User Manual

HD-HU-SP-TX / HD-HU-SP-RX

HDBaseT 2.0 and USB Transmitter / Receiver

Important Safety Instructions

Contents are subject to change without notice

Warnings

To reduce the risk of fire, electric shock or product damage:

1. Do not expose this device to rain, moisture, dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the unit.

6. Clean this device only with dry cloth.

2. Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure the unit is well ventilated.

7. Unplug this device during lightning storms or when unused for long periods of time.

3. To prevent risk of electric shock or fire hazard due to overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.
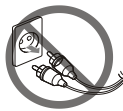
8. Protect cables and cords from being walked on or pinched particularly at plugs.

4. Do not install near any heat sources such as radiators, heat registers, stoves, or other device (including amplifiers) that produce heat.

9. Only use attachments/accessories specified by FSR.

5. Do not place sources of open flames, such as lighted candles, on the unit.

10. Refer all servicing to qualified service personnel.

Table of Contents

Overview

Based on HDBaseT 2.0 Technology, these true HDBaseT 5-Play devices transmit HD Video (up to 4k @60hz.), Audio, Bi-Directional Control (IR & RS-232), Ethernet, and Bi-directional Power via 1 CAT-6A shielded cable up to 100 Meters.   Long Reach Mode increases the usable CAT6A shielded cable length of up to150m / 492ft with up to a 1920x1080p HD video@60Hz / 24bit Deep Color signal.

The units also carry two-way USB 2.0 on the same cable as well as an analog audio input on the Transmitter and analog stereo audio output on the Receiver.

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Features

- True HDBaseT 5-Play

- HDMI transmissions using single cable Cat5e cable under recommended conditions:

   90m/295ft: 4096 x 2160 video@30Hz / 24bit True Color with Chroma subsampling color palette 4K@60Hz 4:2:0

   - 100m/328ft: 1920x1080p HD video@60Hz / 36bit Deep Color

   Via Cat6/6a/7 cables:

   100m/328ft: 4096 x 2160 video@30Hz / 24bit True Color with Chroma subsampling color palette 4K@60Hz 4:2:0

   150m/492ft: 1920x1080p HD video@60Hz / 24bit Deep Color (Long Reach Mode)

- Bi-directional PoH (Power over HDBaseT) allowing a single power supply to power both transmitter and receiver

- Fully compliant with HDMI 1.4, and compatible with HDMI 2.0 (4K 60Hz with 4:2:0 coding)

- HDCP 2.2 compliance

- One analog stereo audio pass through from Transmitter in to Receiver out over HDBaseT

- Bi-directional USB pass through , USB Host/Device adjustable in both Transmitter and Receiver

- Built in 100MBase-T Ethernet Switch integral to both Transmitter and Receiver

- Audio & Video, Power, Ethernet, RS232 and IR pass-through over HDBaseT

- Additional pluggable screw terminal connection power port

- Dual function RS232 port for firmware update

- Locking DC power connector

- Cable termination follows IEEE-568B standards

Package Contents

Transmitters and Receivers are ordered separately

HD-HU-SP-TX

• One HD-HU-SP-TX Transmitter

• One 3.5mm pluggable screw terminal connector (2 Pin)

• One 3.5mm pluggable screw terminal connector (3 Pin)

• One IR Emitter

• One Wide-band IR Receiver (30KHz~50KHz)

• Two Mounting Brackets

HD-HU-SP-RX

• One HD-HU-SP-RX Receiver

• One Power Supply 12VDC / 2A (with HD-HU-SP-RX Receiver only)

• One 3.5mm pluggable screw terminal connector (2 Pin)

• One 3.5mm pluggable screw terminal connector (3 Pin)

• One IR Emitter

• One Wide-band IR Receiver (30KHz~50KHz)

