BZB**2**GEAR®

Solutions to Amplify Your World ™

BG-EXH-8KF

48Gbps HDMI 2.1 over FIBER Extender (300m)

User Manual

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.

Surge protection device recommended

This product contains sensitive electrical components that electrical spikes, surges, electric shocks, lightning strikes, etc may damage. Use of surge protection systems is highly recommended to protect and extend the life of your equipment.

Introduction

The BG-EXH-8KF consists of transmitter and receiver modules that can extend HDMI 2.1 video and audio signals up to 300m/984ft using an OM4 fiber optic cable. It supports video resolutions up to 8K@60Hz 4:2:0 or 4K@120Hz 4:4:4. Additionally, it features Auto Low Latency and Variable Refresh Rate, along with 16 EDID presets. This versatile 8K over fiber extender can be used in various scenarios such as pro AV installations, events, and other similar applications.

Features

- Compliant with HDCP 2.3
- Support video bandwidth up to 48Gbps FRL and 18Gbps TMDS
- Video resolution up to 8K@60 4:2:0 12-bit, 4K@120Hz 4:4:4 12-bit, as specified in HDMI 2.1
- Transmission distance can be up to 300m/984ft over an OM4 fiber optic cable
- Multi-mode fiber grade OM2/3/4 compliant
- Support EDID learning function on Transmitter
- Support analog audio de-embedding on Receiver
- VRR, ALLM, QMS, QFT, SBTM are supported
- HDR, HDR10, HDR10+, Dolby Vision, HLG pass-through are supported
- HDMI audio formats support Dolby Atmos, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio
- Bi-directional IR & RS-232 pass-through

Packing List

- 1× 48Gbps HDMI over FIBER Extender (TX)
- 1× 48Gbps HDMI over FIBER Extender (RX)
- 1× IR Wideband Blaster Cable (1.5m)
- 1× IR Wideband Receiver Cable (1.5m)
- 2× 12V/1A Multinational Power Supply
- 2× Power Adapter
- 4× Mounting Ear
- 8× Machine Screw (KM3*4)
- 2× 3pin-3.5mm Phoenix Connector (male)
- 1× User Manual

Specifications

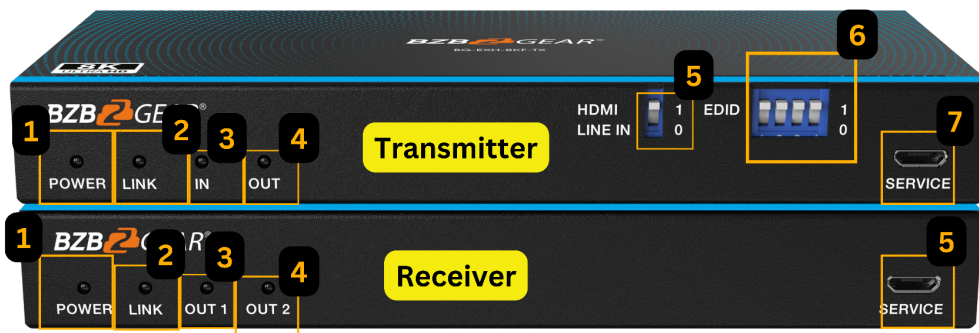| Technical	
HDMI Compliance	HDMI 2.1
HDCP Compliance	HDCP 2.3
Video Bandwidth	48Gbps FRL and 18Gbps TMDS
Video Resolution	Up to 8K@60 4:2:0 12-bit, 4K@120Hz 4:4:4 12-bit
Color Space	RGB 4:4:4, YCbCr_4:4:4, YCbCr_4:2:2, YCbCr_4:2:0
Color Depth	8/10/12-bit
Audio Formats	**HDMI IN/OUT:** PCM 2.0, LPCM 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; AUDIO BREAKOUT: L/R OUT: PCM 2.0CH
Optical Fiber Transmission Distance	**OM2:** 40m/131ft OM3: 200m/656ft **OM4:** 300m/985ft (over 850nm OM2/3/4 multi-mode fiber optic cable)
IR Level	**IR IN:** 12V; Level: 3.2.04.00219 **IR OUT:** 5V; Level: 3.2.04.00093
IR Frequency	Wideband 20K-60KHz
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap discharge), ±4kV (Contact discharge)
Connection	
Transmitter	**Input:** 1× HDMI IN [Type A, 19-pin female] 1× IR IN [3.5mm audio jack] **Output:** 1× HDMI OUT [Type A, 19-pin female] 1× IR OUT [3.5mm audio jack] 1× FIBER [LC] **Control:** 1× RS-232 [3pin-3.5mm phoenix connector] 1× SERVICE [USB-C, update port]
Receiver	**Input:** 1× FIBER [LC] 1× IR IN [3.5mm audio jack] **Output:** 2× HDMI OUT [Type A, 19-pin female] 1× IR OUT [3.5mm audio jack] 1× AUDIO OUT [3.5mm audio jack] Control: 1× RS-232 [3pin-3.5mm phoenix connector] 1× SERVICE [USB-C, update port]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	Transmitter / Receiver: 175mm [W] × 100mm [D] × 30mm [H]
Weight	Transmitter: 496g; Receiver: 492g
Power Supply	Input: AC 100~240V 50/60Hz Output: DC 12V/1A
Power Consumption	Transmitter: 6.7W (Max); Receiver: 4.5W (Max)
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F

