



USB-C 3.2 Gen1 Dual HDMI Extender Kit, 100m

User Manual

500536



Table of Contents

1. Safety Precautions.....3

2. Introduction.....4

3. Features.....4

4. Package Contents.....4

5. Specifications.....5

6. Operation Controls and Functions.....6

 6.1 Transmitter Panel.....6

 6.2 Receiver Panel.....7

7. API Commands.....8

8. Application Example.....11

1 Safety Precautions

To ensure the best performance from the product, please read all instructions carefully before using the device. Save this manual for future reference.

- Follow basic safety precautions to reduce the risk of fire, electrical shock, and injury.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burns.
- Do not open or remove the housing of the device as you may be exposed to dangerous voltage or other hazards.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture and do not install this product near water. Keep the product away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on the housing, unplug the module immediately.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Using supplies or parts not meeting the product specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- Install the device in a place with adequate ventilation to avoid damage caused by overheating.
- Unplug the power when left unused for a long period of time.
- Information on disposal of devices: do not burn or mix with general household waste, please treat them as normal electrical waste.

Copyright Notice

All contents in this manual are copyrighted, and cannot be cloned, copied, or translated without the express permission of MuxLab Inc. Product specifications and information in this document are for reference only, and the content may be updated from time to time without prior notice.

2 Introduction

The USB-C 3.2 Gen1 Dual HDMI Extender Kit, 100m (model: 500536) enables USB 3.2 Gen1 connectivity at data rates up to 5Gbps & extends true USB up to 100m (328ft) over standard Cat6a UTP cable. Transmitter features with Two USB-C 3.2 Gen1 selectable hosts port, three local input (One USB-C and two USB-A), one FSYSNC GPIO input and one RS-232 pass-through. Receiver features with three USB 3.2 Gen1 outputs(One USB-C and Two USB-A), two HDMI output ports, one FSYSNC GPIO output and one RS-232 pass-through. The device also supports 24V Bi-directional PoC.

The USB-C 3.2 Gen1 Dual HDMI Extender Kit, 100m is true plug and play, requires no additional software drivers, and is compatible with all major operating systems. The unit supports a wide variety of USB extension applications including security, industrial control, digital signage, scientific data acquisition and other implementations of USB standards.

3 Features

- Extension of USB 3.2 Gen1 up to 100m/328ft over CAT6a cable
- USB 3.2 Gen1 connectivity with data transfer rate up to 5Gbps
- Built-in DisplayLink technology for video over USB on dual HDMI outputs, supporting up to 4K/60Hz
- Backwards compatible with USB 2.0 and USB 1.1
- Hardware acceleration for isochronous and bulk transfer
- USB-C and USB-A Ports supports 5VDC up to 1.5A and 1A
- Support RS-232 pass-through and FSYNC GPIO pass-through (for industry camera use)
- Support bi-directional 24VDC PoC
- Simple plug and play, no driver and setting installation required

4 Package Contents

- One (1) USB-C 3.2 Gen1 Dual HDMI Extender (Transmitter)
- One (1) USB-C 3.2 Gen1 Dual HDMI Extender (Receiver)
- One (1) 24VDC/3.75A Locking Power Supply
- Two (2) 4pin-3.5mm Phoenix Connector (Male)
- One (1) 5pin-3.5mm PhoenixConnector (Male)
- Four (4) Mounting Ear
- Eight (8) Screw (KM3*4)
- One (1) User manual (available via download)