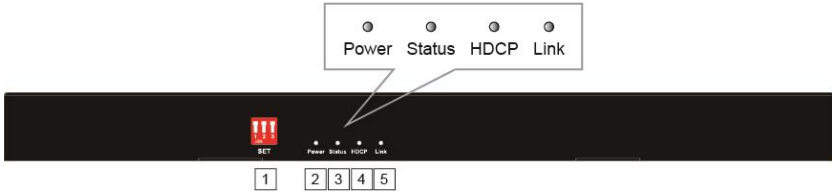• Two Mounting Brackets

Typical Application

**NOTE:** It is only necessary to power one side (Tx or Rx)
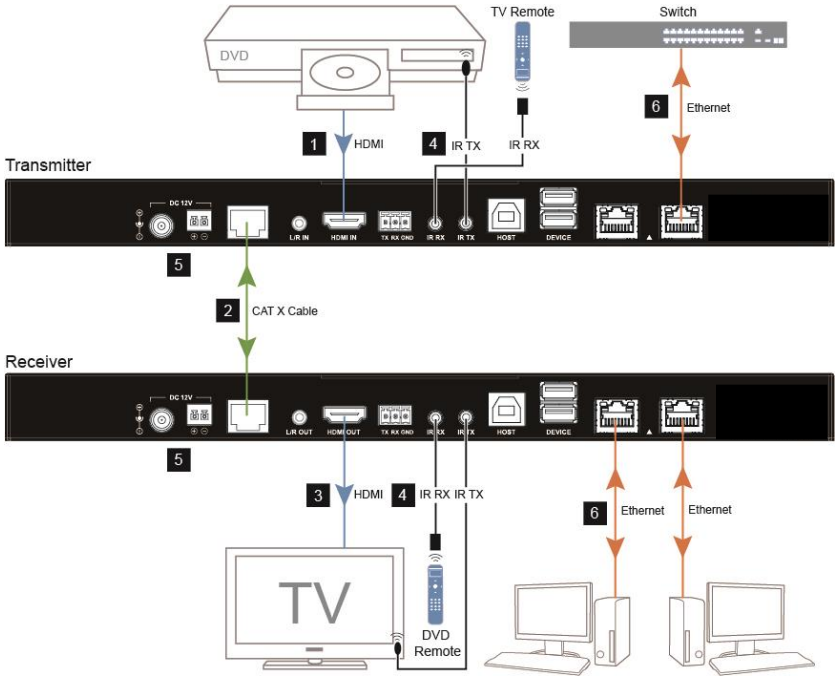
Panel Layout

Transmitter

Front Panel

No.	Name	Description
1	SET	Enables/disables the Long Reach Mode, RS232 updates /pass-through the device Choose USB Device or USB Host mode
2	Power LED	**ON:** The transmitter is powered on **OFF:** The transmitter is powered off
3	Status LED	**Flashing Slowly:** The transmitter is working properly **OFF:** The transmitter is not working properly
4	HDCP LED	**ON:** HDCP video is being transmitted **Flashing Quickly:** Non-HDCP video is being transmitted
5	Link LED	**ON**: HDBT link is normal **Blinking/OFF:** No HDBT Link or link is unstable

SET DIP switch Settings (HD-HU-SP-TX Transmitter)
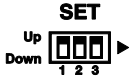
DIP		Function
1	Up	RS232 Pass Through
	Down	Valens Chip Update
2	Up	Sets Tx Unit to be USB Host
	Down	Sets Rx Unit to be USB Host
3	Up	Long Reach Mode OFF
	Down	Long Reach Mode ON

The SET DIP switch is capable of setting the RS232 firmware update or RS232 pass through function, choosing USB device or USB Host mode, enabling/disabling the Long Reach Mode, and setting fixed/copy EDID mode (See additional information below).
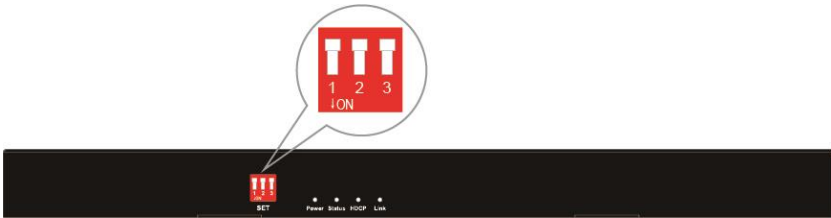
NOTE: SET switches that are marked in grey indicate the switch can be in any position.

The first switch is used for controlling the RS232:

RS232 pass through

RS232 firmware update

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The second switch is used for controlling the USB HOST/DEVICE mode on the Rx and Tx Units:

NOTE: The second switch must be in the same position on both the Transmitter and Receiver:

Set Tx Unit to be USB Host and Rx Unit to be USB Device
Note: Reboot the device to make the change effective.

