

iTrans WP70HBC

2 x 1 USB-C & HDMI over HDBT 3.0 Wall Plate Extender Kit (Tx + Rx)

User Manual V1.2



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1.0 OVERVIEW

1.1 iTrans WP70HBC (Tx)

This **iTrans WP70HBC (Tx)** is a 2 x 1 wall plate transmitter equipped with both USB-C and HDMI inputs. It adopts the latest **HDBT 3.0** technology, allowing for fully uncompressed video transmission of **4K@60Hz 4:4:4 8-bit** SDR and **4K@60Hz 4:2:2 12-bit** HDR signal. It supports simultaneous transmission of **video, audio, USB 2.0**, control signals, and power up to 40m/131ft through a single Cat 6A or higher cable. It complies with the **2-gang US standard**, making it easy to install on walls or desks. Additionally, it supports **automatic and manual** (button & API) **switching** between the inputs of USB-C and HDMI + USB-B. The USB-C port is designed as a full-featured port that supports transmission of **video, data**, and **60W** charging (when connected to a local power adapter).

This product is PoH+ (Power over HDBaseT) capable that allows itself to be recharged by the remote receiver (Model **iTrans WP70HBC (Rx)**) via a category cable, and no additional power adapter is required. Moreover, it features 60W charging of the attached USB-C computer when connected to an external power adapter.

1.2 iTrans WP70HBC (Rx)

This **iTrans WP70HBC (Rx)** is an **HDBT 3.0** receiver designed to work with an HDBT 3.0 transmitter (**iTrans WP70HBC (Tx)**) to transmit **uncompressed 4K UHD** video, high-speed **USB 2.0** signals up to **40m/131ft** along a Cat 6A or above cable. It supports a maximum of **4K@60Hz 4:4:4 8bit** resolution. With one-way **PoH+** support, it can provide power to the remote transmitter. It also features one independent **audio pass-through** and one **audio de-embedded** output. RS232 port allows for device control and firmware update.

This receiver is ideal in scenarios where USB signals are extended along with HDMI to realize interactions with displays such as interactive whiteboards or projectors.

2.0 FEATURES

2.1 iTrans WP70HBC (Tx)

- 2 x 1 wall plate switch transmitter over **HDBT 3.0** platform.
- Supports **automatic and manual switching** (button & API commands) between the inputs of USB-C and HDMI + USB-B.
- **Full-featured USB-C** input allows for 4K video and USB data delivery and **60W** charging*.
- HDMI 2.0 input supports video resolutions up to **4K@60Hz 4:4:4 8bit** and **HDCP 2.2**.
- Supports transmission of **4K@60Hz 4:4:4 8bit** signal up to **40m/131ft** and of **4K@30Hz 4:4:4 8bit** signal up to **70m/230ft** via a Cat 6A or above cable.
- An additional **analog pass-through** channel allows for independent audio distribution to the HDBT receiver.
- High-speed **USB 2.0 pass-through** with data rate up to 300Mbps.
- The RS232 port supports command pass-through, API control and firmware update.
- **PoH+ PD** function enables the transmitter to be powered by an HDBT receiver.
- Supports control of the display on/off through **CEC**.

*Note: The USB-C 60W charging requires an additional power adapter to be connected to the wall plate transmitter.

2.2 iTrans WP70HBC (Rx)

- Supports video resolutions up to **4K@60Hz 4:4:4 8bit**.
- **HDCP 2.3** and backwards compatible.
- Supports transmission of **4K@60Hz 4:4:4 8bit** signal up to **40m/131ft** and of **4K@30Hz 4:4:4 8bit** signal up to **70m/230ft** via a Cat 6A or above cable.
- An additional **analog pass-through** channel allows for independent audio transmission.
- High-speed **USB 2.0** pass-through with data rate up to 300Mbps.
- Provides **DIP switch** for configuration of RS232 function.
- Supports **PoH+** to power the remote transmitter that is with PD module.
- Supports device control and firmware update through RS-232 port.
- Supports **CEC** commands pass-through.

