



BG-USX-B100CH

**Dual-Host USB 3.2/HDMI Switcher & HDBaseT 3.0 Extender Kit with
Dual USB-C Host Inputs and Dual 4K60 HDMI Outputs with
Bi-Directional PoC/RS-232 up to 328ft**

User Manual







TABLE OF CONTENTS

Statement	4
Safety Precaution	4
Introduction	5
Features	5
Packing List	6
Specifications	7
Operation Controls and Functions	9
Connection Diagram	12
API Commands	13
Troubleshooting	15
Tech Support	16
Limited Product Warranty Terms	16
Mission Statement	16
Copyright	16



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-USX-B100CH USB 3.2 Gen 1 Extender is a high-performance signal extension solution designed to transmit USB data and video signals over long distances of up to 100 meters (328 feet) using a single CAT6a (F/FTP) cable. Supporting USB 3.2 Gen 1 with data rates up to 5Gbps, the system is fully backward compatible with USB 2.0 and USB 1.1 devices. The transmitter features dual USB-C host inputs with both automatic and manual switching, enabling flexible source selection, while the receiver provides multiple USB device ports for seamless peripheral connectivity.

Integrated DisplayLink video technology enables dual HDMI video output at resolutions up to 4K@60Hz, making the extender ideal for applications requiring simultaneous USB and video extension. Additional professional features include bi-directional 24V Power over Cable (PoC), RS-232 pass-through, FSYNC GPIO support for industrial and machine-vision cameras, and analog audio de-embedding on the receiver. With support for firmware upgrades via USB-C service ports and robust metal enclosures, the BG-USX-B100CH is well suited for control rooms, medical imaging, industrial automation, and AV system integration environments.

Features

- **100m USB Extension:** Extends USB 3.2 Gen 1 signals up to 100m (328ft) over a single CAT6a (F/FTP) cable.
- **5Gbps High-Speed USB:** Supports USB 3.2 Gen 1 data transfer rates up to 5Gbps with backward compatibility for USB 2.0 and 1.1 devices.
- **Dual USB-C Host Inputs:** Provides two selectable USB-C host ports on the transmitter with auto-switching and manual switching support.
- **Multiple USB Device Ports:** Features one USB-C and two USB-A device ports on both transmitter and receiver for flexible peripheral connectivity.
- **Dual HDMI Video Outputs:** Utilizes DisplayLink™ technology to deliver dual HDMI video outputs at resolutions up to 4K@60Hz.
- **Bi-Directional 24V PoC:** Enables power delivery over the CAT6a link so only one side requires an external power supply.
- **RS-232 Pass-Through Control:** Supports RS-232 communication for remote control system integration and API command operation.
- **FSYNC GPIO Support:** Provides FSYNC signal pass-through for synchronization of industrial and machine-vision cameras.
- **Analog Audio De-Embedding:** Supports balanced and unbalanced analog audio output from the receiver.
- **Firmware Upgrade Support:** Allows firmware updates via USB-C service ports on both transmitter and receiver.



Packing List

- 1 × USB 3.2 Gen 1 Extender Transmitter (TX)
- 1 × USB 3.2 Gen 1 Extender Receiver (RX)
- 1 × 24V / 3.75A Locking Power Supply
- 2 × 4-Pin 3.5mm Phoenix Connectors (Male)
- 1 × 5-Pin 3.5mm Phoenix Connector (Male)
- 4 × Mounting Ears
- 8 × Machine Screws (KM3 × 4)
- 1 × User Manual



Specifications

Technical	
USB Protocol	USB 3.2 Gen 1
Data Rate	Up to 5Gbps
HDMI™ Compliance	HDMI™ 2.0b
HDCP Compliance	HDCP 2.2
Video Bandwidth	18Gbps
Maximum Video Resolution	Up to 4K@60Hz
Color Depth	8 / 10 / 12-bit
Color Space	RGB, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0
ESD Protection	IEC 61000-4-2: ±8kV (Air), ±4kV (Contact)
Transmission	
USB Extension Distance	100m / 328ft via CAT6a (F/FTP)
USB Cable Distance	1.5m / 4.9ft
HDMI™ Cable Distance	3m / 9.8ft (Passive)
Connections – Transmitter (TX)	
USB-C Host Inputs	2 × USB-C (24-pin, Female)
USB Device Outputs	1 × USB-C (24-pin), 2 × USB-A (9-pin)
Extension Port	1 × HDBT-USB3 (RJ45, 24V PoC)
RS-232 Control	1 × 3-Pin 3.5mm Phoenix
FSYNC	1 × 1-Pin 3.5mm Phoenix
Service Port	1 × USB-C (Firmware Upgrade)
Power Input	DC 24V / 3.75A
Connections – Receiver (RX)	
Extension Input	1 × HDBT-USB3 (RJ45, 24V PoC)
USB Device Outputs	1 × USB-C (24-pin), 2 × USB-A (9-pin)
HDMI™ Outputs	2 × HDMI™ Type-A