Set Rx Unit to be USB Host and Tx Unit to be USB Device
Note: Reboot the device to make the change effective.

The third switch on Transmitter is used for controlling the Long Reach Mode. Long Reach Mode increases the usable CAT6A shielded cable length of up to150m/492ft when using up to a 1920x1080p HD video@60Hz / 24bit Deep Color signal.

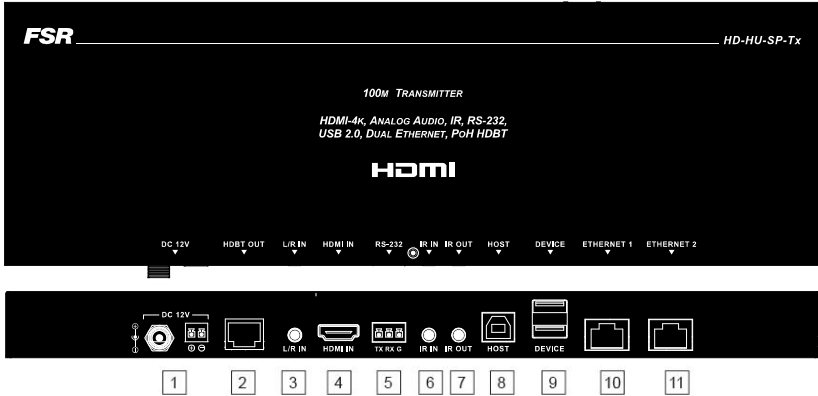**NOTE: Set on HD-HU-SP-TX transmitter only**

Long Reach Mode OFF

Long Reach Mode ON

Set switch , then remove power and reapply to activate the new setting.

Rear Panel

| No.	Name	Description
1	DC 12V	12V DC power input, Threaded port for standard or locking connection 2-pin phoenix port for alternate power connection
2	HDBT OUT	Connects to HDBT IN port of HDBT receiver
3	LINE IN	Analog audio input, 3.5mm analog audio pass through from transmitter input to receiver output over HDBaseT.
4	HDMI IN	Connects to an HDMI source
5	RS232	RS232 pass through or firmware update
6	IR RX	Connects to IR receiver to enable control of display from source location
7	IR TX	Connects to IR emitter to enable control of source from display location
8	USB HOST	Connects to device to be controlled such as server, computer etc.
9	USB Device	Connects to USB devices such as mouse, keyboard, USB disk etc.
10	ETHERNET 1	Connects to Ethernet devices
11	ETHERNET 2	Connects to Ethernet devices

Receiver

Front Panel
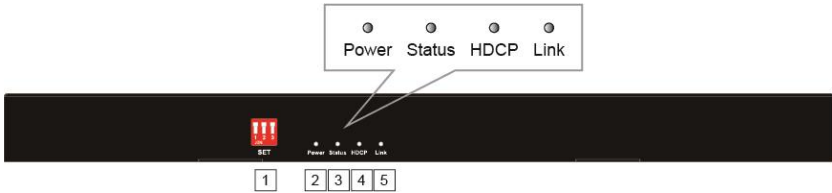
No.	Name	Description
1	SET Dip Switch	Enables/disables the Long Reach Mode, RS232 updates /pass-through the device Choose USB Device or USB Host mode
2	Power LED	**ON:** The receiver is powered on **OFF:** The receiver is powered off
3	Status LED	**Flashing Slowly:** The receiver is working properly. **OFF:** The receiver is not working properly
4	HDCP LED	**ON:** HDCP video is being transmitted **Flashing Quickly:** Non-HDCP video is being transmitted
5	Link LED	**ON**: HDBASET link is normal **Blinking/OFF:** No HDBT Link or link is unstable

# SET DIP switch settings (HD-HU-SP-RX Receiver)

The SET switch is capable of setting the RS232 function, choosing USB device or USB Hose mode, and selecting fixed or copy EDID mode.
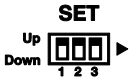
DIP		Function
1	Up	RS232 Pass Through
	Down	Valens Chip Update
2	Up	Sets Tx Unit to be USB Host
	Down	Sets Rx Unit to be USB Host
3	Up	Copy EDID
	Down	Fixed EDID

Note: SET switches that are marked in grey indicate the switch can be in any position.
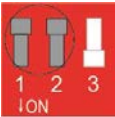
The first switch is used for controlling the RS232:

 RS232 pass through

 RS232 update

The second switch is used for controlling the USB HOST/DEVICE mode on the Rx and Tx Units:

 Set Tx Unit to be USB Host and Rx Unit to be USB Device

Note: Reboot the device to make the change effective.

