



BG-USX-B100BC

**Dual-Host USB 3.2 Type-A/B/C Switcher & HDBaseT 3.0 Extender Kit
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	8
API Commands	11
Notes on Command Ranges (Reference)	12
Connection Diagram	13
Troubleshooting	14
Tech Support	15
Limited Product Warranty Terms	15
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 2-Port USB 3.2 Gen 1 Extender Kit is designed to deliver reliable, high-speed USB connectivity over long distances using a single CAT6a cable. Supporting USB 3.2 Gen 1 with data transfer rates up to 5Gbps, the system extends USB signals up to 100 meters (328 feet) while remaining fully backward compatible with USB 2.0 and USB 1.1 devices. The transmitter provides dual selectable host inputs (USB-C and USB-B), allowing flexible connection to different host systems, while the receiver offers multiple USB device ports, including both USB-C and USB-A, to support a wide range of peripherals.

Engineered for professional and industrial applications, the extender features bi-directional 24V Power over Cable (PoC), enabling either the transmitter or receiver to power the entire system and simplifying installation. Advanced hardware acceleration ensures stable isochronous and bulk data transfers, making the solution well-suited for bandwidth-sensitive devices such as PTZ cameras, webcams, touch panels, and industrial cameras. Additional capabilities including RS-232 pass-through, FSYNC GPIO signal transmission, API control, and firmware upgrade support provide seamless integration into control systems and demanding AV, broadcast, and automation environments.

Features

- **Long-Distance USB Extension:** Extends USB 3.2 Gen 1 signals up to 100m (328ft) over a single CAT6a (F/FTP) cable.
- **High-Speed Data Throughput:** Supports USB 3.2 Gen 1 with data transfer rates up to 5Gbps for bandwidth-intensive devices.
- **Backward Compatibility:** Fully compatible with USB 2.0 and USB 1.1 devices.
- **Dual Host Inputs:** Transmitter includes one USB-C and one USB-B selectable host input for flexible system integration.
- **Multi-Port Device Connectivity:** Receiver provides one USB-C and three USB-A device ports to support multiple peripherals simultaneously.
- **Bi-Directional Power over Cable (PoC):** 24V PoC allows either the transmitter or receiver to power both units, reducing power supply requirements.
- **Automatic and Manual Host Switching:** Supports auto-switching via USB 5V detection as well as manual host selection.
- **Isochronous and Bulk Transfer Acceleration:** Hardware acceleration ensures stable performance for real-time and high-bandwidth USB devices.
- **RS-232 Pass-Through and API Control:** Enables remote control, monitoring, and integration with third-party control systems.
- **FSYNC GPIO Pass-Through:** Supports FSYNC signal transmission for synchronized industrial and machine-vision camera applications.
- **Firmware Upgrade Support:** Dedicated USB-C service port allows easy firmware updates and maintenance.



- **Plug-and-Play Operation:** No drivers or software required for quick and straightforward deployment.

