# Liberty

# INT-USB3-H & INT-USB3-C
## USB 3.2 Gen 1 Extender over HDBaseT



# User Manual
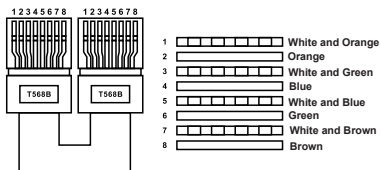
# Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

# Surge protection device recommended

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.

# Connection

Please connect in direct interconnection method and do not cross connect.



**Direct Interconnection Method**

# Table of Contents

# 1. Introduction

This USB 3.2 Extender based on HDBaseT VS6320, can extend USB signal to a distance up to 100m/328ft via a single CAT6a cable. Host/Local device features one USB 3.2 Type B host port, two USB 3.2 Type A client ports, one FSYSNC and RS-232 pass-through. Client/Remote device features one USB 3.2 Type C, and two USB 3.2 Type A client ports, one FSYSNC, and RS-232 pass-through. Bi-directional 24V Power (PoC) is also supported.

It can be widely used for long distance USB signal transmission between USB sources and devices like webcams, PTZ cameras, keyboards, mouse devices, USB microphones, flash sticks, printers, scanners, touch panel displays and other USB devices. Host & Client devices are sold separately, and are fully compatible with box and wall plate style INT-USB3 devices

# 2. Features

☆ Extension of USB 3.2 up to 100m/328ft over CAT6a cable

☆ USB 3.2 Gen 1 connectivity with data transfer rate up to 5Gbps

☆ Backwards compatible with USB 2.0 and 1.1

☆ Hardware acceleration for isochronous and bulk transfer

☆ Each USB-A or USB-C port supports power output up to 5V/1500mA

☆ Plug-and-play with no drivers, downloads, or software required

☆ Support RS-232 pass-through and FSYNC GPIO pass-through (for industry camera use)

☆ Support bi-directional 24V PoC (Power over Cable)

# 3. Package Contents

| INT-USB3-H | Qty | INT-USB3-C | Qty |
|---|---|---|---|
| USB 3.2 Extender Box (Host) | 1 | USB 3.2 Extender Box (Client) | 1 |
| 24V/2.7A Power Supply | 2 | AC Power Cord (1.5m) | 2 |
| USB-C to USB-B cable (2m) | 1 | USB-A to USB-A cable (2m) | 1 |
| USB-A to USB-B cable (2m) | 1 | USB-A to USB-C cable (2m) | 1 |
| Mounting Ear | 4 | Machine Screw (KM3*4) | 8 |
| 4pin-3.5mm Phoenix Connector | 2 | User Manual | 1 |

# 4. Specifications

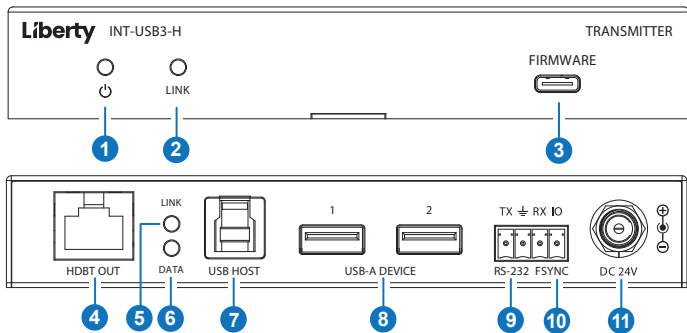| Technical | |
|---|---|
| USB Protocol | USB 3.2 Gen 1 |
| Transmission Rate | Up to 5Gbps |
| Transmission Distance | Up To 100m/328ft over CAT6a (U/FTP) cable |
| ESD Protection | IEC 61000-4-2:<br>±8kV (Air-gap discharge), ±4kV (Contact discharge) |
| **Connections** | |
| Transmitter | Input:   1× USB HOST [USB Type B, 9-pin female]<br>Output: 2× USB-A DEVICE [USB Type A, 9-pin female]<br>          1× HDBT OUT [RJ45 connector, 24V PoC]<br>Control: 1× RS-232 [3pin-3.5mm phoenix connector]<br>          1× FSYNC [1pin-3.5mm phoenix connector]<br>          1× FIRMWARE [USB-C, firmware update port] |
| Receiver | Input:   1× HDBT IN [RJ45 connector, 24V PoC]<br>Output: 2× USB-A DEVICE [USB Type A, 9-pin female]<br>          1× USB-C DEVICE [USB Type C, 24-pin female]<br>Control: 1× RS-232 [3pin-3.5mm phoenix connector]<br>          1× FSYNC [1pin-3.5mm phoenix connector]<br>          1× FIRMWARE [USB-C, firmware update port] |
| **Mechanical** | |
| Housing | Metal Enclosure |
| Color | Black |
| Dimensions | Transmitter / Receiver: 75mm [W] × 140mm [D] × 23mm [H] |
| Weight | Transmitter: 60g / Receiver: 50g |
| Power Supply | Input: AC 100~240V 50/60Hz<br>Output: DC 24V/2.7A |
| Power Consumption | PoC Power Supply: 48W (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) |
| Country of Origin | Taiwan (TAA Compliant) |

