BZB GEAR®
Solutions to Amplify Your World™

BG-EXH-100C6

HDBaseT 3.0 Extender with eARC/ARC (100m)

User Manual

TABLE OF CONTENTS

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.
- This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Introduction

The BG-EXH-100C6 is an HDBaseT 3.0 extender that extends uncompressed HD/UHD audio / video, eARC/ARC, RS-232, bi-directional IR, 1GbE Ethernet, and USB 2.0 signals up to a distance of up to 100m/328ft using a single CAT6A/7 cable. Featuring USB 2.0 (host/device configurability), and bi-directional PoC. The transmitter supports audio embedding or de-embedding, while the receiver supports audio de-embedding. The extender supports ARC/ARC from the receiver's HDMI output and passes through to the transmitter's HDMI input, or de-embedding to the transmitter's HDMI audio only and SPDIF output ports.

The BZBGEAR BG-EXH-100C6 extender is a convenient solution for applications requiring long distance HDMI extension over CAT cables.

Features

- HDMI 2.0b, HDCP 2.2 and HDBaseT 3.0 compliant
- Uncompressed 4K@60Hz 4:4:4 up to 18Gbps video bandwidth
- HDR, HDR10, HDR10+, Dolby Vision and HLG pass through
- LPCM, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD pass through
- Transmission distance is up to 328ft/100 meters over a single CAT 6A/7 cable
- eARC/ARC function (the audio is returned to the HDMI IN port, HDMI OUT (AUDIO ONLY) port and SPDIF OUT port of the transmitter.)
- SPDIF audio reverse transmission
- Bi-directional IR, RS-232 and 1G Ethernet signal pass through
- USB 2.0 transmission, Host/Device is configurable
- Bi-directional 24V PoC function

Packing List

- 1 x HDBaseT 3.0 Extender (Transmitter)
- 1 x HDBaseT 3.0 Extender (Receiver)
- 1 x IR Blaster Cable (1.5 meters)
- 1 x IR Receiver Cable (1.5 meters)
- 2 x 3pin-3.81mm Phoenix Connectors
- 4 x Mounting Ears
- 8 x Machine Screws (KM3*4)
- 1 x 24V/1A Locking Power Supply
- 1x User Manual