 Set Rx Unit to be USB Host and Tx Unit to be USB Device

Note: Reboot the device to make the change effective.

NOTE: The second switch must be in the same position on both the Transmitter and Receiver:

The third switch on the Receiver is used for controlling the Fixed / Copy EDID Mode When Dipswitch 3 is up, Copy EDID Mode is selected.   In this mode, the Display Device EDID is passed directly through to the source.

NOTE: Receiver side only

Copy EDID Mode

Fixed EDID MODE

When Dipswitch 3 is down, Fixed EDID Mode is selected. In this mode, the source is limited to a maximum of 4k@30Hz.

Rear Panel

No.	Name	Description
1	DC 12V	12V DC power input, -threaded port for standard or locking connection -two-pin phoenix port for alternate power connection
2	HDBT IN	Connects to HDBT OUT port of HDBT transmitter
3	LINE OUT	Analog audio output, 3.5mm analog audio pass through from transmitter in to receiver out over HDBT.
4	HDMI OUT	Connects to an HDMI display device
5	RS232	RS232 pass through or firmware update
6	IR RX	Connects to IR receiver to enable control of source from display location
7	IR TX	Connects to IR emitter to enable control of display from source location
8	USB HOST	Connects to device to be controlled such as server, computer etc.
9	USB DEVICE	Connects to USB devices such as mouse, keyboard, USB disk etc.
10	ETHERNET 1	Connects to Ethernet devices
11	ETHERNE	Connects to Ethernet devices

| No.	Name	Description
	T 2	

Hardware Installation
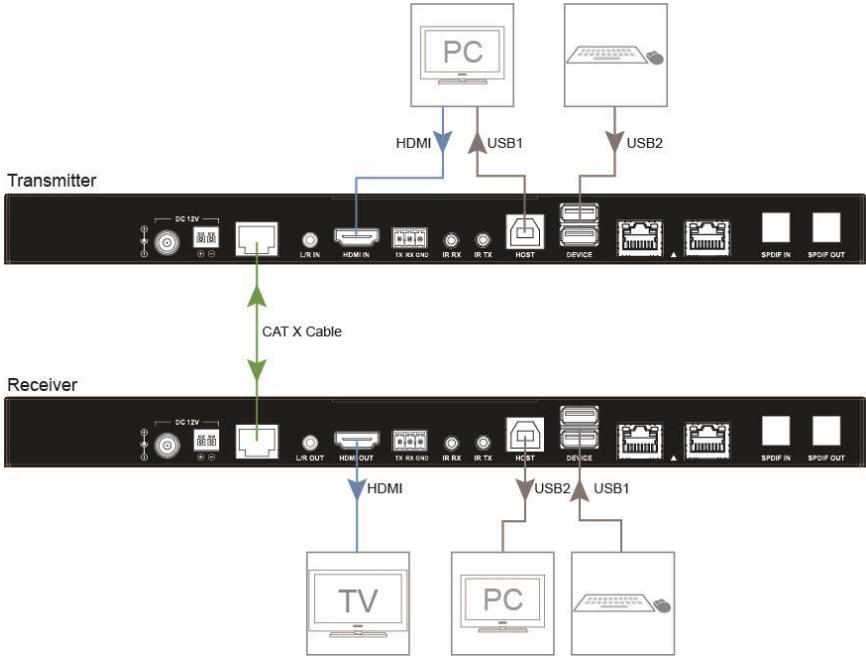
1. Using quality HDMI cables, connect an HDMI source (such as Blu-ray, games console, satellite/cable TV, media server etc.) to HDMI IN of the Transmitter.
2. Connect a good quality, well terminated, shielded Catx cable between the HDBT OUT of the Transmitter to the HDBT IN of the Receiver.
3. Connect the HDMI display device (LED/LCD display or projector) to the HDMI OUT of the Receiver.
4. For two-way IR control of connected sources and displays from either location, first, connect the IR Sensors to the IR IN ports of the Transmitter or Receiver, and then insert IR Emitters into the IR OUT ports of the Transmitter or Receiver.
5. Connect the included 12v power supply to the Transmitter power input connector. The PoH function carries power along the length of the cable

one-way to power the Receiver. No additional power supply is required at
the display end of the cable run.

