green LED illuminates when the receiver is powered on.
2	USB 2.0 DEVICE	USB-A ports for peripherals such as keyboard, mouse, flash drives, and cameras (5V/500mA per port).
3	SERVICE (USB-C)	Firmware update port for system maintenance and upgrades.
4	DC 24V	Locking 24V/1A power input. Supports PoC operation.
5	HDBT IN	HDBaseT input (RJ45) connection from transmitter unit.
6	LINK LED (Green)	ON: TX and RX are linked. OFF: No HDBaseT link.
7	DATA LED (Yellow)	ON: HDMI signal with HDCP. Flashing: HDMI signal without HDCP. OFF: No HDMI signal.
8	HDMI OUT	HDMI™ output to display device (monitor/TV/projector).
9	AUDIO OUT	Analog audio de-embedding output (3.5mm).
10	IR IN	Connects IR receiver cable for sending IR to transmitter side IR OUT.
11	IR OUT	Connects IR blaster cable for receiving IR from transmitter IR IN.
12	RS-232	3-pin Phoenix connector for serial control pass-through.



IR Pin Definition

The IR receiver and IR blaster cables use a standard 3.5mm connection with the following pin configuration:



Pin	Signal	Function Description
Tip	IR Signal	Carries the modulated IR signal (20–60kHz wideband).
Ring	+5V	Provides power for active IR receiver modules.
Sleeve	GND	Ground reference for IR signal and power return.

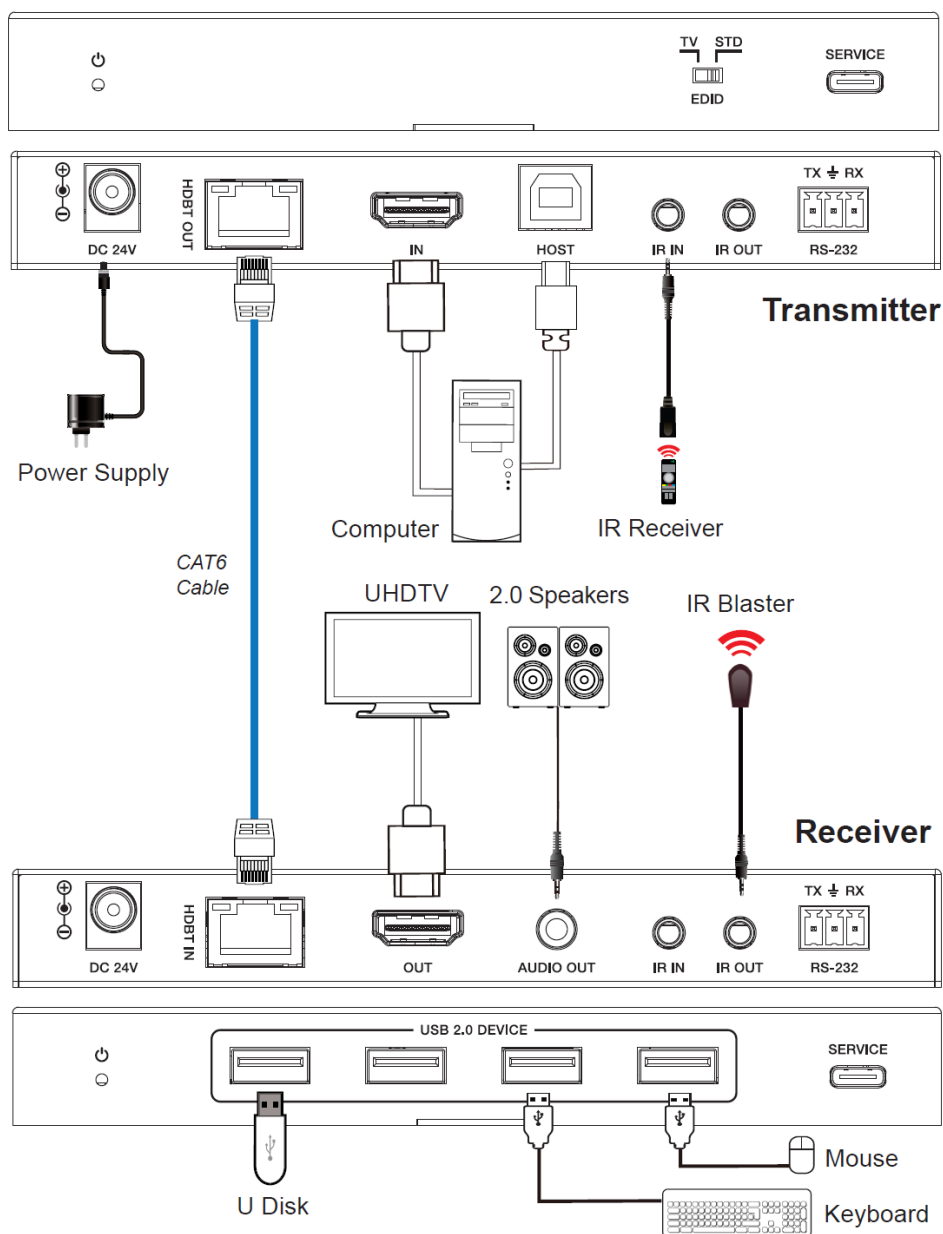
IR Operating Notes

- IR transmission supports wideband frequencies from **20kHz to 60kHz** for compatibility with most consumer and professional remote controls.
- The system supports **bi-directional IR pass-through**, allowing control of source or display devices from either transmitter or receiver side.
- Optimal IR reception distance is dependent on angle:
 - **0–5 meters** at approximately 45° angle
 - **0–8 meters** at approximately 90° angle





Connection Diagram





Troubleshooting

Problems	Causes	Solutions
No Power / All LED off	Power supply not connected, connected fully, or wrong power supply.	Check if the power supply is connected correctly and the output voltage value is within recommended specifications.
No sound or sound issues	The HDMI connection is faulty, the audio format is not supported by the displays, or the source player is set to another port for audio output	Check if the HDMI cables are connected correctly. Check if the audio format is supported by the display and that a user has not changed the supported audio format on the player's audio output. Ensure output settings from the HDMI source device as set correctly.
No picture or picture flickers	The HDMI cable may be faulty or the category cable quality is faulty.	Check if the HDMI and category cable connections are correct and undamaged. Change to another good working HDMI cable or category cable (CAT6 or better cable is recommended).



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

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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