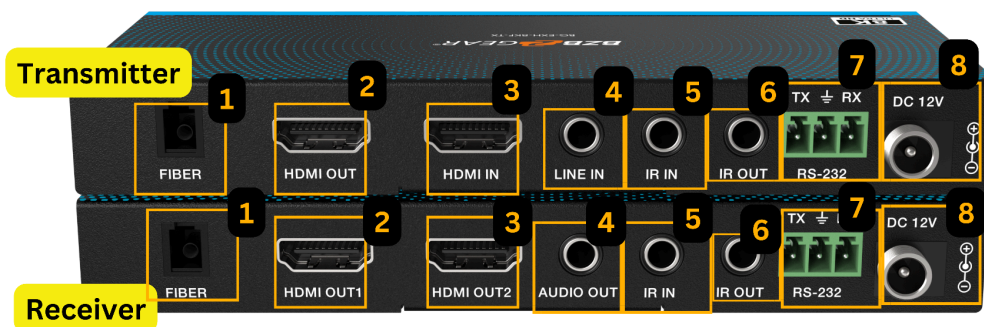| Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F			
Relative Humidity	20~90% RH (non-condensing)			
Recommended HDMI Cable				
Video Resolution	8k	4K60	4K24	1080P
HDMI Cable Length (HDMI in / out)	3m/10ft (Ultra HDMI 2.1)	8m/26ft	12m/39ft	15m/49ft
The use of "Premium High-Speed HDMI" cables is highly recommended.				

Operation Controls and Functions

Front Panels

Transmitter		
No.	**Name**	**Function**
1	POWER LED	The red LED is on when the transmitter is powered on.
2	LINK LED	**Connection signal indicator** • **On:** Transmitter and Receiver are connected and the signal is detected. • **Blinking:** The transmitter and Receiver are connected but no signal is detected. • **Off:** Transmitter and Receiver are not connected.
3	IN LED	The green LED is on when an input source is detected.
4	OUT LED	The green LED is on when a display device is connected.
5	AUDIO SELECT	Switch between HDMI embedded audio and line-in audio.
6	EDID	Used for EDID setting. **[DIP]=1111: Copy sink EDID from HDMI OUT1 port on RX (default)** [DIP]=1110: 1080P, 2.0CH **[DIP]=1101: 1080P, 5.1CH** [DIP]=1100: 1080P, 7.1CH **[DIP]=1011: 4K60(444)_HDR, 2.0CH** [DIP]=1010: 4K60(444)_HDR, 5.1CH **[DIP]=1001: 4K60(444)_HDR, 7.1CH** [DIP]=1000: 4K120(420)_HDR, 2.0CH **[DIP]=0111: 4K120(420)_HDR, 5.1CH**

		[DIP]=0110: 4K120(420)_HDR, 7.1CH **[DIP]=0101: FRL10G_8K_HDR, 2.0CH** [DIP]=0100: FRL10G_8K_HDR, 5.1CH **[DIP]=0011: FRL10G_8K_HDR, 7.1CH** [DIP]=0010: FRL12G_8K_HDR, 2.0CH **[DIP]=0001: FRL12G_8K_HDR, 5.1CH** [DIP]=0000: FRL12G_8K_HDR, 7.1CH
7	SERVICE	Firmware update and debug port.