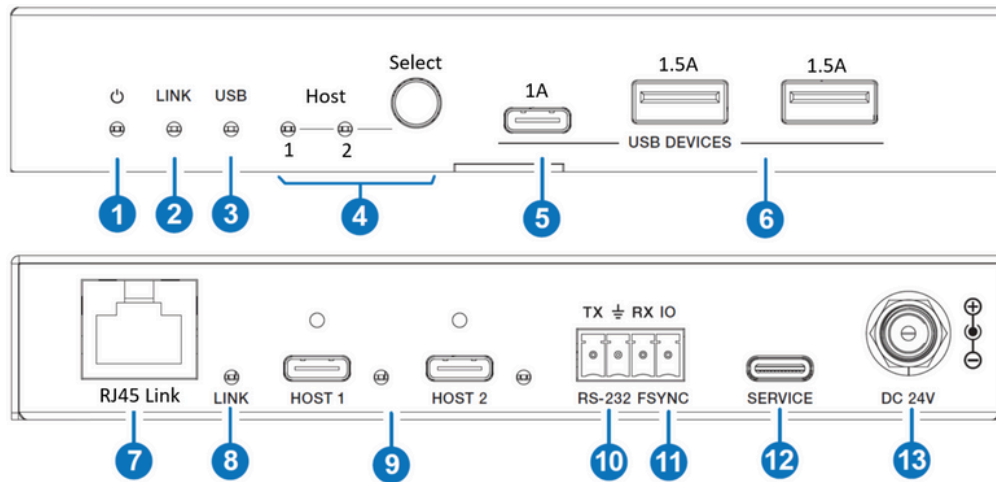
Notes: Confirm that the product and accessories are all included. If not, please contact the supplier from which you purchased the unit.

5 Specifications

Technical	
USB Protocol	USB 3.2 Gen1
Transmission Rate	Up to 5Gbps
Network Bandwidth	10G
Transmission Distance	100m/328ft over CAT6a (F/FTP) cable
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap discharge), ±4kV (Contact discharge)
Connection	
Transmitter	Input: 2 × USB HOST [USB-C, 24pin Female] Output: 1 × USB-C DEVICE [USB Type C, 24-pin female] 2 × USB-A DEVICE [USB Type A, 9-pin female] 1 × HDBT-USB3 [RJ45 connector, 24V PoC] Control: 1 × RS-232 [3pin-3.5mm Phoenix Connector] 1 × FSYNC [1pin-3.5mm Phoenix Connector] 1 × SERVICE [USB-C, Update Port]
Receiver	Input: 1 × HDBT-USB3 [RJ45 connector, 24V PoC] Output: 2 × USB-A DEVICE [USB Type A, 9-pin female] 1 × USB-C DEVICE [USB Type C, 24-pin female] 2 × HDMI OUT [Type A, 19-pin Female] 1 × AUDIO OUT [Terminal Block 5-pin] Control: 1 × RS-232 [3pin-3.5mm Phoenix Connector] 1 × FSYNC [1pin-3.5mm Phoenix Connector] 1 × SERVICE [USB-C, Firmware Update Port]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	Transmitter: 140mm [W] × 75mm [D] × 23mm [H] Receiver: 180mm [W] × 95mm [D] × 23mm [H]
Weight	Transmitter: 324g, Receiver: 486g
Power Supply	Input: 100~240VAC 50/60Hz Output: 24VDC/3.75A
Power Consumption	PoC Power Supply: 68W (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)
Generic Specification	
Warranty	2 years
Order Information	500536 USB-C 3.2 Gen1 Dual HDMI Extender Kit, 100m (UPC: 627699005361)

