HD-HSC-SP-RX

100m 4k HDBaseT Receiver with 4k@60Hz Scaler

User Manual

Version: V1.0.0

Important Safety Instructions

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

**6.** Clean this apparatus 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 apparatus 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.
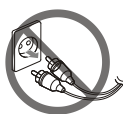
8. Protect the power cord from being walked on or pinched particularly at plugs.

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

9. Only use attachments / accessories specified by the manufacturer.

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

10. Refer all servicing to qualified service personnel.

FCC Warnings

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

    -- Reorient or relocate the receiving antenna.

    -- Increase the separation between the equipment and receiver.

    -- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

    -- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Table of Contents

Introduction

Overview

The HD-HSC-SP-RX is a 100m 4k HDBaseT Receiver with an integral 4k@60Hz Scaler. The unit is capable of the distribution of uncompressed 4k@60Hz 4:2:0 UHD video, Digital Coax and Analog Stereo audio, Ethernet, RS232 and Bi-directional IR together up to 100m/330ft over a single CATx cable.

With the 4k@60Hz scaler built in, it combines the benefits of an extended-distance HDBaseT receiver with the capabilities of automatic display control by CEC or RS232, volume adjustment, Ethernet routing and optional third-party control. When working with a presentation switcher, it creates a standalone AV switching and control system with video scaling for classrooms and collaboration systems.

It is suitable for any application where high quality video scaling or 4k-1080p down-scaling is required due to the mixed use of displays with different resolution capabilities, aspect ratios, and timings.

Features

- HDBaseT receiver with 4k@60Hz (4:4:4) scaler built in and HDCP 2.2 compliance

- Supports 1080P@60Hz up to 100m, 4k@60Hz 4:2:0 / 4k@30Hz 4:4:4 up to 70m over Cat5e/Cat6.

- HDMI audio de-embedded output with unbalanced stereo option.

- Built in 2-port Ethernet switch with Telnet control

- Bi-directional IR, RS232 and Ethernet pass through

- Supports PoH and PSE module built in to power HDBT transmitter with 48V PD

- HDBT scaling out supports auto-scaler by default, or output resolution adjustment by API

- Built in CEC controller on the HDMI output

- Built in configurable controller for display control.

- Provides automatic Power on / Power off of the Display Device by sensing the input signal and sending CEC or user configurable RS-232 commands.

Package Contents

- 1 x HD-HSC-SP-RX Receiver

- 1 x Power Supply (DC 12V 3A)

- 1 x AC Cord

- 2 x Pluggable Screw Terminal Connectors (3.81mm 3 Pin)

- 1 x IR Emitter

- 1 x IR Receiver

- 1 x Mounting Brackets (Pair)

Specifications

Technical	
Input	1 x HDBT
Input Signal Type	HDBT
Input Resolution	VESA: 800×600^8, 1024×768^8, 1280×768^8, 1280×800^8, 1280×960^8, 1280×1024^8, 1360×768^8, 1366×768^8, 1440×900^8, 1600×900^8 , 1600×1200^8, 1680×1050^8, 1920×1200^8 SMPTE: $720\times480P^{7,8}$, $720\times576P^6$, $1280\times720P^{6,7,8}$, $1920\times1080P^{6,7,8}$, $3840\times2160P^{2,3,5,6,8*}$, $4096\times2160P^{2,3,5,6,8*}$ 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 = 60 Hz * = 4:2:0
Input Video Level	0.5-1.2 V p-p
Output	1 x HDMI 1 x L/R OUT
Output Signal Type	HDMI: TMDS
Audio Output Format	L/R OUT**:** PCM 2.0.
Output Resolution	VESA: 800×600^8, 1024×768^8, 1280×768^8, 1280×800^8, 1280×960^8, 1280×1024^8,