Packing List

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



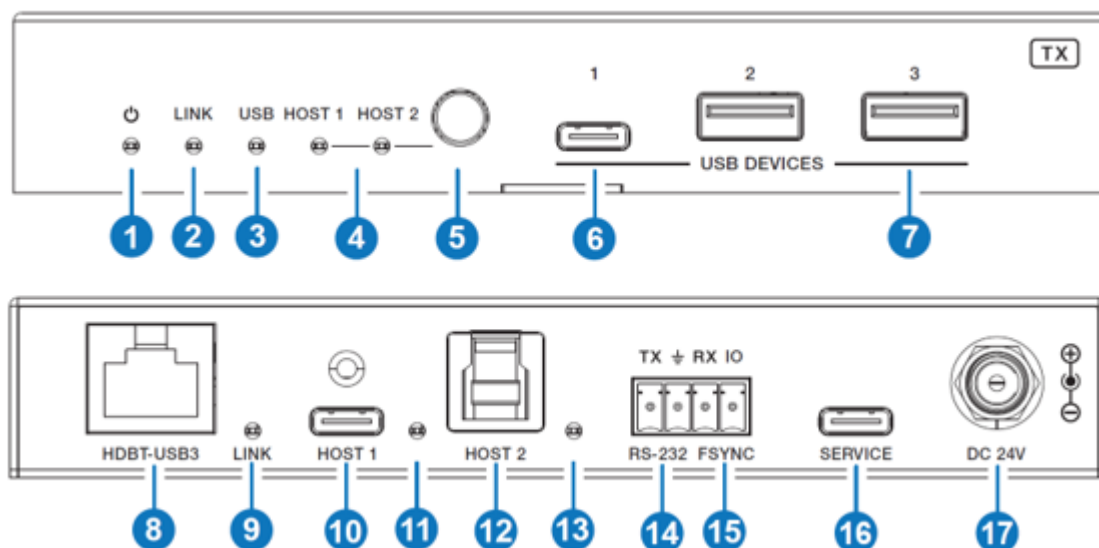
Specifications

Technical Specifications	
USB Protocol	USB 3.2 Gen 1
Max Data Rate	Up to 5Gbps
Transmission Distance	Up to 100m / 328ft via CAT6a (F/FTP); up to 1.5m / 4.9ft via USB cable
ESD Protection	IEC 61000-4-2: ±8kV (air discharge), ±4kV (contact discharge)
Connections	
Transmitter Host Inputs	1× USB-C (24-pin, female), 1× USB-B (9-pin, female)
Transmitter Device Outputs	1× USB-C (24-pin, female), 2× USB-A (9-pin, female)
Transmitter Extension Port	1× HDBT-USB3 (RJ45, 24V PoC)
Transmitter Control Ports	1× RS-232 (3-pin 3.5mm Phoenix), 1× FSYNC (1-pin 3.5mm Phoenix)
Transmitter Service Port	1× USB-C (firmware update)
Receiver Extension Input	1× HDBT-USB3 (RJ45, 24V PoC)
Receiver Device Outputs	1× USB-C (24-pin, female), 3× USB-A (9-pin, female)
Receiver Control Ports	1× RS-232 (3-pin 3.5mm Phoenix), 1× FSYNC (1-pin 3.5mm Phoenix)
Receiver Service Port	1× USB-C (firmware update)
Mechanical	
Housing	Metal enclosure
Color	Black
Dimensions (W × D × H)	140 × 75 × 23 mm (Transmitter / Receiver)
Weight	Transmitter: 313 g; Receiver: 318 g
Power Supply	AC 100–240V, 50/60Hz; DC 24V / 3.75A output
Power Consumption	Transmitter: 23W (max); Receiver: 35W (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

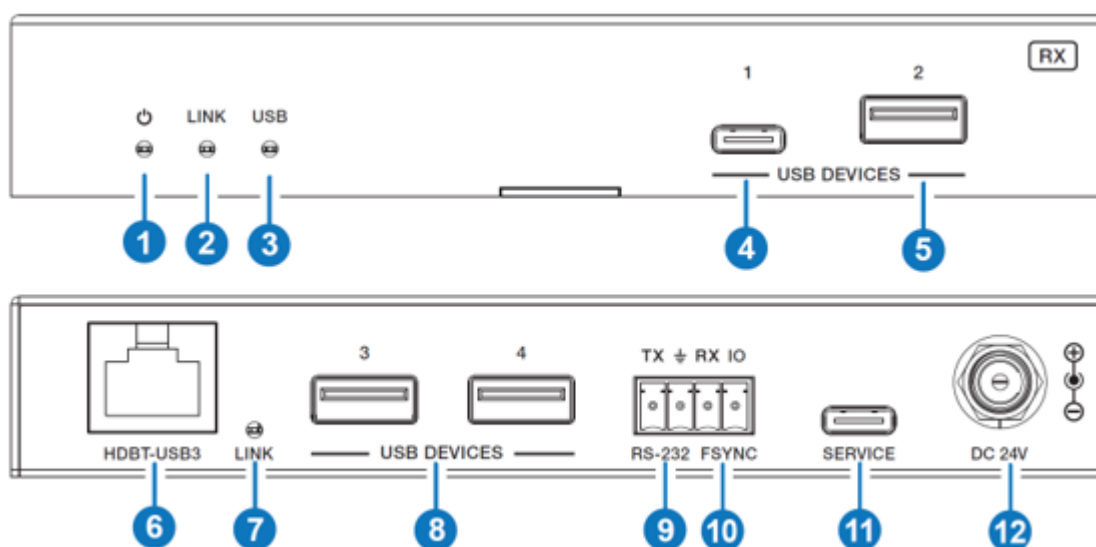


No.	Name	Function Description
1	Power LED	Indicates power status. LED is ON when the transmitter is powered.
2	LINK LED (Top)	Indicates connection status between transmitter and receiver. ON: link established; OFF: no link.
3	USB LED	Indicates USB signal status. ON: USB 3.0 detected; Blinking: USB 2.0 detected; OFF: no USB signal.
4	HOST (1~2) LED	Indicates which host input is currently selected (HOST 1 or HOST 2).
5	HOST Switch Button	Used to manually switch between HOST 1 (USB-C) and HOST 2 (USB-B).
6	USB DEVICE (USB-C)	Downstream USB-C port for connecting USB peripherals (up to 5V/1A).
7	USB DEVICE (USB-A x2)	Downstream USB-A ports for connecting USB peripherals (up to 5V/1A each).
8	HDBT-USB3 (RJ45)	Connects to the receiver via CAT6a cable for USB extension and PoC power transmission.