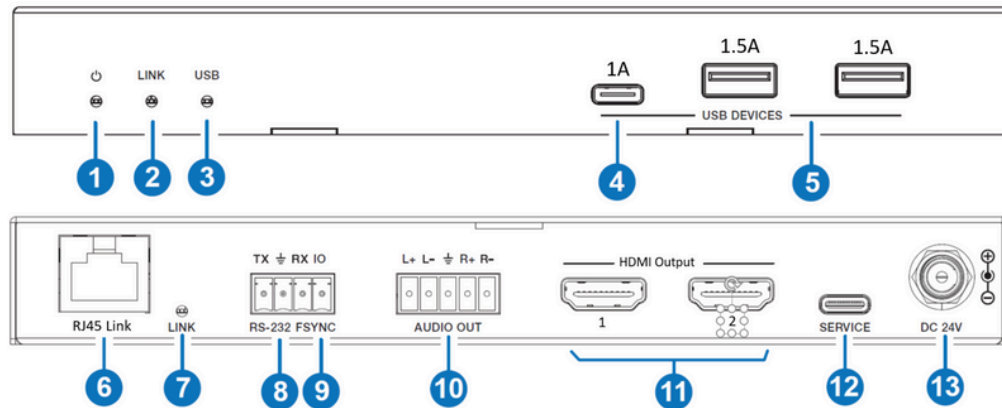
6 Operation Controls and Functions

6.1 Transmitter Panel



No	Name	Function Description
1	Power LED	Uplink USB-C port, connected to PC or host.
2	LINK LED	Connection signal indicator. ▪ On: Transmitter and Receiver are connected and linked. ▪ Off: Transmitter and Receiver are not connected.
3	USB LED	USB signal indicator. ▪ On: USB 3.0 signal is detected. ▪ Blinking: USB 2.0 signal is detected. ▪ Off: USB signal is not detected.
4	HOST switch button & LED	The button is used to switch between HOST 1 and HOST 2. When HOST 1/2 is selected, the corresponding LED will be on.
5	USB-C DEVICE	Downlink USB-C port, with output power up to 5V/1A. Connects to USB device such as U disk or hard disk.
6	USB-A DEVICE	Downlink USB-A ports, with output power up to 5V/1.5A. Connect to USB devices such as U disk or hard disk.
7	HDBT - USB3	Connects to the HDBT-USB3 port on RX with CAT6a cable. It can also be used for 24V PoC power supply.
8	LINK LED	Connection signal indicator. ▪ On: Transmitter and Receiver are connected and linked. ▪ Off: Transmitter and Receiver are not connected.
9	USB-C HOST port & LED (1/2)	Uplink USB-C ports, connected to PC or host. The two ports can be used for HUB firmware update. When HOST 1/2 is selected as input channel, the corresponding LED will be on.
10	RS-232	3pin phoenix connector, connected to a PC or control system for RS-232 command pass-through.
11	FSYNC	FSYNC port, the level pass through from Transmitter to Receiver, to synchronize the external devices. Default level range is 0~5V.
12	SERVICE	USB 2.0 port, used for software upgrade of MCU and HDBT-USB3 chip.
13	24VDC	24VDC/3.75A power input port.

6.2 Receiver Panel



No	Name	Function Description
1	Power LED	The red LED will be on when the receiver is powered on.
2	LINK LED	Connection signal indicator. ▪ On: Transmitter and Receiver are connected and linked. ▪ Off: Transmitter and Receiver are not connected.
3	USB LED	USB signal indicator. ▪ On: USB 3.0 signal is detected. ▪ Blinking: USB 2.0 signal is detected. ▪ Off: USB signal is not detected.
4	USB-C DEVICE	Downlink USB-C port, with output power up to 5V/1A. Connect to USB device such as U disk or hard disk.
5	USB-A DEVICE	Downlink USB-A ports, with output power up to 5V/1.5A. Connect to USB devices such as U disk or hard disk.
6	HDBT-USB3	Connects to the HDBT-USB3 port on TX with CAT6a cable. It can also be used for 24V PoC power supply.
7	LINK LED	Connection signal indicator. ▪ On: Transmitter and Receiver are connected and linked. ▪ Off: Transmitter and Receiver are not connected.
8	RS-232	3pin phoenix connector, connected to a PC or control system for RS-232 command pass-through.
9	FSYNC	FSYNC port, the level pass through from Transmitter to Receiver, to synchronize the external devices. Default level range is 0~5V.
10	AUDIO OUT	Analog audio output port, supporting balanced audio output (with a maximum support of 2Vrms) and unbalanced audio output (with a maximum support of 1Vrms). Balanced connection method: L+, L-, R+, R- Unbalanced connection method: L+, R+
11	HDMI OUT	HDMI output ports, connected to HDMI display devices such as TV or monitor.
12	SERVICE	USB 2.0 port, used for software upgrade of MCU and HDBT-USB3 chip.
13	24VDC	DC 24V/3.75A power input port.

7 API Commands

The product supports API commands control. Connect the SERVICE or RS-232 port of the product to a PC, then open a Serial Command tool on PC to send API commands to control the product. The API commands list is shown below.

