



BG-EXH-8K50C

**8K60/4K120 48Gbps HDMI 2.1 Extender Kit over CAT5E/6/7 with
Bi-Directional IR/PoC and HDR/VRR/ALLM Support up to 165ft**

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-8K50C is a high-performance HDMI™ 2.1 extender set designed to transmit ultra-high-definition video and audio signals over a single Cat6 cable up to 50 meters (164 feet). Supporting bandwidths up to 48Gbps FRL and 18Gbps TMDS, the system enables full 8K@60Hz (4:2:0 12-bit) and 4K@120Hz (4:4:4 12-bit) transmission with support for advanced formats including HDR10, HDR10+, Dolby Vision, and HLG. Built-in HDMI™ re-clocking ensures stable signal integrity and improved compatibility with HDCP 2.3 handshaking, making it suitable for demanding professional AV environments.

The extender features bi-directional PoC (Power over Cable), allowing either the transmitter or receiver to be powered with a single 12V supply, simplifying installation and reducing cable clutter. It also supports bi-directional IR pass-through and CEC control for seamless remote device management. With support for a wide range of audio formats including Dolby Atmos and DTS:X, along with VRR, ALLM, and other HDMI 2.1 gaming features, the BG-EXH-8K50C delivers a flexible and reliable solution for residential, commercial, and professional AV distribution systems.

Features

- **HDMI 2.1 Compliance:** Supports full HDMI™ 2.1 specification for next-generation video formats and ultra-high bandwidth transmission.
- **8K Ultra HD Support:** Transmits resolutions up to 8K@60Hz (4:2:0 12-bit) and 4K@120Hz (4:4:4 12-bit) over Cat6 cable.
- **48Gbps Video Bandwidth:** Delivers up to 48Gbps FRL and 18Gbps TMDS for uncompressed, high-quality video performance.
- **Long-Distance Transmission:** Extends HDMI™ signals up to 50m (164ft) over a single Cat6 cable.
- **Advanced HDR Support:** Compatible with HDR10, HDR10+, Dolby Vision, and HLG for enhanced dynamic range and color accuracy.
- **Wide Audio Format Compatibility:** Supports PCM, LPCM, Dolby Atmos, DTS:X, and other advanced multichannel audio formats.
- **Bi-directional PoC Power:** Allows either transmitter or receiver to be powered using a single 12V supply over the CAT cable.
- **Bi-directional IR Pass-through:** Enables remote control of source or display devices from either end of the system.
- **CEC Control Support:** Allows connected HDMI™ devices to communicate and be controlled through a single control interface.
- **HDMI Re-clocking Technology:** Stabilizes signal integrity and improves compatibility by reducing HDCP and handshake issues.
- **VRR / ALLM / Gaming Features:** Supports Variable Refresh Rate, Auto Low Latency Mode, and other HDMI 2.1 gaming enhancements.





- **HDCP 2.3 Compliance:** Ensures secure content transmission with the latest copy protection standards.
- **Plug-and-Play Operation:** No software required; simple installation with automatic signal detection and configuration.
- **Compact Metal Housing:** Durable, low-profile metal enclosure designed for professional and commercial installations.

Packing List

- 1× 8K60 HDMI™ Extender (TX)
- 1× 8K60 HDMI™ Extender (RX)
- 1× IR Blaster Cable (1.5m)
- 1× IR Wideband Receiver Cable (1.5m)
- 1× 12V/1A Multinational Power Supply
- 4× Mounting Ears
- 8× Machine Screws (KM3×4)
- 1× User Manual



Specifications

TECHNICAL	
HDMI™ Compliance	HDMI™ 2.1
HDCP Compliance	HDCP 2.3
Video Bandwidth	48Gbps FRL / 18Gbps TMDS
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
CEC Control	Supported
IR Level	5Vp-p
IR Frequency	20–60KHz (Wideband)
VIDEO RESOLUTIONS	
Supported Formats	VGA–WUXGA, 480i–8K
HD / FHD	720p50/60, 1080i50/60, 1080p24–240Hz
4K UHD	3840×2160 up to 144Hz, 4096×2160 up to 144Hz
Ultra-Wide	5120×2160 up to 120Hz
8K UHD	7680×4320 up to 60Hz
AUDIO	
Audio Formats	PCM 2.0, LPCM 5.1 / 7.1
Sampling Rates	32K–192KHz (16/20/24-bit)
Surround Sound	Dolby Digital, Dolby TrueHD, Dolby Atmos
DTS Support	DTS:X, DTS-HD Master Audio, DTS-HD HRA, DTS Express
TRANSMISSION	
Distance	Up to 50m (164ft) over Cat6
HDMI Cable Distance	Up to 3m (9.8ft)
Method	Uncompressed HDMI over single Cat6
PoC	Bi-directional Power over Cable