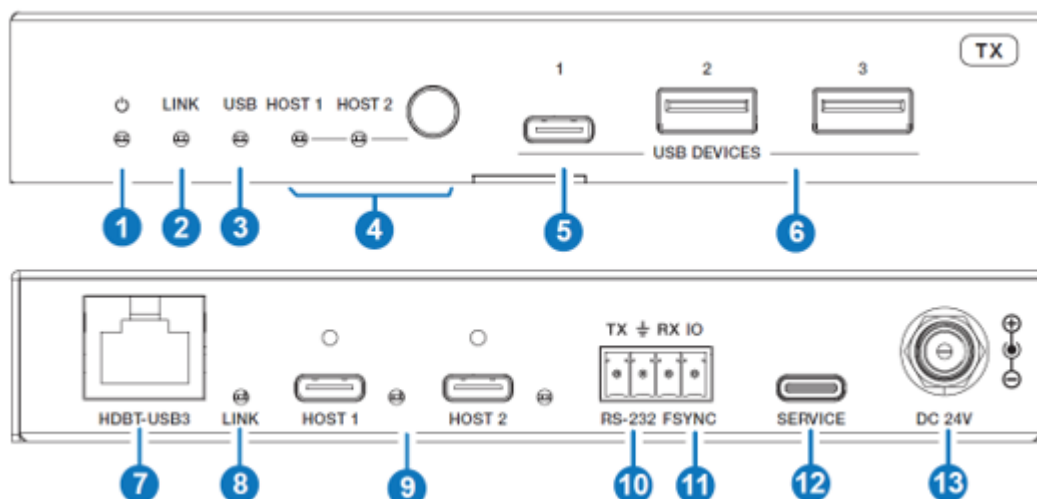
Audio Output	1 × 5-Pin 3.5mm Phoenix (Balanced / Unbalanced)
RS-232 Control	1 × 3-Pin 3.5mm Phoenix
FSYNC	1 × 1-Pin 3.5mm Phoenix
Service Port	1 × USB-C (Firmware Upgrade)
Power Input	DC 24V / 3.75A
Mechanical & Environmental	
Housing	Metal Enclosure
Color	Black
Dimensions (TX)	5.5 × 3 × 0.91 in [140 × 75 × 23 mm] (W × D × H)
Dimensions (RX)	7.1 × 3.7 × 0.91 in [180 × 95 × 23 mm] (W × D × H)
Weight (TX)	0.71 lbs [324 g]
Weight (RX)	1.1 lbs [486 g]
Power Supply	AC 100–240V, 50/60Hz; DC 24V / 3.75A
Power Consumption (TX)	18.48W (Max)
Power Consumption (RX)	19.44W (Max)
Operating Temperature	0°C to 40°C (32°F to 104°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Operating Humidity	20%–80% RH, Non-Condensing
Storage Humidity	10%–90% RH, Non-Condensing



Operation Controls and Functions

Front and Rear Panel

Transmitter Panel (TX)