3.0 PACKAGE CONTENTS

- 1 x iTrans WP70HBC (Tx)
- 1 x iTrans WP70HBC (Rx)
- 1 x 2-Gang US Faceplate Cover (with 4 x Screws)
- 1 x USB 2.0 Type-A to USB Type-B Cable (1.8m)
- 2 x 3.5mm 3-Pin Phoenix Male Connector
- 1 x 3.5mm 2-Pin Phoenix Male Connector
- 1 x Power Adapter for Rx (DC 20V 3A).
- 1 x Power Adapter for Tx PD (DC 20V 6A).
- 2 x AC Power Cord with US version (With PSE)
- 2 x 3-Pin RS-232 Phoenix Male Connector
- 1 x 2-Pin RS-232 Phoenix Male Connector
- 4 x Mounting Screws
- 4 x Mounting Brackets
- 4 x Rubber Feet

4.0 SPECIFICATIONS

4.1 iTrans WP70HBC (Tx)

Technical	
Input	1 x HDMI IN, 1 x USB-C IN
Output	1 x HDBT OUT
Input/Output Video Singal	Input: • HDMI up to 4K@60Hz (4:4:4 8-bit), HDCP 2.2; • USB-C Up to 4K@60Hz (4:4:4 8-bit), HDCP 2.2 Output: HDBT

Technical	
Input/Output Resolutions Supported	HDMI/USB-C/HDBT: 4096 x 2160^{2,5,6,7,8}(YUV 4:4:4), 3840 x 2160^{2,5,8}(YUV 4:4:4), 2560x1600⁸, 2560x1440⁸, 1920x1200⁸, 1920x1080P⁸, 1680x1050⁸, 1600x1200⁸, 1600x900⁸, 1440x900⁸, 1366x768⁸, 1360x768⁸, 1280x1024⁸, 1280x960⁸, 1280x800⁸, 1280x768⁸, 1280x720⁸, 1024x768⁸, 800x600⁸ 1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = at 60 Hz
Maximum Data Rate	18Gbps
Audio Format	- HDMI IN / USB-C IN: Supports multi-channel audio formats, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X - LINE IN-P: Stereo

General	
Operating Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	10% to 90%, non-condensing
ESD Protection	Human-body Model: ±8kV (Air-gap discharge) / ±4kV (Contact discharge)
Power Supply	- PoH+ - DC 20V 6A (optional, for USB-C charging)
Power Consumption (Max)	6.6W (USB-C charging not included) 71.6W (USB-C charging included)
Device Dimension	89mm x 105.6mm x 36.25mm / 3.5" x 4.16" x 1.43" (W x H x D)

General	
Product Weight	0.36kg/0.79lb

4.2 iTrans WP70HBC (Rx)

Technical	
Input	1 x HDBT IN
Output	1 x HDMI OUT
Input/Output Video Singal Type	Input: HDBT Output: HDMI up to 4K@60Hz (4:4:4 8-bit), HDCP 2.3
Input/Output Resolutions Supported	HDMI/HDBT: 4096 x 2160 ^{2,5,6,7,8} (YUV 4:4:4), 3840 x 2160 ^{2,5,8} (YUV 4:4:4), 2560x1600 ⁸ , 2560x1440 ⁸ , 1920x1200 ⁸ , 1920x1080P ⁸ , 1680x1050 ⁸ , 1600x1200 ⁸ , 1600x900 ⁸ , 1440x900 ⁸ , 1366x768 ⁸ , 1360x768 ⁸ , 1280x1024 ⁸ , 1280x960 ⁸ , 1280x800 ⁸ , 1280x768 ⁸ , 1280x720 ⁸ , 1024x768 ⁸ , 800x600 ⁸ 1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = at 60 Hz
Maximum Data Rate	18Gbps
Audio Format	- HDMI OUT: Supports multi-channel audio formats, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X - LINE OUT-P/AUDIO OUT: Stereo

General	
Operating Temperature	0°C to 45°C (32°F to 113°F)

General	
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	10% to 90%, non-condensing
ESD Protection	Human-body Model: ±8kV (Air-gap discharge) / ±4kV (Contact discharge)
Power Supply	DC 20V 3A
Power Consumption (Max)	10.92W
Device Dimension (W x H x D)	212.5mm x 25mm x 110mm / 8.37" x 0.98" x 4.33"
Product Weight	0.46kg/1.01lbs

5.0 TRANSMISSION DISTANCE

- Straight-through category cable wired to T568B standard is recommended.
- For a maximum of HDMI 2.0 resolution, Cat 6A U/FTP, F/FTP or S/FTP cable is recommended.