# 4.1  Supported Cable Length

The firmware version V1.0.10 includes improvements and optimizations in the link performance to support longer cable lengths. Tested and verified over CAT 6A U/FTP from different vendors:

- **Up to 90 meters with patches**: 80 meter of infrastructure cable + 2 X 5 meter patch cable

- **Up to 100 meter straight cable** (without patches)

- **Cable length with Semi-crossover and crossover: up to 60 meter** (50 meter infrastructure + 2 X 5 meter patch cable


** Important note.  "EZ" or other types of pass-through RJ45 connectors are not supported.  Please use quality shielded RJ45 connectors that properly pair with the Cat6a or above cable being used
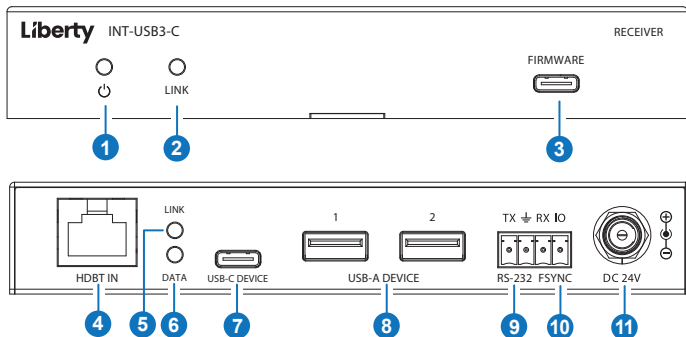
# 5. Operation Controls and Functions

## 5.1 Transmitter Panel



| No. | Name | Function Description |
|-----|------|---------------------|
| 1 | Power LED | The LED will be on when the transmitter is powered on. |
| 2 | LINK LED | Connection signal indicator.<br>▪ **On:** Transmitter and Receiver are connected and linked.<br>▪ **Blinking:** Transmitter and Receiver link is off due to USB low power mode.<br>▪ **Off:** Transmitter and Receiver are not connected. |
| 3 | FIRMWARE | Firmware update port. |
| 4 | HDBT OUT | Connects to the HDBT IN port on Receiver with CAT cable. |
| 5 | LINK LED | Connection signal indicator.<br>▪ **On:** Transmitter and Receiver are connected and linked.<br>▪ **Blinking:** Transmitter and Receiver link is off due to USB low power mode.<br>▪ **Off:** Transmitter and Receiver are not connected. |
| 6 | DATA LED | USB signal indicator.<br>▪ **On:** When the USB HOST port establishes an USB 3.2 connection to an USB host.<br>▪ **Blinking:** When the USB HOST port establishes an USB 2.0 connection to an USB host.<br>▪ **Off:** The USB HOST port is not connected. |

