



UHBX-3S

UHBX-6S

HDMI on HDBaseT Splitter

with Local HDMI output, RS232, & PoH

Part Number	Function
UHBX-3S	1 in x 3 out HDMI on HDBaseT Splitter
UHBX-6S	1 in x 6 out HDMI on HDBaseT Splitter

UMA1220 Rev D

CUSTOMER
SUPPORT
INFORMATION

Order toll-free in the U.S. 800-959-6439
FREE technical support: 714-641-6607 or support@hallresearch.com
Hall Research, 1163 Warner Ave. Tustin, CA 92780
www.hallresearch.com

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FCC Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference even if it causes undesired operation.

This equipment has been designed to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

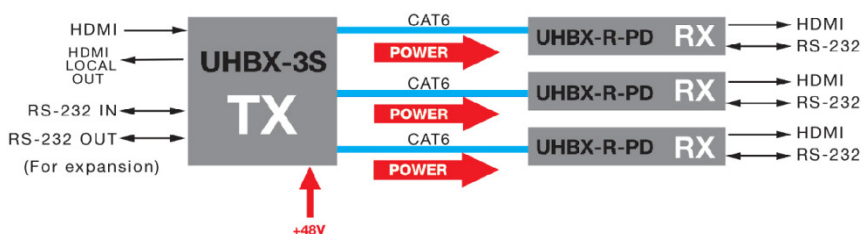
1.0 Introduction

The UHBX-3S and UHBX-6S are HDMI splitters with one local HDMI output and 3 or 6 HDBaseT outputs for transmission to compatible receivers up to 150 meters / 500 ft in Long Reach mode, or 100 meters / 328 ft in Standard mode using UTP cables (max distance is a function of receiver type and cable quality).

The Splitter supports 4K (UHD) video (4K/30 4:4:4, or 4K/60 4:2:0), HDCP, 3D, Deep Color, and CEC. The splitter also provides true EDID management with "Pass-thru", "Learn", and "Emulate" capabilities.

Advanced users can download, edit, and upload EDID data to and from the device using the provided USB port. The unit offers an RS-232 port that can individually address and control remote displays with RS-232 interface. The HDBaseT Splitter provides convenient front panel LED status indicators for all HDBaseT parameters so the user can quickly view the system status.

The UHBX-3S/6S supports PoH (Power over HDBaseT) to the remote receivers using a 48 vDC power supply (part number [511-PS4815](#)).



Typical Connection Diagram

The HDBaseT compliant PoH performs the necessary low voltage handshake (per IEEE802.3af) prior to injecting full supply voltage on the UTP line for maximum reliability, safety and compliance.

Compatible & Recommended Receivers:

UHBX-R-PD	<ul style="list-style-type: none"> • Max length of 100m @ 4K or 150m @ 1080p • Supports PoH (no power connection is needed) • Provides RS-232
UH-BTX/UH-1BTX	<ul style="list-style-type: none"> • Max length of 100m @ 4K or 150m @ 1080p • UH-BTX provides RS-232 (UH-1BTX does not)
UH-BT/UH-1BT	<ul style="list-style-type: none"> • Max length of 70m (Long Reach is not available) • UH-BT provides RS-232 (UH-1BT does not)

Features

- Splits HDMI for up to 3 or 6 remote displays via HDBaseT
- HDMI output for connection to a local display or daisy-chaining
- Extends HDMI, Power (PoH), and RS-232 on Cat 6 to 500 ft (150 m)
- Supports most HDMI and DVI resolutions
- Advanced EDID management with USB port for EDID manipulation using a PC
- Can address and send independent RS-232 commands to each HDBaseT output.
- RS-232 commands can be sent at any baud rate up to 115200
- Complies fully with HDBaseT standard
- Power-over-HDBaseT(PoH) meets IEEE802.3af standard
- RS-232 expansion port for daisy-chaining multiple UHBX-3S/6S units
- Fully isolates ground between TX and RX sides
- Sturdy metal enclosures with mounting provisions

2.0 Package Contents

- (x1) The Splitter unit
- (x1) 48v, 1.5A universal power supply (part number [511-PS4815](#))
- (x1) 1m HDMI Cable
- (x1) 2m DB9 (RS-232) M/F cable
- (x1) 1m USB /A to Mini USB /B cable
- (x1) User's Manual

3.0 Setup

Installation

As shown in the diagram below, the UHBX-3S/6S can extend a single video source to multiple remote displays. There is also an additional HDMI output for connection to a local display or for daisy chaining to another Splitter. A maximum of (7) Splitters can be daisy-chained together.