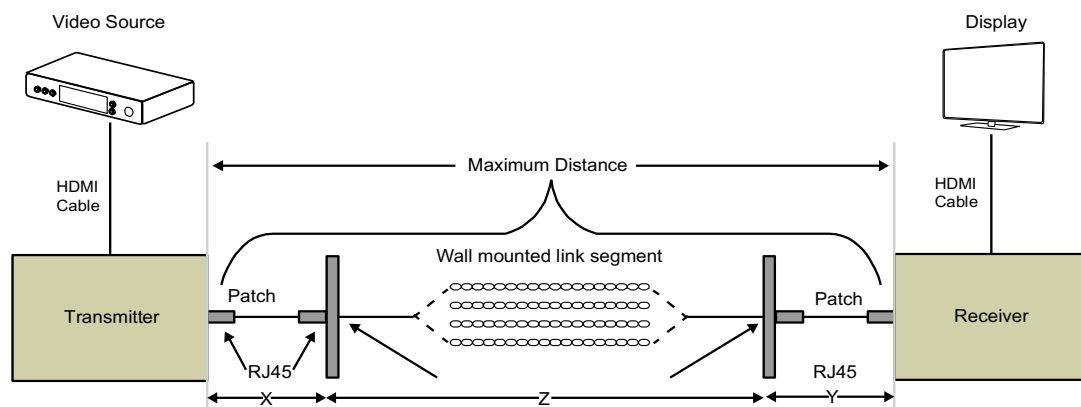
Cable Type	Transmission Distance (Max)	Supported Video
Cat 5e/6	60m/197ft	4K@60Hz 4:2:0 24bpp 4K@30Hz 1080P@60Hz
	40m/131ft	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp 4K@60Hz 4:2:0 36bbp

Cable Type	Transmission Distance (Max)	Supported Video
Cat 6A or 7 (U/FTP, F/FTP or S/FTP)	70m/230ft	4K@60Hz 4:2:0 24bpp 4K@30Hz 1080P@60Hz
	40m/131ft	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp 4K@60Hz 4:2:0 36bpp

6.0 USING PATCHES

Network patches may be applied in the installation, which may obviously affect the transmission distance. The requirements for the patches are as follows:

- A maximum of 2 cables can be used during the deployment, each of which cannot exceed the length of 5m.
- Install the patches on both ends of the devices as the following:



The lengths of the cables used in three segments shall follow the specification below:

- $X = \text{Length of the patch cable at TX end} \leq 5 \text{ (meter)}$
- $Y = \text{Length of the patch cable at RX end} \leq 5 \text{ (meter)}$
- $Z = \text{Wall segment} \leq \text{Maximum Distance} - X - Y \text{ (meter)}$

iTrans WP70HBC (Tx)		
Cable Type	Transmission Distance (Max)	Supported Video
Cat 5e/6	60m/197ft (with Patches)	4K@60Hz 4:2:0 24bpp 4K@30Hz 1080P@60Hz
	30m/100ft (with Patches)	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp 4K@60Hz 4:2:0 36bpp
Cat 6A or 7 (U/FTP, F/FTP or S/FTP)	70m/230ft (with Patches)	4K@60Hz 4:2:0 24bpp 4K@30Hz 1080P@60Hz
	40m/131ft (with Patches)	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp 4K@60Hz 4:2:0 36bpp

iTrans WP70HBC (Rx)		
Cable Type	Transmission Distance (Max)	Supported Video
Cat 5e/6	30m/100ft (with Patches)	4K@60Hz 4K@30Hz 1080P@60Hz
Cat 6A or 7 (U/FTP, F/FTP or S/FTP)	70m/230ft (with Patches)	4K@60Hz 4:2:0 24bpp 4K@30Hz 1080P@60Hz
	40m/131ft (with Patches)	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp

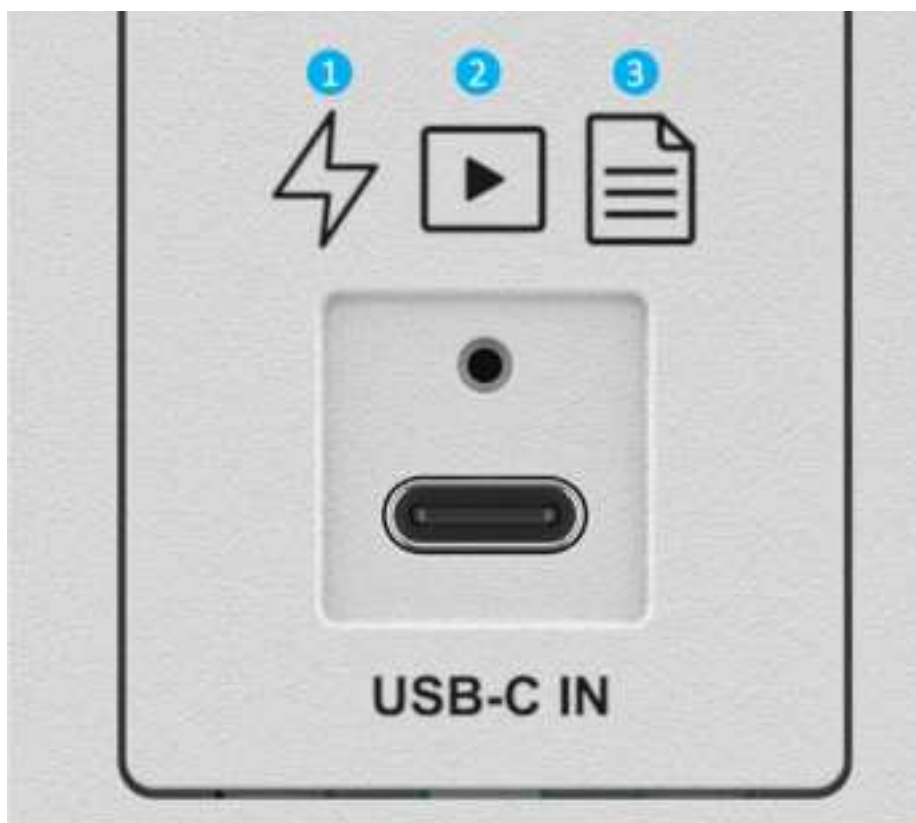
7.0 PANEL DESCRIPTION

7.1 iTrans WP70HBC (Tx)