9	LINK LED (Bottom)	Secondary link indicator for HDBT-USB3 connection status. ON: linked; OFF: no link.
10	HOST 1 (USB-C)	USB host input port (USB-C) for PC connection; also used for firmware updates.
11	HOST 1 LED	Indicates USB signal activity on HOST 1. ON: active signal detected.
12	HOST 2 (USB-B)	USB host input port (USB-B) for PC connection; also used for firmware updates.
13	HOST 2 LED	Indicates USB signal activity on HOST 2. ON: active signal detected.
14	RS-232	3-pin Phoenix connector for RS-232 pass-through communication with control systems.
15	FSYNC	GPIO pass-through port (0–5V) for synchronization with external devices.
16	SERVICE	USB-C service port used for firmware upgrades and maintenance.
17	DC 24V	24V DC power input (required if PoC is not used).

Receiver Panel



No.	Name	Function Description
1	Power LED	Indicates power status. LED is ON when the receiver is powered.



2	LINK LED (Top)	Indicates link status with transmitter. ON: connected; OFF: no link.
3	USB LED	Indicates USB signal status. ON: USB 3.0 detected; Blinking: USB 2.0 detected; OFF: no USB signal.
4	USB DEVICE (USB-C)	Downstream USB-C port for peripherals (up to 5V/1A).
5	USB DEVICE (USB-A 1)	Downstream USB-A port for peripherals (up to 5V/1A).
6	HDBT-USB3 (RJ45)	Receives USB signal and PoC power from transmitter via CAT6a cable.
7	LINK LED (Bottom)	Secondary link indicator for connection status. ON: linked; OFF: no link.
8	USB DEVICE (USB-A ×3)	Additional downstream USB-A ports for peripherals (up to 5V/1.5A each).
9	RS-232	3-pin Phoenix connector for RS-232 pass-through communication.
10	FSYNC	GPIO pass-through port (0–5V) for synchronization with external devices.
11	SERVICE	USB-C service port used for firmware upgrades and maintenance.
12	DC 24V	24V DC power input (optional when PoC is not used).



API Commands

The device supports ASCII command control via the SERVICE (USB-C virtual COM) port or RS-232 Phoenix port. All commands must end with **<CR><LF>**.

Command	Function	Example	Feedback	Default
?	Get the list of all commands	?	Command list	—
help	Get the list of all commands	help	Command list	—
get fw version	Get firmware version	get fw version	1.0.0	1.0.0
set reboot	Reboot the device	set reboot	Reboot... / System Initializing... FW: x.x.x	—
set reset	Reset to factory defaults	set reset	"Sure to RESET to default settings? Type 'Yes'..."	—
get status	Get system status	get status	System status report (see note below)	—
set key on/off	Enable or disable front panel keys	set key on / set key off	Key On / Key Off	On
get key	Get front panel key status	get key	Key On	On
set baud x	Set RS-232 baud rate (x=1~6)	set baud 6	Baud rate 115200	115200
get baud	Get RS-232 baud rate	get baud	Baud rate 115200	115200
set input x	Set USB host input (x=1~2)	set input 1	Input USB Host 1	1
get input	Get USB host input port	get input	Input USB Host 1	1
get usb5v x	Get USB host 5V status (x=0~2)	get usb5v 0	USB host power status	—
set autoswitch x	Enable/disable auto-switching	set autoswitch on	on / off	on
get autoswitch	Get auto-switch status	get autoswitch	Autoswitch on	on
set tx usbd x power y	Set TX USB device power mode	set tx usbd 0 power 1	Follow USB host power	1