	1360x768[8], 1366x768[8], 1440x900[8], 1600x900[8] , 1600x1200[8], 1680x1050[8], 1920x1200[8] SMPTE: 1280x720P[8], 1920x1080P[8], 3840x2160P[5,8] 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 = 60 Hz;
Video Impedance	100Ω
Maximum Pixel Clock	594MHz
Control	
Control Method	Telnet and RS232 control
General	
Operating Temperature/RH	32°F ~ 113°F (0°C ~ 45°C) 10% ~ 90%, non-condensing
Storage Temperature/RH	-4°F ~ 140°F (-20°C ~ 70°C) 10% ~ 90%, non-condensing
Power Supply	DC 12V 3A
Power Consumption	21.5W (Max)
ESD Protection	Human-body Model: ±8kV(Air-gap discharge)/ ±4kV(Contact discharge)
Device Dimension (W x H x D)	234.4. mm x 25mm x 143mm
Product Weight	0.9kg
Certification	CE, FCC

Cable Specifications

Note: FSR recommends use of straight-through Category cables wired to T568B standard and use HD-HSC-SP-RX   with a Transmitter which also supports 100m.

| Cable Type	Range	Supported Video
Cat5e/6	100m/328ft	1080p@60Hz 36bit
	70m/230ft	1080p@60Hz 3D 4k@30Hz YUV4:4:4, 4k@60Hz YUV4:2:0
Cat6a/7	100m/328ft	1080p@60Hz 36bit 1080p@60Hz 48bit 1080p@60Hz 3D 4k@30Hz YUV4:4:4, 4k@60Hz YUV4:2:0

Panel Description

No.	Name	Description
1	Power LED	**ON:** The receiver is powered on **OFF:** The receiver is powered off
2	Scaler LED	**Blinking Slowly:** The scaler module is working properly **OFF:** The scaler module is not working properly
3	Status LED	**Blinking Slowly:** The receiver is working properly **OFF:** The receiver is not working properly
4	HDCP LED	**ON:** Audio and Video signal is HDCP protected. **Blinking:** Audio and Video signal is not HDCP protected. **OFF:** No Audio and Video signal.
5	Link LED	**ON:** Link to receiver has been established. **OFF/Blinking:** Connection problems exist between The transmitter and receiver.

Back Panel
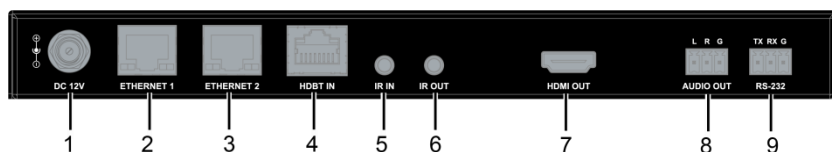
No.	Name	Description
1	DC 12V	DC 12V power input
2	ETHERNET1	Connects to Ethernet device
3	ETHERNET2	Connects to Ethernet device
4	HDBT In	Connects to HDBT Output port of HDBT transmitter
5	IR In	Connects to IR receiver to enable control of display from source location
6	IR Out	Connects to IR emitter to enable control of source from display location
7	HDMI Out	Connects to an HDMI display
8	Audio Out	Connects to audio input device such as an amplifier, a speaker or an earphone for HDMI audio de-embedding output
9	RS232	RS232 pass through or firmware update

Connection and Installation

1. Using quality HDMI cables, connect an HDMI source (such as Blu-ray, games console, satellite/cable TV, media server etc.) to the HDMI IN of an FSR 100m Transmitter.
2. Connect a high quality, well-terminal Cat5e/6/6a/7 cable between the HDBT OUT of the Transmitter and the HDBT IN of the HD-HSC-SP-RX Receiver.
3. Connect the HDMI display device (LED/LCD display or projector) to the HDMI OUT of the Receiver.
4. Connect the audio system to the Audio Out of HD-HSC-SP-RX .
5. For two-way IR control of connected sources and displays from either location, first connect IR Emitters to the IR Out of the Transmitter and Receiver, then connect the IR Receivers into the IR In of the Transmitter and Receiver.
6. Connect the included 12V power supply to the HD-HSC-SP-RX 12VDC input connector. The receiver must be powered locally. The PoH function carries power along the length of the cable one-way to power the transmitter. No additional power supply is required at the source end of the cable run.