CONNECTIONS	
Transmitter Inputs	1× HDMI IN (Type A), 1× IR IN, 1× IR OUT
Transmitter Output	1× CAT OUT (RJ45)
Receiver Input	1× CAT IN (RJ45)
Receiver Output	1× HDMI OUT (Type A)
Service Port	1× USB-C (Firmware Upgrade)
MECHANICAL	
Enclosure	Metal
Color	Black
Dimensions (W × D × H)	3.5in × 2.4in × 0.71in [88mm × 61mm × 18mm]
Weight	0.34lb [155g] (TX / RX each)
POWER	
Power Supply	12V / 1A DC
Power Consumption	Max 8.8W
PoC Support	Yes (either TX or RX powered)
Input Voltage	AC 100–240V, 50/60Hz
ENVIRONMENTAL	
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
PROTECTION	
ESD Standard	IEC 61000-4-2
Air Discharge	±8kV
Contact Discharge	±4kV



Supported Resolution Table

VGA / PC Resolutions	640×480, 800×600, 1024×768, 1280×1024, 1360×768, 1440×900, 1440×1050, 1680×1050, 1920×1200 (all @ 60Hz)
SD Video	480i/p60, 576i/p50
HD Video	720p50/60, 1080i50/60
Full HD	1080p24/25/30/50/60/100/120/240Hz
4K UHD	3840×2160p24/25/30/50/60/100/120/144Hz
DCI 4K	4096×2160p24/25/30/50/60/100/120/144Hz
Ultra Wide	5120×2160p24/25/30/50/60/100/120Hz
8K UHD	7680×4320p24/25/30/60Hz

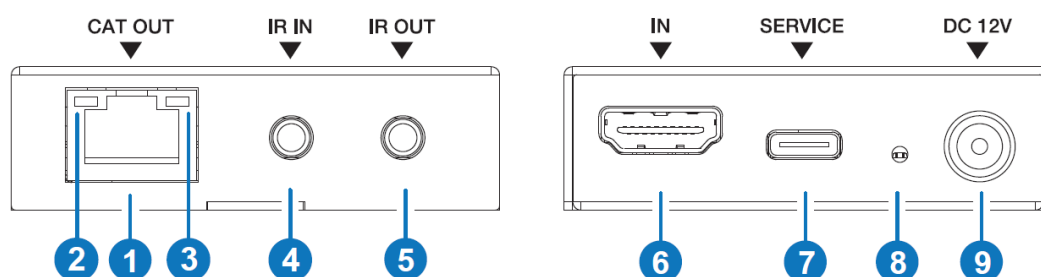




Operation Controls and Functions

Front and Rear Panel

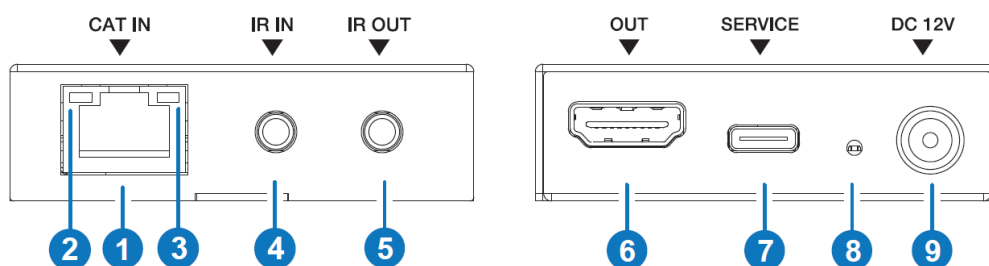
Transmitter Panel



No.	Name	Function Description
1	CAT OUT	Connects to the CAT IN port on the Receiver to transmit HDMI™ signals over Cat6 cable.
2	Link Status Indicator (Green)	Illuminates when TX and RX are connected normally; turns off when no link is detected.
3	HDCP Signal Indicator (Yellow)	On: HDCP signal detected. Flashing: Non-HDCP HDMI signal detected. Off: No HDMI signal.
4	IR IN	Accepts IR signal from the IR wideband receiver cable for remote control pass-through.
5	IR OUT	Sends IR signal via IR blaster cable to control source or display devices.
6	HDMI IN	Connects to HDMI™ source devices such as Blu-ray players, PCs, or media players.
7	SERVICE (USB-C)	Firmware upgrade port for system maintenance and updates.
8	Power LED	Indicates power status of the transmitter when illuminated green.
9	DC 12V	Connects to the included 12V/1A power supply. Supports PoC operation from either TX or RX side.



Receiver Panel



No.	Name	Function Description
1	CAT IN	Receives HDMI™ signal from the transmitter via Cat6 cable.
2	Link Status Indicator (Green)	Illuminates when TX and RX are connected normally; flashes when connection is unstable or not established.
3	HDCP Signal Indicator (Yellow)	On: HDCP signal detected. Flashing: Non-HDCP HDMI signal detected. Off: No HDMI signal.
4	IR IN	Accepts IR signal from IR receiver cable for remote control pass-through.
5	IR OUT	Sends IR signal via IR blaster cable to connected devices.
6	HDMI OUT	Outputs HDMI™ signal to a display device such as a TV or monitor.
7	SERVICE (USB-C)	Firmware upgrade port for system maintenance and updates.
8	Power LED	Indicates power status of the receiver when illuminated green.
9	DC 12V	Connects to the included 12V/1A power supply. Supports PoC operation from either TX or RX side.