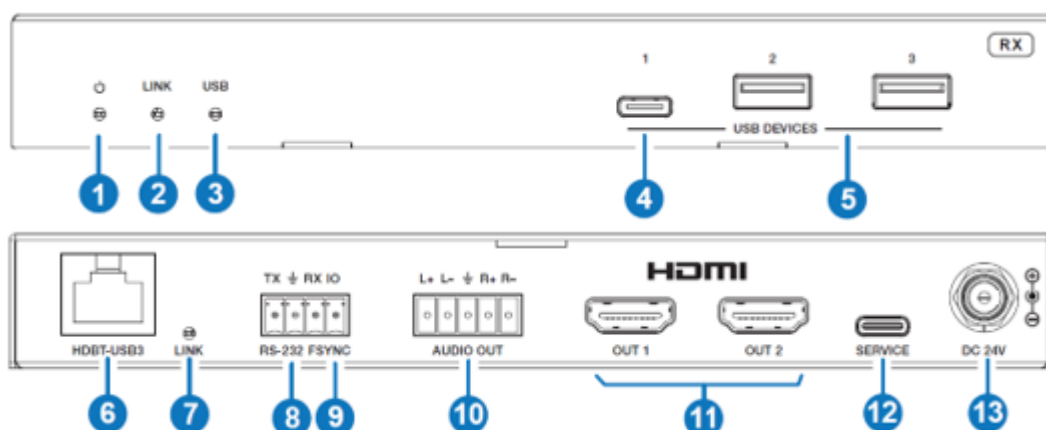


No.	Name	Function Description
1	Power LED	Indicates the transmitter is powered on (Red LED ON).
2	LINK LED	Indicates connection status between TX and RX. ON: Linked successfully. OFF: No link established.
3	USB LED	USB status indicator. ON: USB 3.0 detected. Blinking: USB 2.0 detected. OFF: No USB signal.
4	HOST Switch Button & LED	Selects between USB-C HOST 1 and HOST 2 inputs. Corresponding LED illuminates when active.
5	USB-C DEVICE	USB-C downstream port for peripherals (up to 5V/1A power output).
6	USB-A DEVICE	USB-A downstream ports for USB peripherals (up to 5V/1.5A output).
7	HDBT-USB3 Port	RJ45 port for CAT6a connection to RX, also provides 24V PoC power transmission.
8	LINK LED (Secondary)	Additional link status indicator confirming TX–RX connection.
9	USB-C HOST Ports (1/2)	Dual USB-C host inputs for PC/source connection; support automatic/manual switching.



10	RS-232	3-pin Phoenix connector for RS-232 pass-through control.
11	FSYNC	GPIO synchronization signal pass-through (0–5V default range).
12	SERVICE Port	USB 2.0 port for firmware and MCU/HDBT chip upgrades.
13	DC 24V	Locking DC power input (24V / 3.75A).

Receiver Panel (RX)



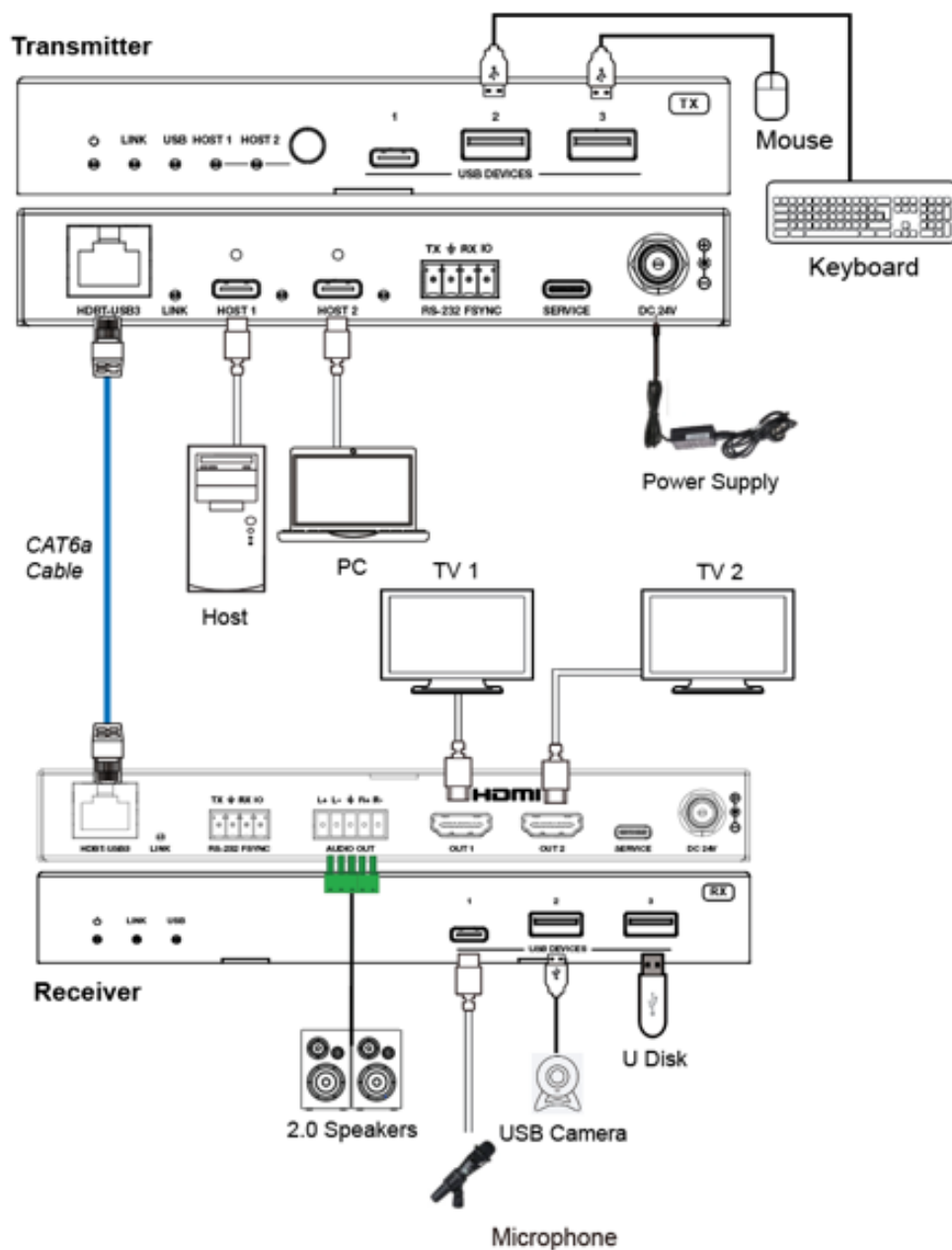
No.	Name	Function Description
1	Power LED	Indicates the receiver is powered on (Red LED ON).
2	LINK LED	Indicates TX–RX connection status. ON: Linked. OFF: No connection.
3	USB LED	USB status indicator. ON: USB 3.0 detected. Blinking: USB 2.0 detected. OFF: No USB signal.
4	USB-C DEVICE	USB-C downstream port for peripherals (up to 5V/1A output).
5	USB-A DEVICE	USB-A downstream ports for peripherals (up to 5V/1.5A output).
6	HDBT-USB3 Port	RJ45 connection to TX unit via CAT6a cable with 24V PoC support.
7	LINK LED (Secondary)	Additional connection status indicator confirming active link.
8	RS-232	3-pin Phoenix connector for RS-232 pass-through control.
9	FSYNC	GPIO synchronization signal pass-through (0–5V default range).
10	AUDIO OUT	Analog audio output supporting balanced (up to 2Vrms) and unbalanced (up to 1Vrms) output.