ASCII Commands				
1. Service port (USB-C virtual RS-232) communication protocol (Internal debug) Baud rate: 115200 (fixed), Data bit: 8, Stop bit: 1, Parity bit: none The end mark of command is "<CR><LF>" 2. Phoenix RS-232 port communication protocol (Connect to control system) Baud rate: 4800~115200 (configurable), Data bit: 8, Stop bit: 1, Parity bit: none The end mark of command is "<CR><LF>"				
Command	Function	Example	Feedback	Default
?	Get the list of all commands	?		
help	Get the list of all commands	help		
get fw version	Get firmware version	get fw version	TX FW 1.0.0 RX FW 1.0.0	
set reboot	Reboot the device	set reboot	Reboot... System Initializing... Initialization Finished! TX FW 1.0.0	
set reset	Reset to factory defaults	set reset	Sure to RESET to default settings? Type "Yes" after next prompt to confirm...	
get status	Get system status	get status	Please refer to the note at the end of the list.	
set key on/off	Set front panel key on/off	set key on set key off	Set key on Set key off	on
get key	Get front panel key on/off status	get key	Key on	
set baud x	Set RS-232 baud rate to x bps x=1: 4800 x=2: 9600 x=3: 19200 x=4: 38400 x=5: 57600 x=6: 115200	set baud 6	Set baud rate 115200	115200
get baud	Get RS-232 baud rate	get baud	Baud rate 115200	

Command	Function	Example	Feedback	Default
get usb5v x	Get USB host input port 5V (x=0~2) x=0: all USB host inputs x=1: USB host 1 (USBC) x=2: USB host 2 (USBC)	get usb5v 0	USB host 1: 5V USB host 2: none	
set autoswitch x	Set auto-switching on/off (USB 5V detection) x=On, Off	set autoswitch on	Set autoswitch on	on
get autoswitch	Get auto-switching status	get autoswitch	Autoswitch on	
set tx usbd x power y	Set TX USB device ports (x=0~3) power to (y=0~2) x=0: TX all USB device ports x=1: TX USB device 1 (USBC) x=2: TX USB device 2 (USBA) x=3: TX USB device 3 (USBA) y=0: Force power off y=1: Follow USB host power y=2: Force power on	set tx usbd 0 power 1	Set TX all USB device ports power follow USB host power	1
get tx usbd x power	Get TX USB device ports (x=0~3) power status x=0: TX all USB device ports x=1: TX USB device 1 (USBC) x=2: TX USB device 2 (USBA) x=3: TX USB device 3 (USBA)	get tx usbd 0 power	TX all USB device ports power follow USB host power	

Command	Function	Example	Feedback	Default
set rx usbd x power y	Set RX USB device ports (x=0~3) power to (y=0~2) x=0: RX all USB device ports x=1: RX USB device 1 (USBC) x=2: RX USB device 2 (USBA) x=3: RX USB device 3 (USBA) y=0: Force power off y=1: Follow USB host power y=2: Force power on	set rx usbd 0 power 1	Set RX all USB device ports power follow USB host power	1
get rx usbd x power	Get RX USB device ports (x=0~3) power status x=0: RX all USB device ports x=1: RX USB device 1 (USBC) x=2: RX USB device 2 (USBA) x=3: RX USB device 3 (USBA)	get rx usbd 0 power	RX all USB device ports power follow USB host power	
set hdbt update	Set service port to HDBT UART for FW update	set hdbt update	HDBT update	
set input x	Set USB host input port (x=1~2) x=1: USB host 1 (USBC) x=2: USB host 2 (USBC)	set input 1	Set input USB host 1	1
get input	Get USB host input port	get input	Input USB host 1	

Note: The feedback of the command of “get status” is as follow. (The middle line ends with <LF><CR> and the last line ends with <CR><LF>.)

Status Info 2-Port USB 3.2 Gen 1 Extender

TX_FW 1.0.0 RX_FW 1.0.0

Source	Key	Baud	Autoswitch
01	On	115200	On

Input	USB_Power
-------	-----------

01	5V
----	----

02	None
----	------

Output	USB_Power
--------	-----------

TX_01	Follow_Input
-------	--------------

TX_02	Follow_Input
-------	--------------

TX_03	Follow_Input
-------	--------------

RX_01	Follow_Input
-------	--------------

RX_02	Follow_Input
-------	--------------

RX_03	Force_On
-------	----------

8 Application Example