EDID Logic

The BG-EXH-8K50C uses an intelligent EDID management system to ensure optimal compatibility between the source device and the connected display. By default, the system is set to **4K@60Hz 4:4:4 SDR 2CH EDID**, providing a stable baseline configuration that supports a wide range of HDMI™ sources without requiring manual setup.

In addition, the extender supports **EDID copy from the RX (receiver) display device**, allowing the system to automatically read and apply the connected display's native capabilities. This ensures the source outputs the most compatible resolution, refresh rate, and audio format, reducing handshake issues and improving overall system reliability in mixed AV environments.



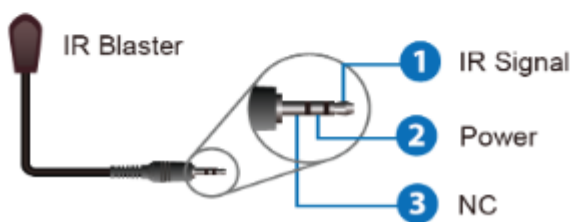
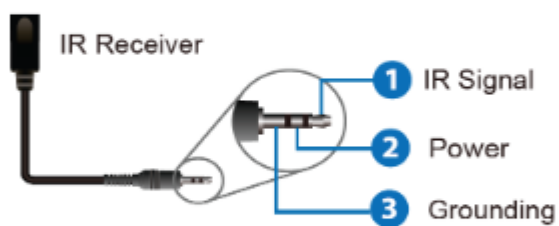
IR Pin Definition



IR RECEIVER

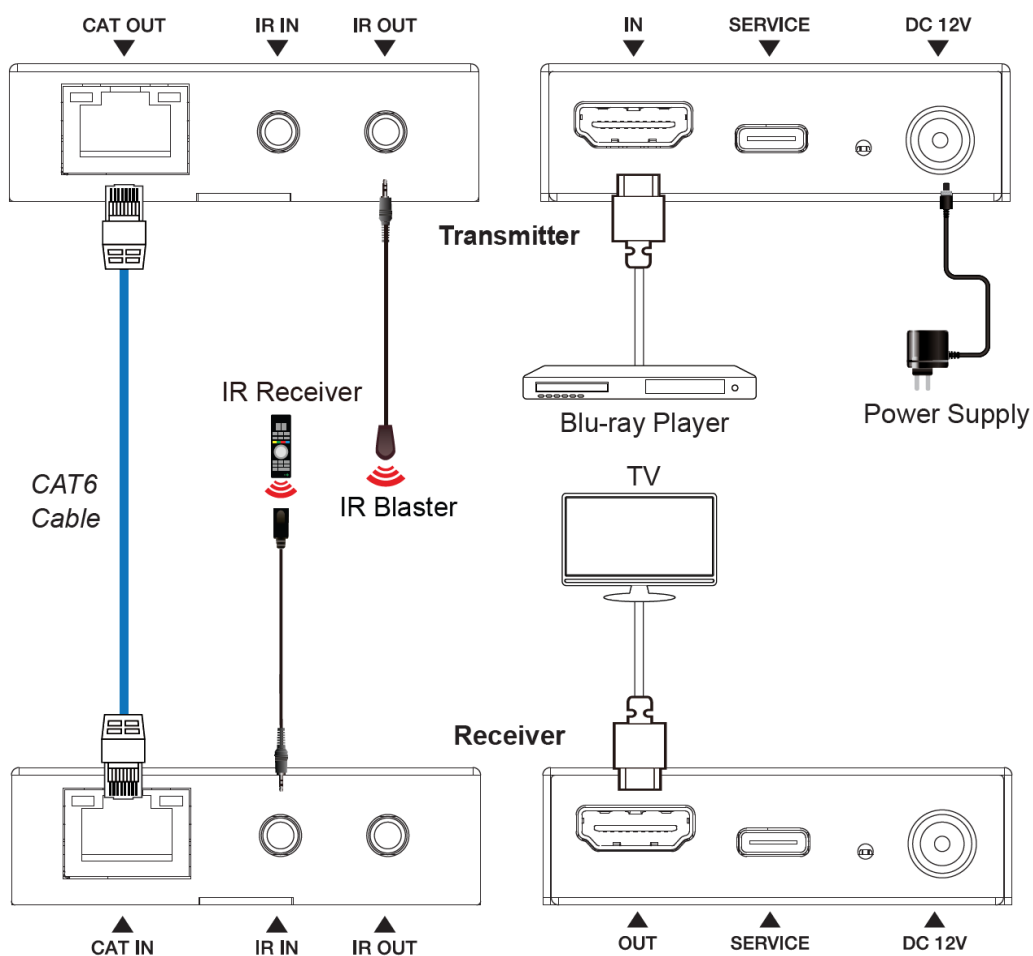


IR BLASTER





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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