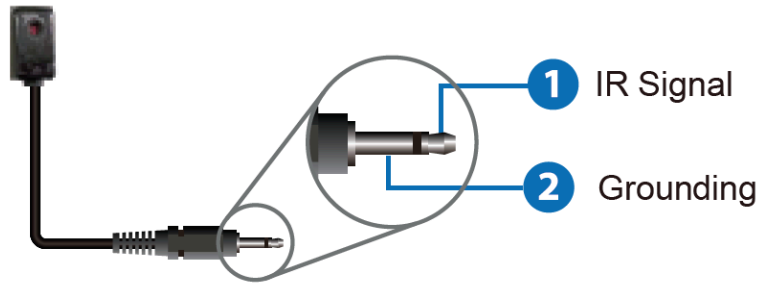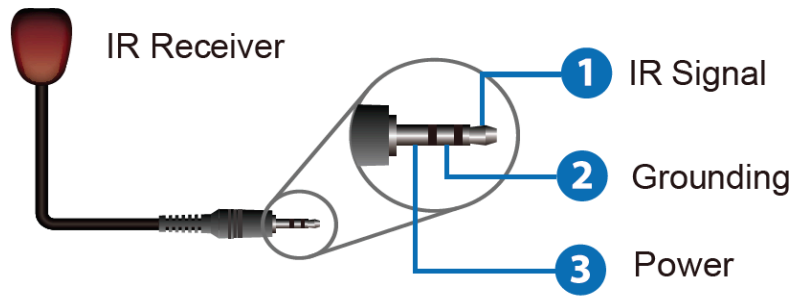| **Receiver**		
No.	**Name**	**Function**
1	POWER LED	The red LED is on when the transmitter is powered on.
2	LINK LED	<u>**Connection signal indicator**</u> ● **On:** Transmitter and Receiver are connected and the signal is detected. ● **Blinking:** The transmitter and Receiver are connected but no signal is detected. ● **Off:** Transmitter and Receiver are not connected.
3	OUT LED	The green LED is on when display 1 device is connected.
4	OUT LED	The green LED is on when display 2 device is connected.
5	SERVICE	Firmware update and debug port.