RS-232 and Power (PoH) signals are also extended on the same Cat 6 cable to compatible Receivers. The RS-232 IN port is used to send/receive commands or data to/from remote displays connected at the output. Special RS-232 commands must be used to communicate with any individual output (Refer to Section 5 for more details).

HDMI on HDBaseT Splitter

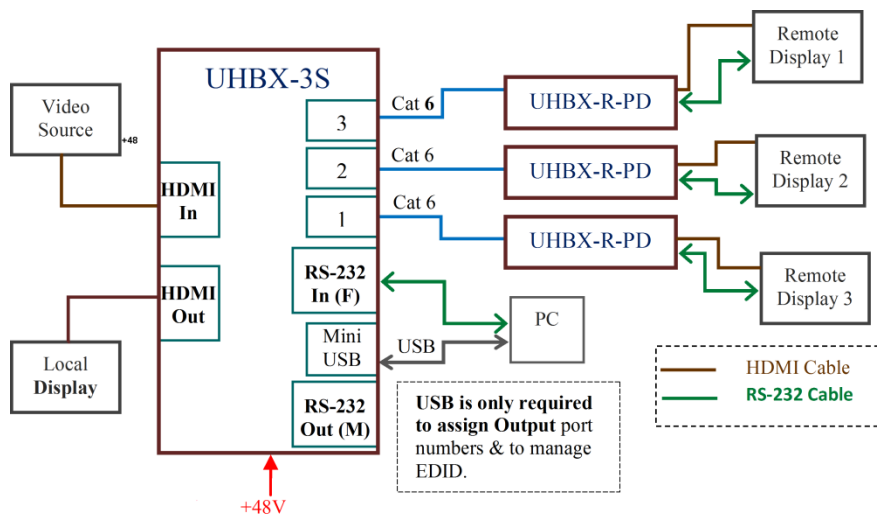
To use the RS-232 port, connect the RS-232 input (Female) connector to your controller or PC using a straight-through male-to-female DB9 cable. The pin-outs are shown below:

RS-232 INPUT (Female)		
DB9-F Pin	Term	Direction
2	TX	Output
3	RX	Input
5	GND	

RS-232 OUTPUT (Male)		
DB9-M Pin	Term	Direction
2	RX	Input
3	TX	Output
5	GND	

To daisy chain splitters, use a M/M HDMI connector to connect HDMI-OUT from the first unit to the HDMI In of the down-stream box.

If RS-232 is used, connect the RS-232 OUT connector to RS-232 IN of the next box. Remember that when more than one unit is daisy-chained, you must assign the addresses for each the outputs so they can individually address a particular RJ45 and send out a command via RS-232 to the remote receiver.



Typical Application Diagram

NOTE

By default, the output port numbers are assigned address 1 through 3. (Or 1 through 6). To assign a different range, the user must connect the Splitter to a PC using the supplied USB cable and use the appropriate "UHBX-3S or 6S Manager Software" from the Hall Research website.

4.0 Operation

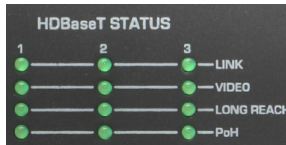
Make the connections as shown in the figure above and power up the UHBX-3/6S.

If the UHBX-R-PD is used as the receiver, the PoH LED will illuminate after about 3 seconds to indicate that the receiver is also receiving power.

When the Link LEDs on front panel and receiver are lit (or blinking), the system is ready to extend video.

If you have video connected, it should be visible on the remote displays. For maximum capability, we recommended that the EDID switch be left in pass-thru (PASS) position, but if you are not getting an image, try changing to the emulated (EMUL) position.