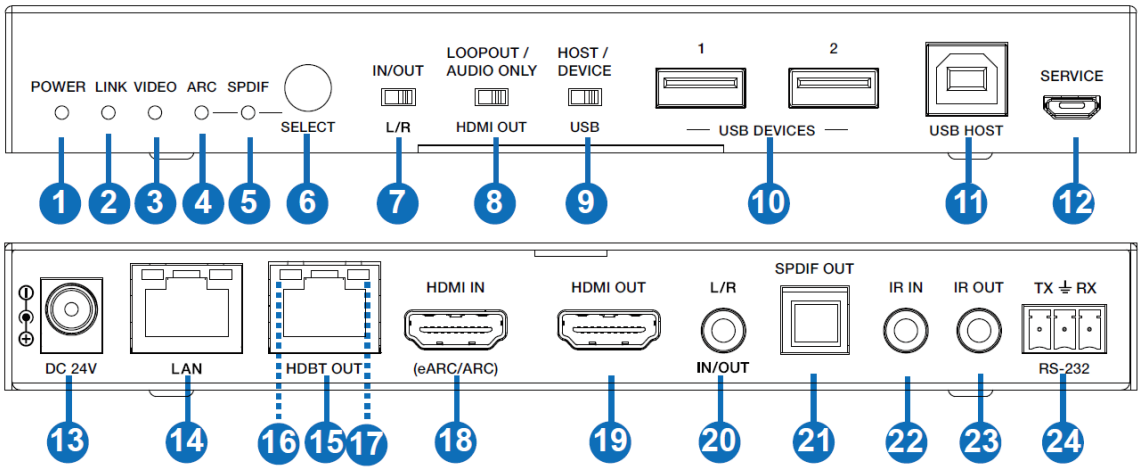
Specifications

Technical	
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2
Video Bandwidth	18Gbps
Video Resolution	Up to 4K@60Hz 4:4:4
HDBaseT Bandwidth	16Gbps on main and 2Gbps on return link
HDR	HDR, HDR10, HDR10+, Dolby Vision, HLG
Color Space	RGB, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0
Color Depth	8/10/12-bit
Audio Formats	LPCM, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD
L/R Audio Formats	PCM 2.0
SPDIF Audio Formats	LPCM2.0, AC3 5.1, DTS 5.1
IR Level	12Vp-p
IR Bandwidth	20K - 60KHz
USB Bandwidth	Up to 350Mbps
Ethernet	1000Mbps
RS-232	Up to 921600bps
Transmission Distance	100m (via a single CAT 6A/7 cable)
ESD Protection	Human body model — ±8kV (Air-gap discharge) & ±4kV (Contact discharge)
Connection	
Transmitter	Input: 1 x HDMI IN [Type A, 19-pin female] Output: 1 x HDMI OUT [Type A, 19-pin female] 1 x HDBT OUT [RJ45, 8-pin female] 1 x SPDIF OUT [S/PDIF] 1 x L/R 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 [3pin-3.81mm Phoenix jack] 1 x SERVICE [Mini-USB, Update port] 1 x USB HOST [USB Type B] 2 x USB DEVICES [USB Type A] 1 x LAN [RJ45]
Receiver	Input: 1 x HDBT IN [RJ45, 8-pin female] / 1 x SPDIF IN [S/PDIF] Output: 1 x HDMI OUT [Type A, 19-pin female] 1 x L/R 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 [3pin-3.81mm Phoenix jack] 1 x SERVICE [Mini-USB, Update port] 1 x USB HOST [USB Type B] 2 x USB DEVICES [USB Type A] 1 x LAN [RJ45]

Mechanical			
Housing	Metal Enclosure		
Color	Black		
Dimensions	Transmitter / Receiver: 170mm [W] x 102mm [D] x 22mm [H]		
Weight	Transmitter: 425g, Receiver: 437g		
Power Supply	Input: AC 100 - 240V 50/60Hz Output: DC 24V/1A (US/EU standard, CE/FCC/UL certified)		
Power Consumption	15.36W (P0C)		
Operating Temperature	32 - 104°F / 0 - 40°C		
Storage Temperature	-4 - 140°F / -20 - 60°C		
Relative Humidity	20 - 90% RH (no condensation)		
Resolution / Cable Length	4K60 - Feet / Meters	4K30 - Feet / Meters	1080P60 - Feet / Meters
HDMI IN / OUT	16ft / 5M	32ft / 10M	50ft / 15M
Note: The use of “Premium High-Speed HDMI” cable is highly recommended.			

Operation Controls and Functions

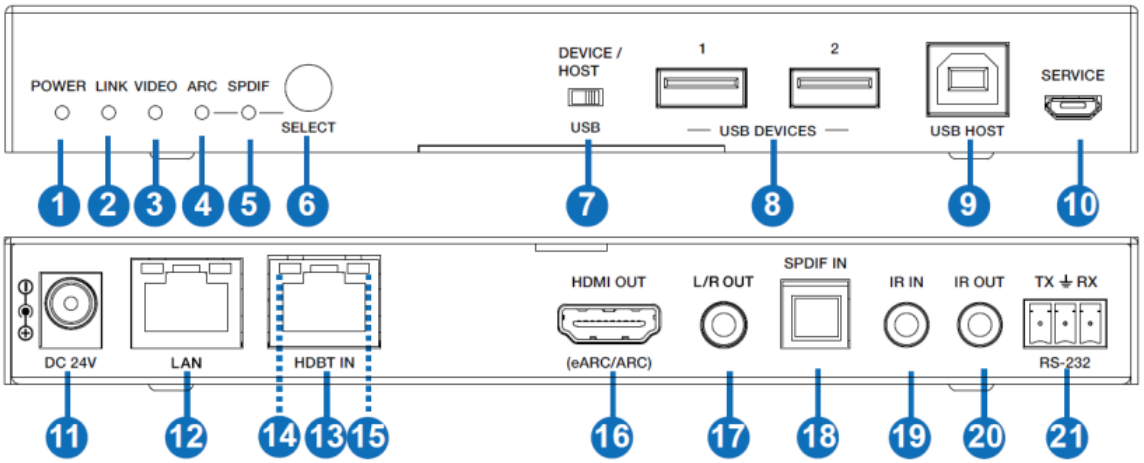
Transmitter Panel



No.	Name	Function Description
1	Power LED	The red LED will illuminate when the transmitter is powered on.
2	LINK LED	Light on: The transmitter and receiver have a good connection status. Light flashing: The transmitter and receiver are in ‘Low Power Mode’. Light off: The transmitter and receiver are not connected.
3	VIDEO LED	Light on: The video is encrypted. Light flashing: The video is not encrypted. Light off: No HDMI input.
4	ARC LED	Light on: The device is switched to ARC mode. Light off: The device is switched to SPDIF mode.
5	SPDIF LED	Light on: The device is switched to SPDIF mode. Light off: The device is switched to ARC mode.
6	SELECT button	Used for switching the ARC and SPDIF modes.