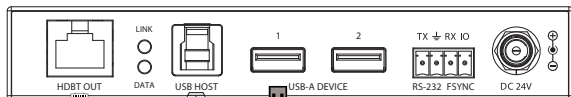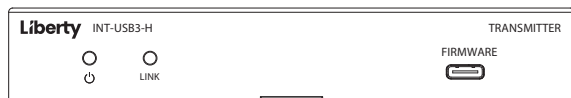| No. | Name | Function Description |
|-----|------|---------------------|
| 7 | USB HOST | Host port supporting USB 3.2 Gen1, connected to a PC or host. |
| 8 | USB-A DEVICE (1~2) | USB extended interface, connected to USB devices such as U disk, keyboard or mouse.<br>And its output power is up to 5V/1.5A. |
| 9 | RS-232 | 3pin phoenix connector, connected to a PC or control system for RS-232 command pass-through. |
| 10 | FSYNC | FSYNC port, the level pass through from Transmitter to Receiver, to synchronize the external devices. Default level range is 0~5V. |
| 11 | DC 24V | DC 24V/2.7A power input port. |

## 5.2 Receiver Panel



| No. | Name | Function Description |
|-----|------|---------------------|
| 1 | Power LED | The LED will be on when the receiver is powered on. |
| 2 | LINK LED | Connection signal indicator.<br>▪ **On:** Transmitter and Receiver are connected and linked.<br>▪ **Blinking:** Transmitter and Receiver link is off due to USB low power mode.<br>▪ **Off:** Transmitter and Receiver are not connected. |

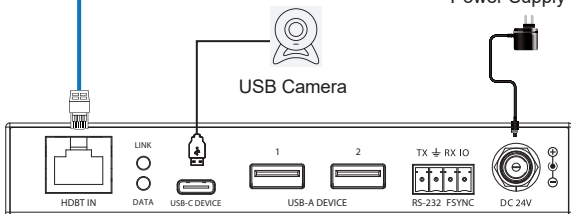| No. | Name | Function Description |
|-----|------|----------------------|
| 3 | FIRMWARE | Firmware update port. |
| 4 | HDBT IN | Connects to the HDBT OUT port on Transmitter with CAT cable. |
| 5 | LINK LED | Connection signal indicator.<br>▪ **On:** Transmitter and Receiver are connected and linked.<br>▪ **Blinking:** Transmitter and Receiver link is off due to USB low power mode.<br>▪ **Off:** Transmitter and Receiver are not connected. |
| 6 | DATA LED | USB signal indicator.<br>▪ **On:** The USB HOST port establishes an USB 3.2 connection to an USB host, and the USB DEVICE port (USB-C or USB-A) establishes an USB 3.2 connection to an USB device.<br>▪ **Blinking:** The USB HOST port establishes an USB 2.0 connection to an USB host, and the USB DEVICE port (USB-C or USB-A) establishes an USB 2.0 connection to an USB device.<br>▪ **Off:** The USB Device port is not connected. |
| 7 | USB-C DEVICE | USB type C port supporting USB 3.2 Gen 1, connected to USB device. And its output power is up to 5V/1.5A. |
|   | USB-A DEVICE (1~2) | USB type A port supporting USB 3.2 Gen 1, connected to USB device. And its output power is up to 5V/1.5A. |
| 9 | RS-232 | 3pin phoenix connector, connected to a PC or control system for RS-232 command pass-through. |
| 10 | FSYNC | FSYNC port. Outputs the level from Transmitter to synchronize the external devices. Default level range is 0~5V. |
| 11 | DC 24V | DC 24V/2.7A power input port. |

# 6. Application Example



**Transmitter**

Liberty INT-USB3-H    TRANSMITTER

FIRMWARE

LINK

DATA

HDBT OUT   USB HOST   1   2    USB-A DEVICE    TX ⏚ RX IO   RS-232 FSYNC   DC 24V

U Disk

*CAT6a*

PC

Power Supply

USB Camera

**Receiver**

LINK

DATA

HDBT IN   USB-C DEVICE   1   2   USB-A DEVICE   TX ⏚ RX IO   RS-232 FSYNC   DC 24V

Liberty INT-USB3-C    RECEIVER

FIRMWARE

LINK

Thank you for your purchase.

For Technical Support please call our toll free number at
800-530-8998 or email us at supportlibav@libav.com

www.libav.com

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