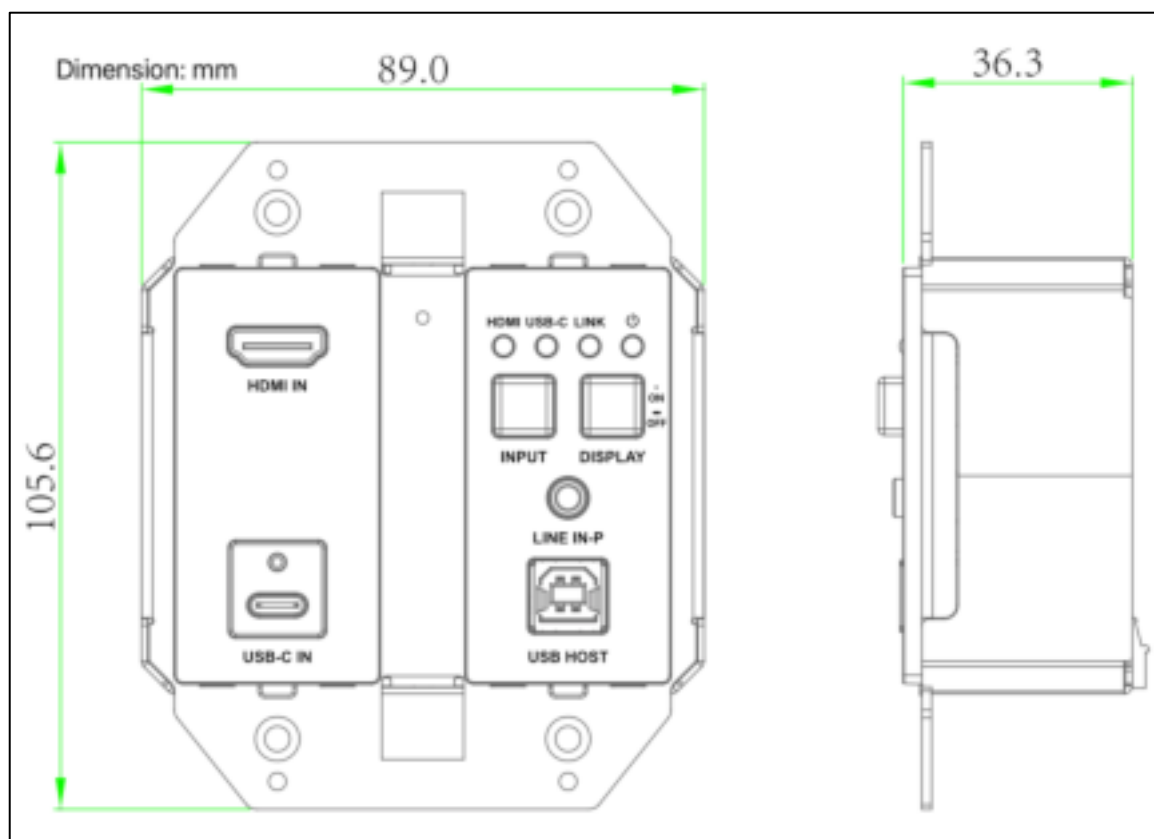
#	Name	Description
1	HDMI IN	Connect to an HDMI source.
2	USB-C IN	Connect to a USB-C source (e.g. laptop). Note: - This port is a full-featured USB-C port that supports USB 2.0, 4K@60Hz video and charging up to 60W. - For charging of a device through the USB-C port, connect a power adapter to the transmitter. - Recommended cable: USB-C to USB-C cable that supports USB 3.2 Gen 1 or above.
3	HDMI LED	- On: HDMI source is selected. - Off: HDMI source is not selected.
4	USB-C LED	- On: USB-C source is selected. - Off: USB-C source is not selected.

#	Name	Description
5	LINK LED	- On: HDBT link is normal. - Off: No HDBT link or link error.
6	Power LED	- On: The device is powered on. - Off: The device is powered off.
7	INPUT	Input selection button. Press to select an input source between HDMI and USB-C channels.
8	DISPLAY	Button of controlling display on/off. - Short press: To turn on the display device. - Press and hold for at least 3 seconds: To turn off the display device.
9	LINE IN-P	Connect to an audio source for analog audio passes through to the receiver.
10	USB HOST	Connect to a USB host (e.g. PC) using the USB-A to USB-B cable provided. Note: This port is bound to the HDMI IN port, when HDMI IN is selected as the input channel, the USB peripheral devices will be linked to the USB host device.
11	HDBT OUT	Connect to the HDBT IN port of a receiver.
12	20V	Connect to a DC 20V 6A power adapter (sold separately). Note: For charging of a device through the USB-C port, you must connect a 20V/6A power adapter to this port.
13	RS232	Connect to an RS232 device for device control or firmware update. Note: Only the MCU firmware of the transmitter can be updated through this port, the Valens firmware needs to be updated through the connected receiver.