No.	Name	Function Description
7	L/R IN/OUT switch	Switch to the left: The L/R IN/OUT port is the audio embedding port. Switch to the right: The L/R IN/OUT port is the audio de-embedding port.
8	LOOP OUT/ AUDIO ONLY switch	Switch to the left (LOOPOUT): The HDMI OUT port is the loop-out port for the HDMI IN port. Switch to the right (AUDIO ONLY): The HDMI OUT port outputs 720P black screen image, and the audio is from ARC or SPDIF.
9	HOST/ DEVICE USB switch	Switch to the left (HOST): The USB HOST mode is enabled. Switch to the right (DEVICE): The USB DEVICE mode is enabled.
10	USB DEVICES	Two USB device ports: Connect to USB memory, mouse, or keyboard.
11	USB HOST	USB extension host port: Connect to PC.
12	SERVICE	Firmware update port.
13	DC 24V	DC 24V/1A power supply input port. **Note:** The extender supports PoC functionality. Either the transmitter or receiver must be connected to a 24V/1A power supply. The other does not require a power supply.
14	LAN	1G Network port. The green LED will illuminate when it switches to Gigabit Ethernet. The yellow LED will illuminate when it switches to 100M Ethernet.
15	HDBT OUT	10G Network port. Connect to the HDBT IN port of Receiver with a CAT 6A/7 cable. It is used for various signals pass-through.
16	Data Signal Indicator (Yellow)	Solid: HDMI signal with HDCP. Flashing: HDMI signal without HDCP. Dark: No HDMI signal.
17	Link Signal Indicator (Green)	Solid: The transmitter and receiver have a good connection status. Flashing: The transmitter and receiver have a poor connection status. Dark: The transmitter and receiver are not connected.
18	HDMI IN	HDMI signal input port, connected to signal source device, supporting eARC/ARC amplifier.
19	HDMI OUT	HDMI signal loopout port. The port can be either a LOOP-OUT or an AUDIO ONLY port through the LOOP-OUT/AUDIO ONLY switch.
20	L/R IN/OUT	Audio embedding/de-embedding port. The port can be used for audio embedding/de-embedding through the L/R IN/OUT switch.
21	SPDIF OUT	Optical output port.
22	IR IN	IR signal input port: Connect to the IR Receiver cable.
23	IR OUT	IR signal output port: Connect to the IR Blaster cable.
24	RS-232	RS-232 serial port: Used for serial port command transmission.

Receiver Panel



No.	Name	Function Description
1	Power LED	The red LED will illuminate when the receiver is powered on.
2	LINK LED	Light on: The transmitter and receiver have a good connection status. Light flashing: The transmitter and receiver are in 'Low Power Mode'. Light off: The transmitter and receiver are not connected.
3	VIDEO LED	Light on: The video is encrypted. Light flashing: The video is not encrypted. Light off: No HDMI input.
4	ARC LED	Light on: The device is switched to ARC mode. Light off: The device is switched to SPDIF mode.
5	SPDIF LED	Light on: The device is switched to SPDIF mode. Light off: The device is switched to ARC mode.
6	SELECT button	Used for switching the ARC and SPDIF modes.
7	DEVICE/ HOST USB switch	Switch to the right (HOST): The USB HOST mode is enabled. Switch to the left (DEVICE): The USB DEVICE mode is enabled.
8	USB DEVICES	Two USB device ports: Connected to U disk, mouse, or keyboard.
9	USB HOST	USB extension host port. Connect to a computer.
10	SERVICE	Firmware update port.
11	DC 24V	DC 24V/1A power supply input port. **Note:** The extender supports PoC functionality. Either the transmitter or receiver must be connected to a 24V/1A power supply. The other does not require a power supply.
12	LAN	1G Network port. The green LED will illuminate when it switches to Gigabit Ethernet. The yellow LED will illuminate when it switches to 100M Ethernet.
13	HDBT IN	10G Network port: Connect to the HDBT OUT port of the transmitter using a CAT 6A/7 cable for various signals pass-through.
14	Data Signal Indicator (Yellow)	Solid: HDMI signal with HDCP. Flashing: HDMI signal without HDCP. Dark: No HDMI signal.
15	Link Signal Indicator (Green)	Solid: The transmitter and receiver have a good connection status. Flashing: The transmitter and receiver have a poor connection status. Dark: The transmitter and receiver are not connected.
16	HDMI OUT	HDMI signal output port: Supports eARC/ARC TV.
17	L/R OUT	Audio de-embedding output port.