11	HDMI OUT (1/2)	Dual HDMI outputs for display devices; supports up to 4K@60Hz via DisplayLink™.
12	SERVICE Port	USB 2.0 port for firmware and MCU/HDBT chip upgrades.
13	DC 24V	Locking DC power input (24V / 3.75A).



Connection Diagram





API Commands

The BG-USX-B100CH supports API command control via RS-232 or USB-C service port. Connect the SERVICE port or RS-232 port to a PC and use a serial terminal tool (e.g., PuTTY, Tera Term) to send commands. Both transmitter and receiver support command-based configuration and status monitoring.

Communication Protocols:

- **Service Port (USB-C Virtual RS-232):** 115200 baud (fixed), 8 data bits, 1 stop bit, no parity
- **RS-232 Phoenix Port:** 4800–115200 baud (configurable), 8 data bits, 1 stop bit, no parity

ASCII Command Table

Command	Function	Example	Feedback	Default
?	List all available commands	?	Command list returned	—
help	List all available commands	help	Command list returned	—
get fw version	Get firmware version	get fw version	TX FW x.x.x / RX FW x.x.x	—
set reboot	Reboot device	set reboot	Rebooting... System initializing	—
set reset	Restore factory defaults	set reset	Prompt confirmation required	—
get status	Display system status	get status	Full system status report	—
set key on/off	Enable/disable front panel keys	set key off	Key off	ON
get key	Get front panel key status	get key	Key on/off	ON
set baud x	Set RS-232 baud rate	set baud 6	115200	115200
get baud	Get RS-232 baud rate	get baud	Baud rate 115200	115200
set autoswitch on/off	Enable/disable auto switching	set autoswitch on	Autoswitch on	ON



get autoswitch	Get autoswitch status	get autoswitch	Autoswitch on/off	ON
set input x	Select USB host input (1-2)	set input 1	Input USB host 1	1
get input	Get current USB host input	get input	Input USB host x	1
get usb5v x	Check USB host 5V status	get usb5v 0	USB power status report	—
set tx usbd x power y	Set TX USB device power mode	set tx usbd 0 power 1	Follow host power	1
get tx usbd x power	Get TX USB power status	get tx usbd 0 power	Power mode status	Follow
set rx usbd x power y	Set RX USB device power mode	set rx usbd 0 power 1	Follow host power	1
get rx usbd x power	Get RX USB power status	get rx usbd 0 power	Power mode status	Follow
set hdbt update	Enter firmware update mode	set hdbt update	HDBT update mode enabled	—



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.

Copyright

All the contents in this manual and its copyright are owned by BZBGear. No one is allowed to imitate, copy, or translate this manual without BZBGear's permission. This manual contains no guarantee, standpoint expression or other implies in any form. Product specification and information in this manual is for reference only and subject to change without notice.

All rights reserved. No reproducing is allowed without acknowledgement.