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Check Power, Status, and HDCP & Link lights are illuminated on both units to
indicate successful connection, with a lit HDCP light illustrating the presence of
encryption within the signal. Power and Link are status lights. Status should be
blinking.

USB Connections
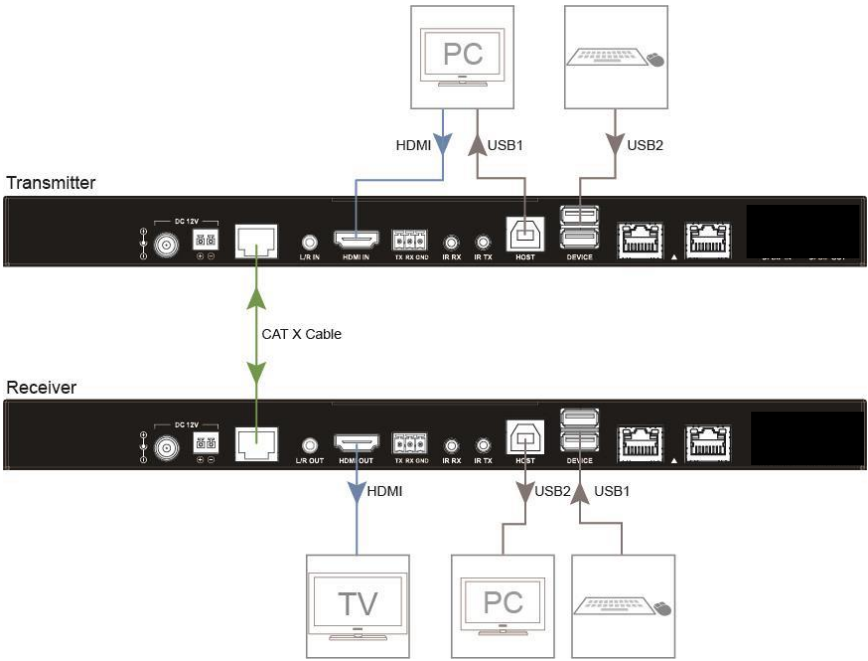
NOTE: The USB 1 and USB 2 signal paths shown above cannot be used at the same time. Only one USB host is allowed at any one time.

SET switches that are marked in grey indicate the switch can be in any position.

Mode 1: Transmitter in USB Host Mode and Receiver in USB Device Mode

The second switch must be up on both Transmitter and Receiver:
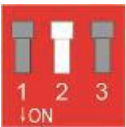
Mode 2: Transmitter in USB Device Mode and Receiver in USB Host Mode

The second switch must be down on both Transmitter and Receiver:
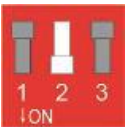
IR and RS-232 Operation
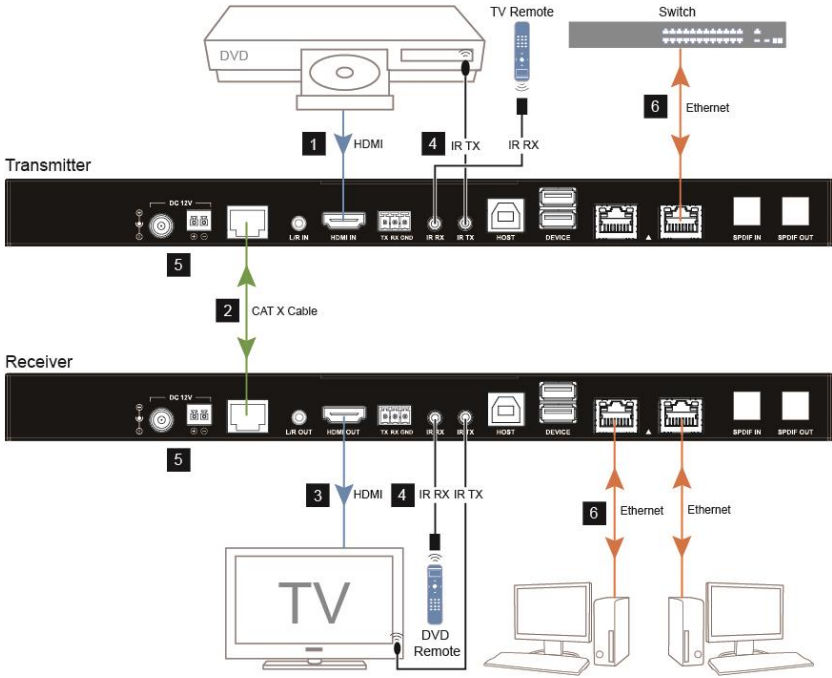
RS-232 Control