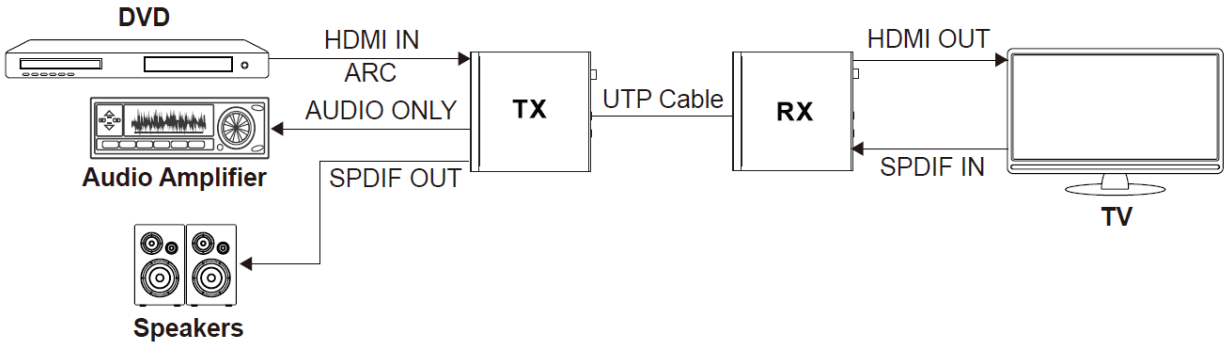
No.	Name	Function Description
18	SPDIF IN	Optical input port.
19	IR IN	IR signal input port: Connect to the IR Receiver cable.
20	IR OUT	IR signal output port. Connect to the IR Blaster cable.
21	RS-232	RS-232 serial port: Used for serial port command transmission.

Input & Output Switching

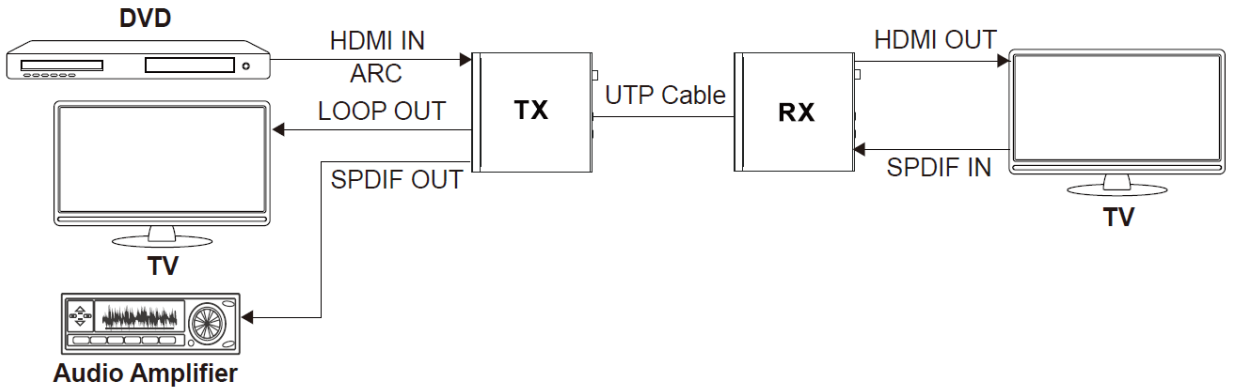
Switch the extender to ARC/SPDIF mode by pressing the SELECT button on the front panel of both transmitter and receiver. The HDMI OUT port of the transmitter can turn to LOOP-OUT or AUDIO ONLY through the LOOP-OUT/AUDIO ONLY switch.

The input and output routing are different for certain scenarios. See the diagrams below for details:

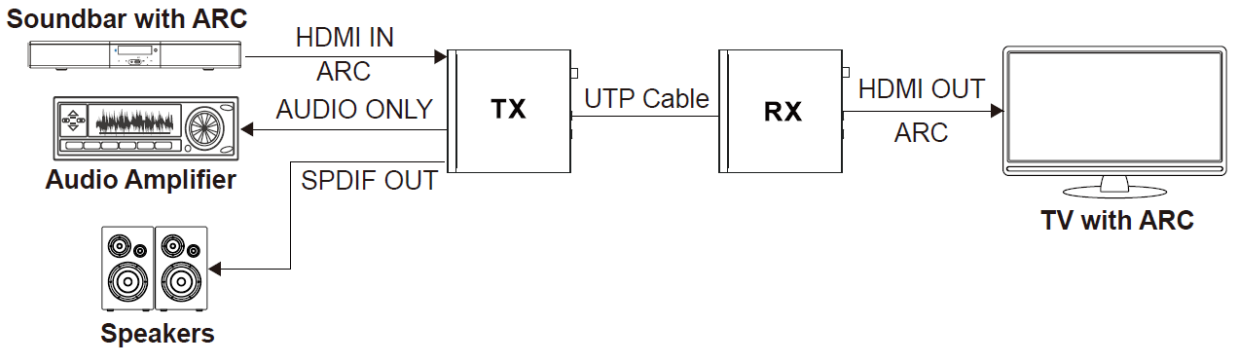
Example 1: Set the extender to SPDIF mode, then toggle the LOOP-OUT/ AUDIO ONLY switch to the right. The HDMI OUT port of the transmitter is now set to AUDIO ONLY.