Rear Panels

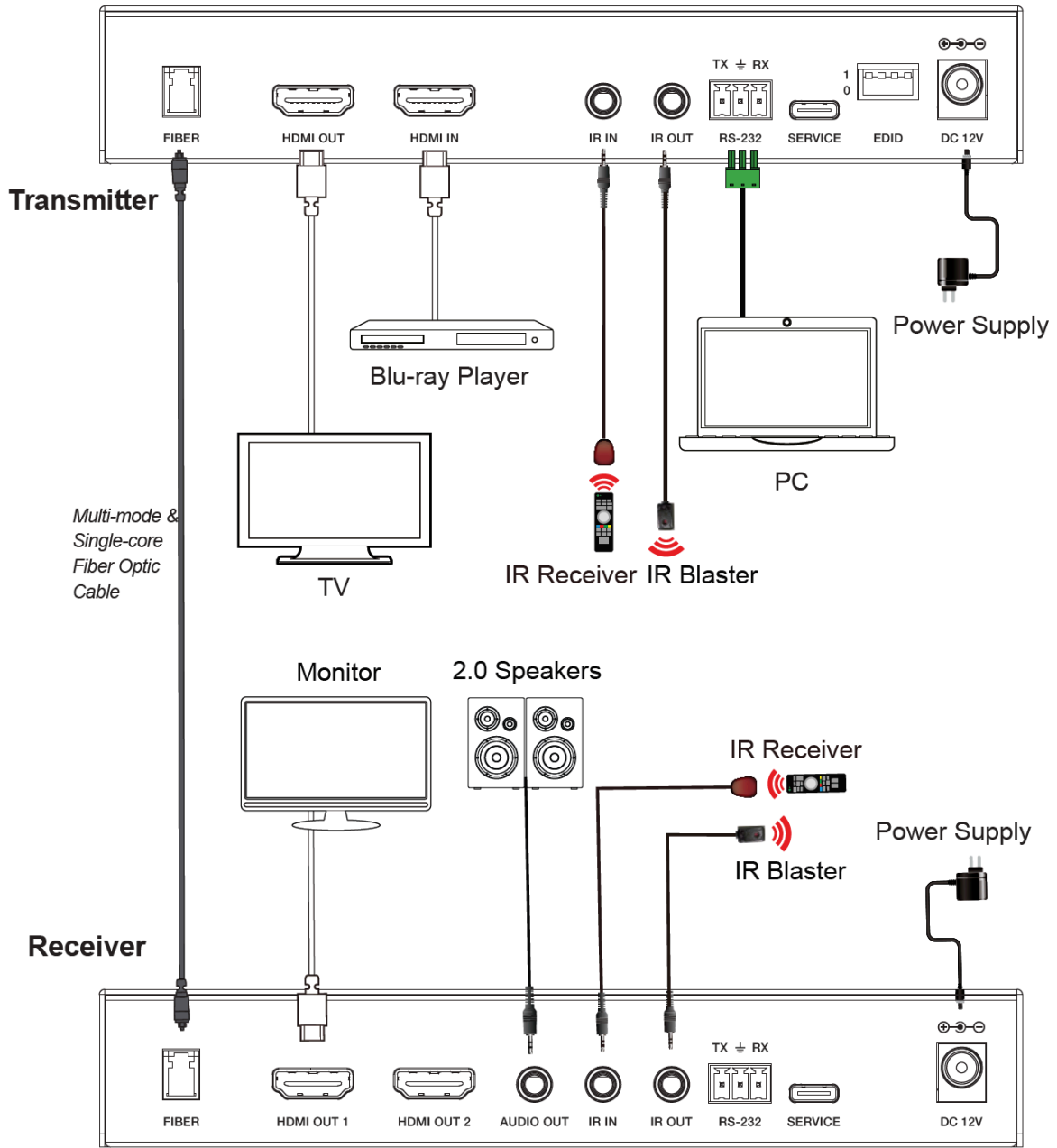| Transmitter		
No.	Name	Function Description
1	FIBER	Input multi-mode and single-core fiber optical signals, including video, audio, and communication signals.
2	HDMI OUT	HDMI signal output port, connected to HDMI display devices such as TVs or monitors with HDMI cable.
3	HDMI IN	HDMI input port, connected to HDMI source devices such as media players or gaming consoles with HDMI cable.
4	AUDIO IN	Analog audio input port.
5	IR IN	IR signal input port, connected to 12V IR wideband receiver.
6	IR OUT	IR signal output port, connected to 5V IR wideband blaster.
7	RS-232	3pin-3.5mm Phoenix connector, connected to a PC or control system for RS-232 command pass-through.
8	DC 12V	DC 12V/1A power input port.
Receiver		
No.	Name	Function Description
1	FIBER	Input multi-mode and single-core fiber optical signals, including video, audio, and communication signals.
2	HDMI OUT 1	HDMI signal output port, connected to HDMI display devices such as TVs or monitors with HDMI cable.
3	HDMI OUT 2	HDMI signal output port, connected to HDMI display devices such as TVs or monitors with HDMI cable.
4	AUDIO OUT	Analog audio output port.
6	IR IN	IR signal input port, connected to 12V IR wideband receiver.
7	IR OUT	IR signal output port, connected to 5V IR wideband blaster.
8	DC 12V	DC 12V/1A power input port.

IR PIN Definition

IR RECEIVER

IR Receiver

1 IR Signal

2 Grounding

3 Power

IR BLASTER

1 IR Signal

2 Grounding

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

Warranty

BZBGEAR Pro AV products and cameras come with a three-year warranty. An extended two-year warranty is available for our cameras upon registration for a total of five years.

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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