The RS-232 port can be used as pass-through to control a device connected to the Transmitter from the Receiver or vice versa.

Specifications

Transmitter

Technical	
Input	1 x HDMI IN 1 x Analog Stereo Audio IN
Input Signal Type	HDMI 1.4, and compatible with HDMI 2.0 (4K 60Hz with 4:2:0 coding) HDCP 2.2
Input Resolution Support	800x600@60Hz, 848x480@60Hz, 1024x768@60Hz, 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1366x768@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1200@60Hz, 2048x1152@60Hz, 3840x2160@24Hz, 3840x2160@25Hz, 3840x2160@30Hz, 3840x2160@60Hz, 4096x2160@24Hz, 4096x2160@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60)
Input Video Level	0.5~1.0Vp-p
Maximum Pixel Clock	297MHz
Output	1 x HDBT OUT 1 x S/PDIF OUT
Input Signal Type	HDBT 2.0

Output Resolution Support	800x600@60Hz, 848x480@60Hz, 1024x768@60Hz, 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1366x768@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1200@60Hz, 2048x1152@60Hz, 3840x2160@24Hz, 3840x2160@25Hz,3840x2160@30Hz, 3840x2160@60Hz, 4096x2160@24Hz, 4096x2160@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60)
Video Impedance	100 Ω
Maximum Transmission distance	Cat 5e: • 1080p 36bit : 100m • 4K@60Hz 4:2:0: 90m Cat 6/6a/7: • 1080p 48bit : 100m • 4K@60Hz 4:2:0: 100m Long Reach Mode: 1080p 24bit:150m
Control	
Control Method	1 x IR Transmitter, 1x IR Receiver; 1 x RS232, 2 x Ethernet, 1 x USB Host, 2 x USB Device
General	
Operating Temperature	0 to + 45°C (32 to + 113 °F), 10% to 90%, non-condensing

Storage Temperature	-20 to +70°C (-4 to + 158 °F), 10% to 90%, non-condensing
Humidity	10% to 90%, non-condensing
Power Supply	DC 12V
Power Consumption	16.08W Transmitter supply power to Receiver
ESD Protection	Human-body Model: ±8kV(Air-gap discharge)/ ±4kV(Contact discharge)
Device Dimension (W x H x D)	271.8mm x 20mm x 98.8mm 10.70" x 0.79" x 3.89"
Product Weight	0.72kg
Certification	CE, FCC, RoHS
Operating Temperature	0 to + 45°C (32 to + 113 °F), 10% to 90%, non-condensing
Storage Temperature	-20 to +70°C (-4 to + 158 °F), 10% to 90%, non-condensing

Receiver

Technical	
Input	1 x HDBT
Input Signal Type	HDBT 2.0
Input Resolution Support	800x600@60Hz, 848x480@60Hz, 1024x768@60Hz, 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1366x768@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1200@60Hz, 2048x1152@60Hz, 3840x2160@24Hz, 3840x2160@25Hz, 3840x2160@30Hz, 3840x2160@60Hz, 4096x2160@24Hz, 4096x2160@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60)
Input Video Level	0.5-1.0 V p-p
Input DDC Signal	5V p-p
Maximum Pixel Clock	297MHz
Output	1 x HDMI OUT 1 x Analog Stereo Audio
Output Signal Type	HDMI 1.4, and compatible with HDMI 2.0 (4K 60Hz with 4:2:0 coding) HDCP 2.2
Output Resolution Support	800x600@60Hz, 848x480@60Hz,