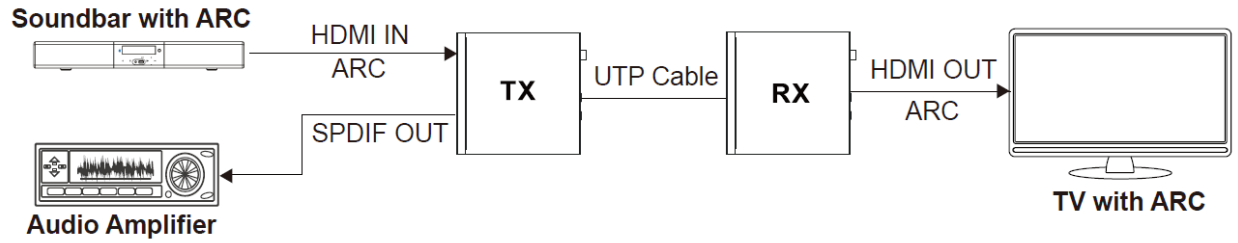
Example 2: Set the extender to SPDIF mode, then toggle the LOOP-OUT/ AUDIO ONLY switch to the left. The HDMI OUT port of the transmitter is now set to LOOP-OUT.



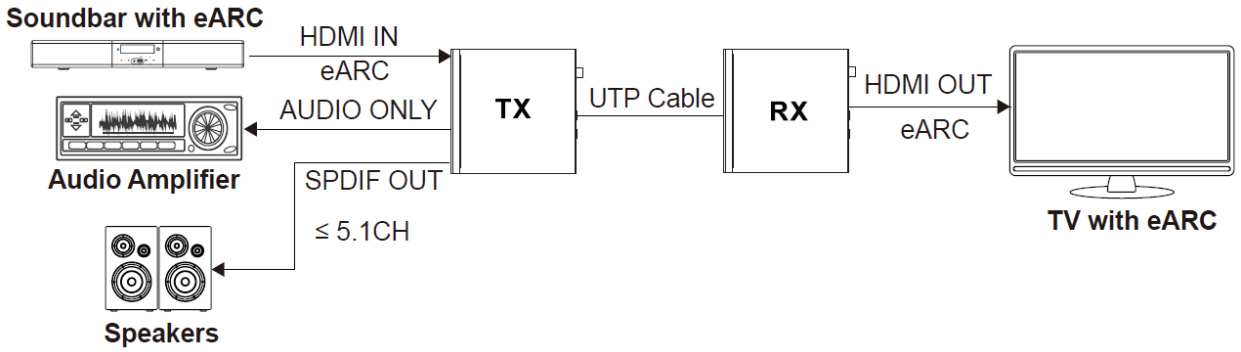
Example 3: Set the extender to ARC mode, then toggle the LOOP-OUT/ AUDIO ONLY switch to the right. The HDMI OUT port of the transmitter is now set to AUDIO ONLY.



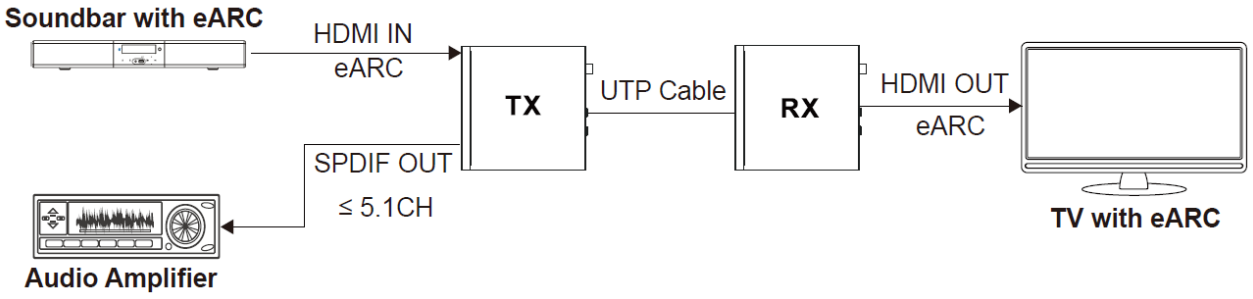
Example 4: Set the extender to ARC mode, then toggle the LOOP-OUT/ AUDIO ONLY switch to the left. The HDMI OUT port of the transmitter is now set to LOOP OUT.