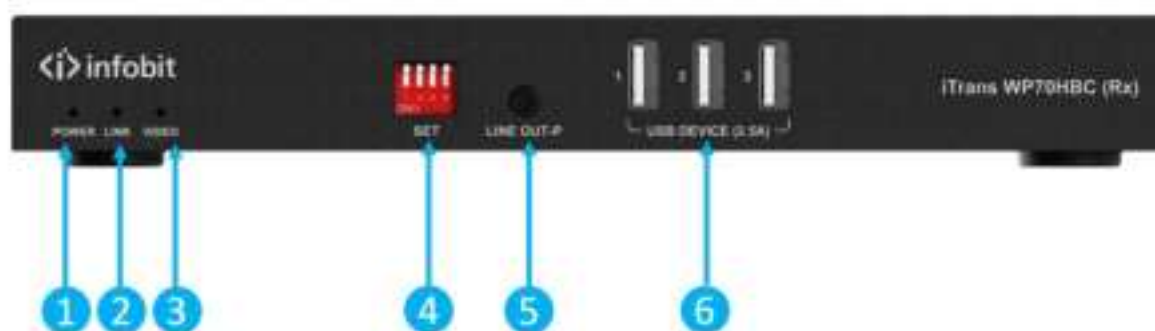
USB C Labels	Description
1	PD (Power Delivery): It supports charging up to 60W to the PC.
2	AV (Audio Video): It supports audio and video transmission.
3	Data (USB data): It support USB 2.0

DIMENSION



7.2 iTrans WP70HBC (Rx)

Front Panel



#	Name	Description
1	Power LED	On/Off: The device is powered on/off.

#	Name	Description
2	LINK LED	- On: HDBT link is normal. - Off: No HDBT link or link error.
3	VIDEO	- On: Valid video signal is being output. - Off: No video signal output.
4	SET	DIP Switch for configuration of RS232 function. For more information refer to DIP Switch Configuration section.
5	LINE OUT-P	Connect to an audio receiver for passing through the analog audio from the transmitter.
6	USB DEVICE (2.5A)	USB 2.0 Type-A ports. Connect to USB devices such as USB camera, mouse and keypad.

Rear Panel



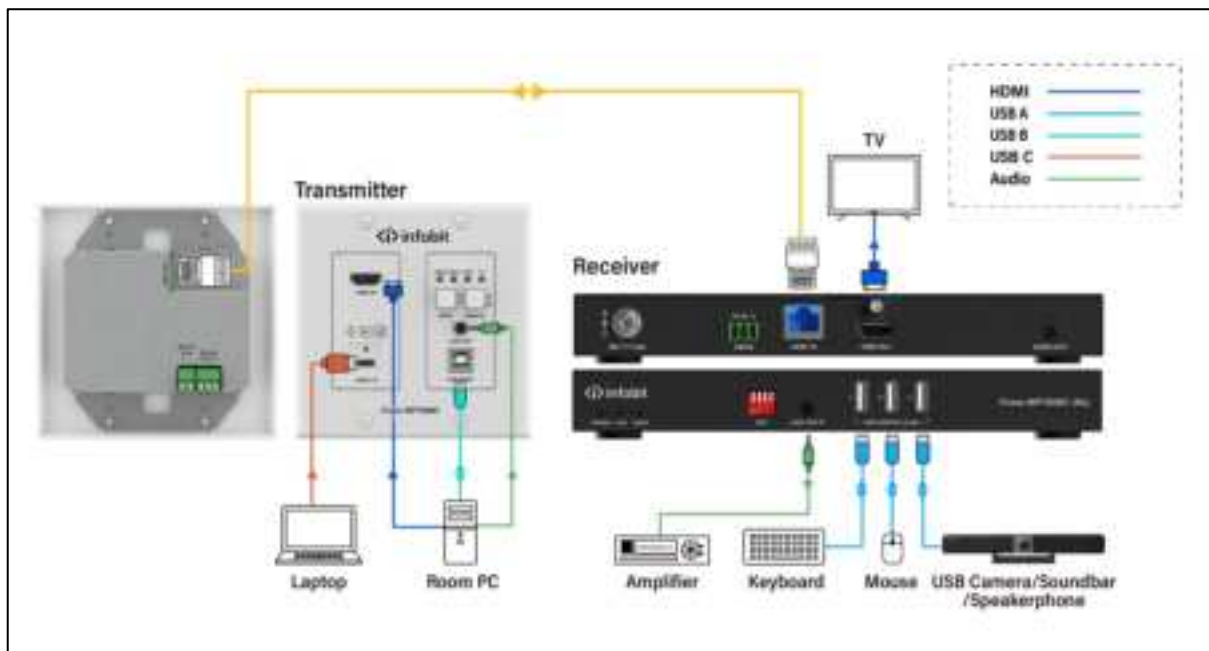
#	Name	Description
1	20V	Connect to the power adapter provided. With one-way PoH+ function support, the receiver can recharge the connected transmitter.
2	RS232	Connect to an RS232 device for controlling the receiver, passing through RS232 commands or for firmware upgrade. Note: RS232 function can be configured through the DIP switch, for more information refer to DIP Switch Configuration section.