Confirm that the Power, Scaler, Status, and HDCP & Link lights are illuminated on both units to confirm a successful connection. A lit HDCP light indicates the presence of encryption within the signal. Power and Link should be steady on. Scaler and Status should be blinking.

Operating with IR and RS232

IR Control

The IR pass-through function allows you to control the source from the display location or control the display from source location.

Control the Display

In this case, **IR OUT** port in HD-HSC-SP-RX is connected to an IR emitter cable and **IR IN** port in your transmitter is connected to a IR receiver cable. You can control the display from the source location with the display remote.

Control the Source

In this case, **IR IN** port in HD-HSC-SP-RX is connected to a IR receiver cable and **IR OUT** port in your transmitter is connected to an IR emitter cable. You can control the source from the display location with the source remote.

RS232 Pinout

The following figure shows the RS232 pinout.
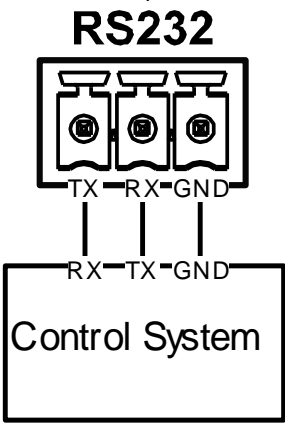
RS232 Control

The **RS232** port allows you to connect an RS232 device at each end of the HDBaseT system for serial communication. **See LIT1663 API Manual for the API command set**

Using RS232 Port for Serial Communication

The bi-directional RS232 pass through function allows you to interface two RS232 devices for serial communication by connecting to an FSR Transmitter and HD-HSC-SP-RX receiver via RS232 cables in order to control the source device or the display.

1. Ensure the source device and the display device are connected separately to the transmitter and the receiver as shown;
2. Connect the RS232 devices to RS232 port of transmitter and receiver using the RS232 cables;
3. Connect the HDBT OUT of the 100m transmitter to the HDBT IN of the HD-HSC-SP-RX using a CATx cable;
4. The source device can now be controlled at the display or the display can be controlled at the source device.
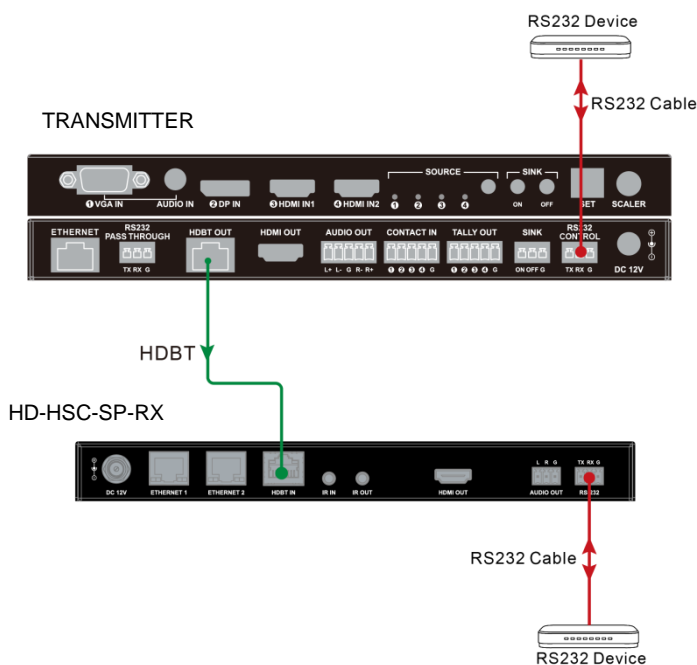
Warranty Terms and Conditions

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. 244 Bergen Blvd. Woodland Park, NJ 07424

Phone: (973) 785-4347 Order Desk Fax: (973) 785-4207

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