Example 5: Set the extender to eARC mode, then toggle the LOOP-OUT/ AUDIO ONLY switch to the right. The HDMI OUT port of the transmitter is now set to AUDIO ONLY.



Example 6: Set the extender to eARC mode, then toggle the LOOP-OUT/ AUDIO ONLY switch to the left. The HDMI OUT port of the transmitter is now set to LOOP OUT.



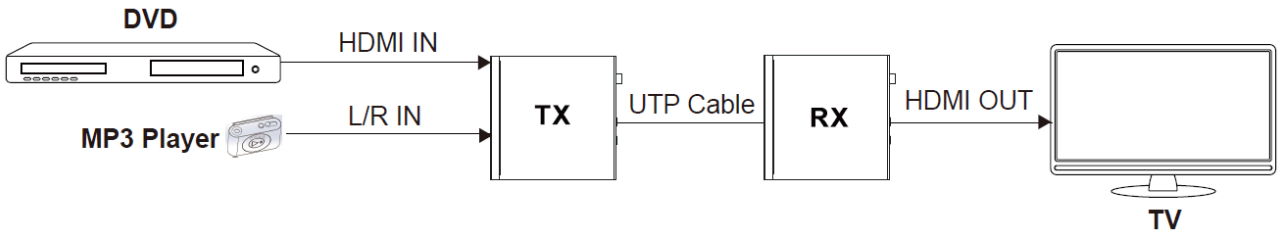
Note: In eARC mode, the SPDIF OUT port can only output the audio up to 5.1CH.

Audio Embedding and De-embedding

The transmitter's L/R IN/OUT port supports audio embedding or de-embedding using the L/R IN/OUT switch.

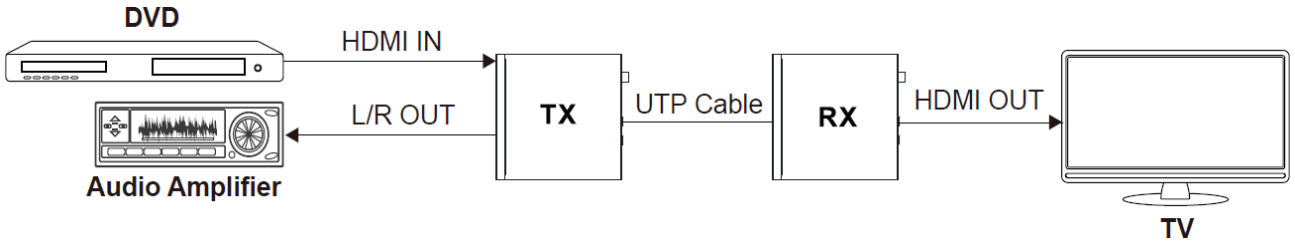
▪ TX Audio Embedding

When the L/R IN/OUT switch is switched to left, the audio from the external audio device will be embedded to the L/R IN/OUT port.



▪ TX Audio De-embedding

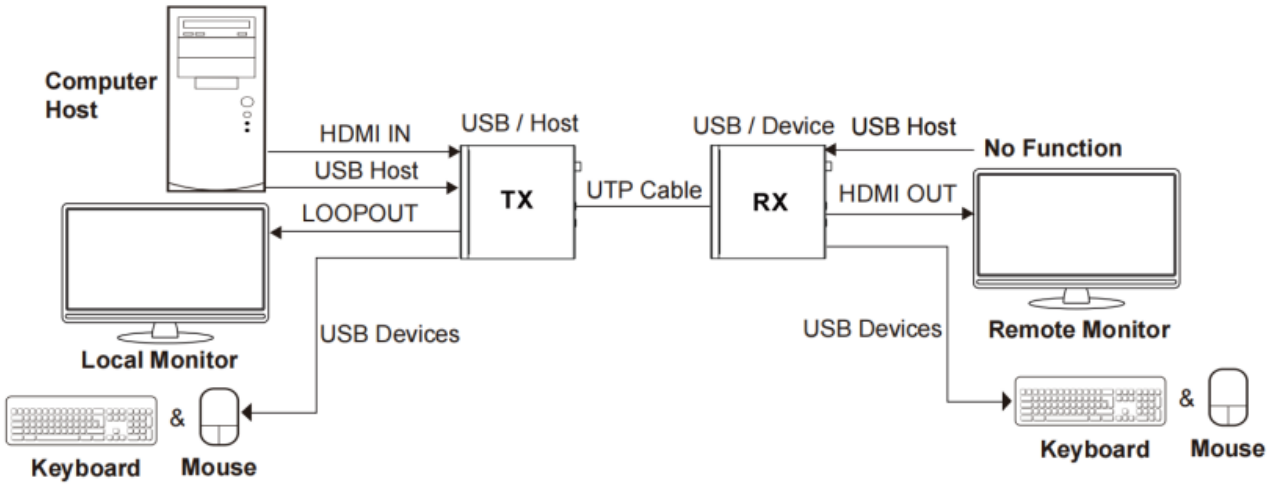
When the L/R IN/OUT switch is switched to right, the L/R IN/OUT port will output the de-embedded audio from the HDMI IN port.