#	Name	Description
3	HDBT IN	Connect to the HDBT OUT port of a transmitter.
4	HDMI OUT	Connect to an HDMI display.
5	AUDIO OUT	Connect to an audio receiver for audio de-embedding from HDMI OUT.

8.0 WIRING

Warnings:

- Before wiring, disconnect the power from all devices.
- During wiring, connect and disconnect the cables gently.



To connect for RS232 control or firmware update:

Connect a PC to RS232 port of the receiver and toggle the DIP switch between up and down positions, then you can send commands to the receiver to either control the receiver as well as the remote transmitter or perform firmware upgrade.

9.0 POWER SUPPLY

ALWAYS CONNECT RX POWER

The RX must connect to the power supply 20V3A all the time, since it only supports power from Rx to Tx.

PD POWER IS ONLY FROM TX

If use USB C to power the connected PC, user must connect the 20V6A power supply at the back of Tx panel.

Note: Can NOT power from Tx to Rx.

10.0 RX DIP SWITCH

The 4-pin DIP switch is designed for configuration of the RS232 working mode. Please toggle the DIP switch between up and down positions as required according to the following table.



- By default, pin 2 is set to the up position, i.e. default RS232 working mode is RS232 Control, which allows for controlling the receiver along with the remote transmitter, passing through RS232 commands and updating the receiver's MCU firmware. When pin 2 is set to the down position, the receiver is available for Valens firmware update.

- PIN 1, 3 and 4 are reserved switches and do not affect the proper working of RS232 function.

11.0 AUTOMATIC SWITCHING

The transmitter provides automatic switching between the two inputs, allowing you to select the desired source with ease. This function follows **LIFO** (Last in, first out) rule:

1. When a video source is connected to the transmitter, this lately input source will be selected as the input video source.
2. When the currently selected video source is disconnected from the transmitter, the transmitter will detect if another input channel is connected to a cable: if yes, the transmitter switches to another channel and output it; if not, the transmitter keeps the current selection and outputs no signal.

If you want to select a certain input video source:

1. Disconnect the desired video source from the transmitter and then connect it to the transmitter again.
2. Use the Input Selection button on the front panel or API commands to select the video source you want.

Note: The automatic signal switching function can detect 5V signal input only instead of valid A/V signal. If the selected source in standby mode still outputs a 5V signal constantly, this function doesn't work, i.e. the transmitter will not switch to another video source if the currently selected source is in standby status. In this case, please turn off the selected source that is in standby mode or disconnect it from the transmitter.

12.0 RS232 CONTROL

Users may need to control the transmitter using API commands. Connect a PC or a control system to the RS232 port of the transmitter. The API commands for RS232 control are available in the separate document “**API Command Set_iTrans WP70HBC**”. A professional RS232 serial interface software (e.g. Serial Assist) may be needed as well.

Before executing the API command through RS232 serial connection, ensure the RS232 interfaces of the device and the control PC are configured correctly.

Parameters	Value
Baud Rate	115200 bps
Data bits	8 bits
Parity	None
Stop bits	1 bit
Flow control	None