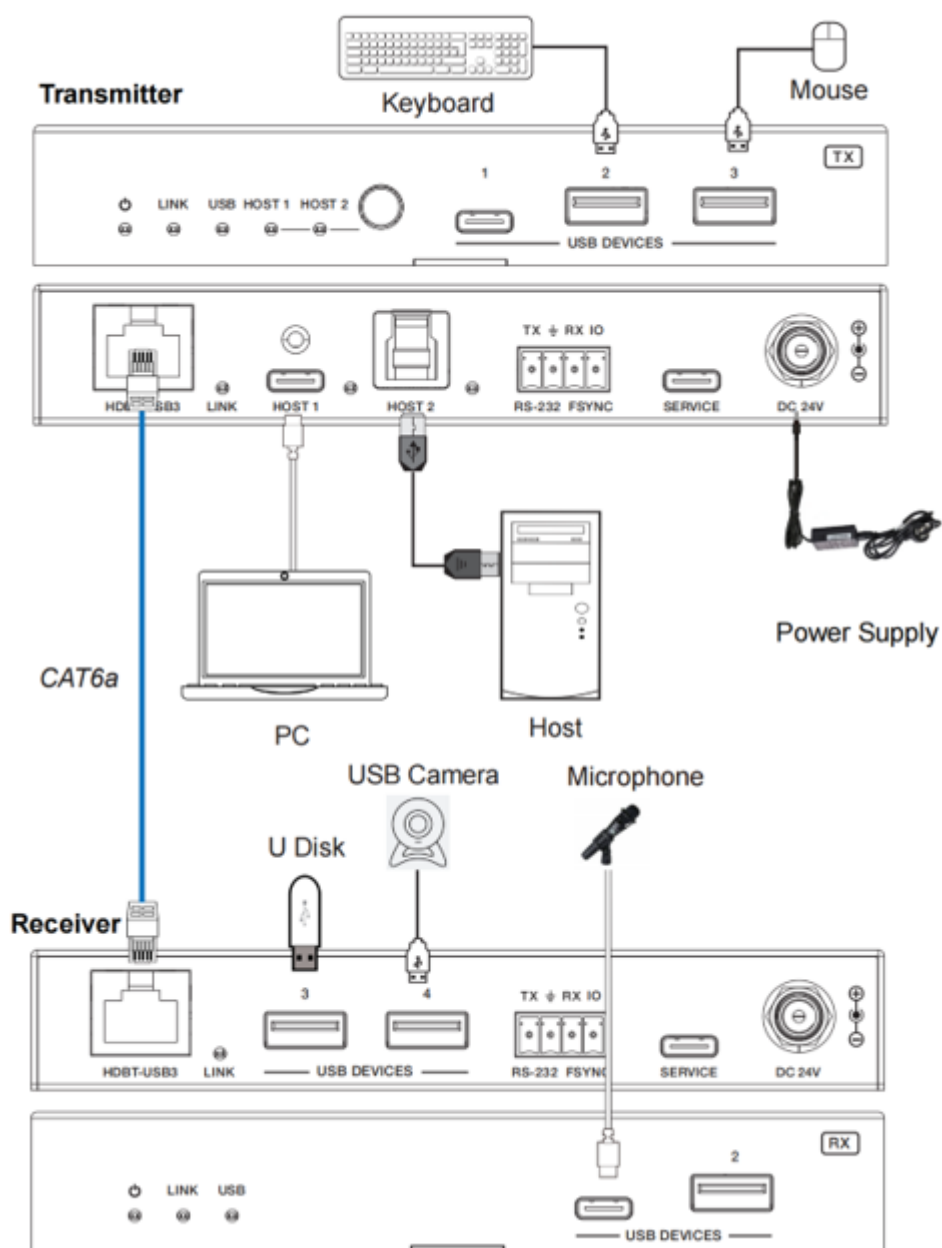


get tx usbd x power	Get TX USB device power status	get tx usbd 0 power	Power mode status	Follow
set rx usbd x power y	Set RX USB device power mode	set rx usbd 0 power 1	Follow USB host power	1
get rx usbd x power	Get RX USB device power status	get rx usbd 0 power	Power mode status	Follow
set hdbt update	Switch to HDBT UART firmware update mode	set hdbt update	Hdbt update	—

Notes on Command Ranges (Reference)

- **set baud x**
 - x=1: 4800
 - x=2: 9600
 - x=3: 19200
 - x=4: 38400
 - x=5: 57600
 - x=6: 115200
- **set input x**
 - x=1: USB-C Host
 - x=2: USB-B Host
- **set/get usb5v x**
 - x=0: All USB hosts
 - x=1: USB Host 1 (USB-C)
 - x=2: USB Host 2 (USB-B)
- **USB Power Modes (TX/RX)**
 - y=0: Force OFF
 - y=1: Follow USB host power
 - y=2: Force ON
- **set/get tx/rx usbd x**
 - x=0: All USB device ports
 - TX:
 - x=1 USB-C device
 - x=2 USB-A device 1
 - x=3 USB-A device 2
 - RX:
 - x=1 USB-C device
 - x=2 USB-A device 1
 - x=3 USB-A device 2
 - x=4 USB-A device 3

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

1.888.499.9906

Email

support@bzbgear.com

Live Chat

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.