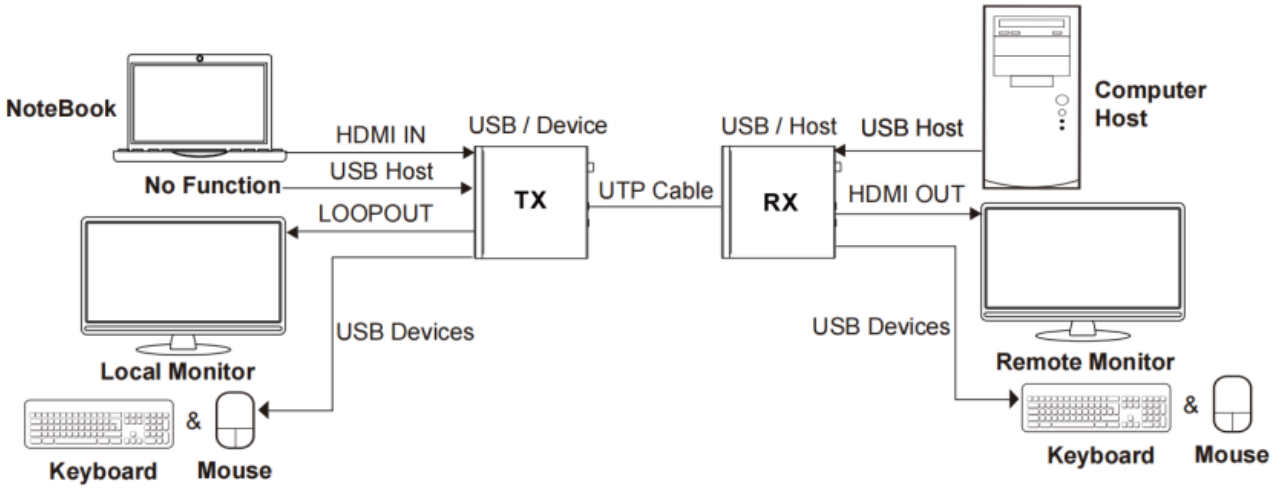
USB Mode Applications

The BG-EXH-100C6 supports USB 2.0 transmission and the Host/Device is also configurable.

Mode 1: USB forward from TX to RX
Toggle the HOST/DEVICE USB switch to the right and then power off and reboot the transmitter to set to USB Host mode. Meanwhile, toggle the DEVICE/HOST USB switch to the right and then power off and reboot the receiver to set to USB Device mode.

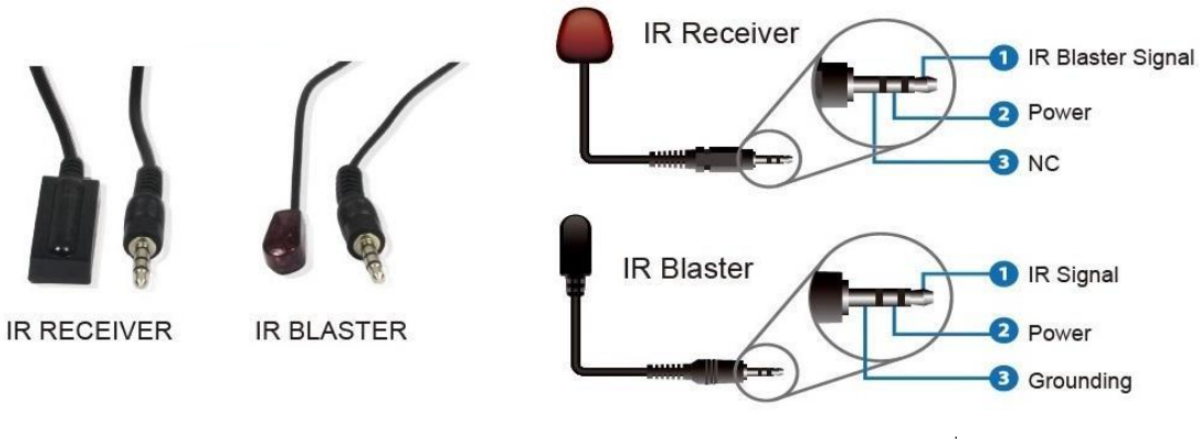


Mode 2: USB reverse from RX to TX
Toggle the DEVICE/HOST USB switch to the left and then power off and reboot the receiver to set to USB Device mode. Meanwhile, toggle the HOST/DEVICE USB switch to left and then power off and reboot the transmitter to set to USB Host mode.