	1024x768@60Hz, 1280x768@60Hz,
	1280x800@60Hz, 1280x960@60Hz,
	1280x1024@60Hz, 1360x768@60Hz,
	1366x768@60Hz, 1440x900@60Hz,
	1600x900@60Hz, 1600x1200@60Hz,
	1680x1050@60Hz, 1920x1200@60Hz,
	2048x1152@60Hz, 3840x2160@24Hz,
	3840x2160@25Hz, 3840x2160@30Hz, 3840x2160@60Hz, 4096x2160@24Hz,
	4096x2160@60Hz, 720x480@60Hz (480p),
	720x576@50Hz (576p),
	1280x720@50Hz (720p50),
	1280x720@60Hz (720p60),
	1920x1080@50Hz (1080p50),
	1920x1080@60Hz (1080p60)
Video Impedance	100 Ω
Maximum Transmission distance	Cat 5e: • 1080p 36bit : 100m • 4K@60Hz 4:2:0: 90m Cat 6/6a/7: • 1080p 48bit : 100m • 4K@60Hz 4:2:0: 100m Long Reach Mode: 1080p 24bit:150m
Control	
Control method	1 x IR Transmitter, 1x IR Receiver, 1 x RS232, 2 x Ethernet, 1 x USB Host, 2 x USB Device
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)
Surge Protection	Voltage: ±1 kV (Ten times respectively for the positive and negative voltage)
Electrical Fast Transient/Burst	Data communication cord: 1 kV Power cord : 2 kV
Power Supply	DC 12V
Power Consumption	16.2W Receiver supply power to Transmitter
ESD Protection	Human-body Model: ±8kV(Air-gap discharge)/ ±4kV(Contact discharge)
Device Dimension (W x H x D)	271.8mm x 20mm x 98.8mm 10.70" x 0.79" x 3.89"
Product Weight	0.72kg

Cable Specifications

Note: Use of straight-through Category cables wired to T568B standard.

Cable Type	Range	Supported Video
Cat5e	100m/328ft	Up to 1080p@60Hz 36bit
	90m/295ft	1080p@60Hz 48bit
Cat6/6a/7	100m/328ft	1080p@60Hz 3D 4K@30Hz 4:4:4, 4k@60Hz 4:2:0

Note:

Up to 150 meters in long-reach mode:

• Up to 4 Gbps HDBT Traffic rate

• HDMI Pixel Frequency 148.5Mhz

• Video Format 1080p / 60Hz / 24bpp

Limited Warranty

The HD-HU-SP HDBaseT HDMI Extender Set is warranted against failures due to defective parts or faulty workmanship for a period of three years after delivery to the original owner. During this period, FSR will make any necessary repairs or replace the unit without charge for parts or labor. Shipping charges to the factory or repair station must be prepaid by the owner, return-shipping charges (via UPS Ground) will be paid by FSR.

This warranty applies only to the original owner and is not transferable. In addition, it does not apply to repairs done by other than the FSR factory or Authorized Repair Stations.

This warranty shall be cancelable by FSR at its sole discretion if the unit has been subjected to physical abuse or has been modified in any way without written authorization from FSR. FSR's liability under this warranty is limited to repair or replacement of the defective unit.

FSR will not be responsible for incidental or consequential damages resulting from the use or misuse of its products. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Warranty claims should be accompanied by a copy of the original purchase invoice showing the purchase date (if a Warranty Registration Card was mailed in at the time of purchase, this is not necessary). Before returning any equipment for repair, please read the important information on service below.

SERVICE

Before returning any equipment for repair, please be sure that it is adequately packed and cushioned against damage in shipment, and that it is insured. We suggest that you save the original packaging and use it to ship the product for servicing. Also, please enclose a note giving your name, address, phone number and a description of the problem.

NOTE: all equipment being returned for repair must have a Return authorization (RMA) Number. To get a RMA Number, please call the FSR Service Department (1-800-332-FSR1).

Please display your RMA Number prominently on the front of all packages.

CONTACT INFORMATION:

FSR INC.

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Woodland Park, NJ 07424

Phone: (973) 785-4347

Order Desk Fax: (973) 785-4207

Web Site: *http://www.fsrinc.com*