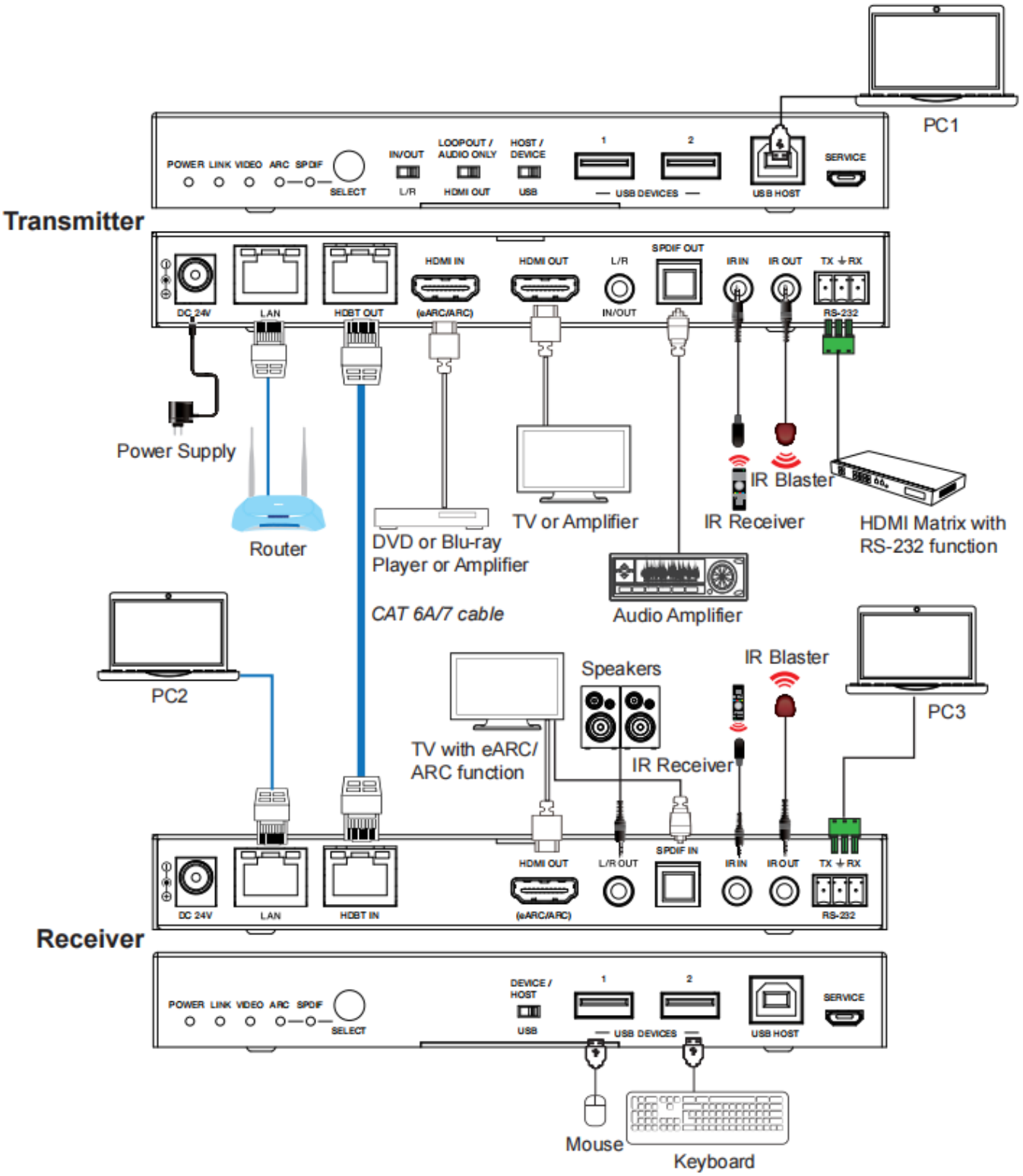
IR Pin Definition

IR Receiver and Blaster pin's definition as below:



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.

Application Example



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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