Front Panel LEDs



Link	Solid on means the splitter and receiver are communicating. Blinking means they are in communicating, but in Low-Power mode
Video	Solid on means Video is being sent to the display
Long Reach	Solid on means the link is operating in Long Reach mode
PoH	Solid on means PoH is active and power is being sent to receiver

As shipped from factory, the HDBaseT ports of the splitter are in AUTO mode, in this mode if a UHBX-R-PSE is used, the link mode should be set to standard (100m) or Long Reach (150m) using the mode switch on the receiver.

If the Link, Video, and Long Reach LED's are blinking together, this indicates there has been a failure on the corresponding HDBaseT transmitter port. Contact Hall Research Support department for assistance.

EDID Management

A main feature of the Splitters is EDID management.

Two modes of operation are supported, Pass-Through or Emulate. The mode is selectable from the front panel of the splitter.

In Pass-through mode, the EDID of the TV connected to the selected output passes to the video source.

In Emulate mode, the splitter allows the user to send an EDID table that is stored in the splitter itself to the video source.

The internal EDID table is modifiable in two ways.

1. The EDID can be "learned" from the display connected to the local HDMI output (by holding the SEL button for 5 seconds).
2. The user can upload any valid EDID table from a PC using the GUI through the USB port. "Learning" from a remote display is also possible.

To switch between EMULATE and PASS-THRU modes, press the front panel SEL button.



PASS	Solid On means the current EDID data is from connected displays
EMUL	Solid On means the EDID data is being EMULATED. Blinking means the selected mode is Pass-Thru (PASS LED will be solidly lit), but the splitter could not find any sinks connected so the EDID was defaulted to being Emulated.

5.0 Serial (RS-232) Commands

The Splitter has special commands that can selectively send data to the HDBaseT outputs.

When daisy chaining multiple splitters, assign each with a unique number to each splitter output port using the Windows™ GUI Software. Refer to the software guide for more details.

Serial Communication Parameters

Baud Rate: 19200, Bits: 8, Parity: None, Stop Bits: 1, Flow Control: Off

Serial Commands

Command: *XC,n<cr>* stands for *Serial Connect*

Connect serial interface to output (n). If n is not specified, then it reports which output the controller is connected. "n" is in the range of 1 to 99. Default is 1.

Response: *XC,n <cr>*

This indicates the command completed successfully

Command: *XT<cr>* stands for *Serial Transmit*

The string of characters (bytes) to send follows this command. The unit will wait up to 5 seconds to start receiving the characters to send. Enter any byte from 0x00 to 0xFF. The maximum number of bytes to send cannot exceed 64. To indicate you are finished sending the data, you must send a 0x17 byte followed by 0x0D. This sequence initiates the transmission.

Response: *OK<cr>*

We recommend waiting for the "OK" response prior to issuing further commands to the splitter to avoid the risk of corrupting the internal buffers.

Command: *XR<cr>* stands for *Serial Read*

Reads the receive buffer. The unit can store up to 64 bytes from the device being controlled.

Response: *x bytes as received or possibly none*

Command: *XB,n<cr>* stands for *Serial Baud*

If n is not specified, it reports the current baud rate (n = 1-8 per table below)

N	1	2	3	4	5	6	7	8
Baud Rate	1200	2400	4800	9600	19200	38400	57600	115200

Response: *XBn <cr>*

Command: *XP,n <cr>* stands for *Serial Parity*

If n is not specified, it reports the current parity. n: (0 = None, 1=Odd, 2=Even)

Response: *XP,n <cr>*

NOTE

"XB,n" and "XP,n" are global commands and will affect the setting for all HDBaseT outputs. If all remote devices use the same baud rate, you only need to issue the XB,n command once. Otherwise you need to use the XB,n commands prior to sending data to individual outputs.

5.0 Troubleshooting

If you are experiencing problems getting the extender to work properly, please use the following troubleshooting suggestions.

- Make sure that all of the connections on both the sender and the receiver are solid.
- Try resetting the system by cycling power on the Splitter.
- Check the state of the LEDs on the front of both the sender and the receiver. If the Link, Video, and Long Reach LED's are blinking together, there has been a failure on the corresponding transmitter port.
- Change the EDID mode using the front panel SEL button.
- Make sure the CAT6 cables are not in proximity to any power cables or ballasts. Even if the length of the cable is less than 100 meters, if the screen is periodically blanking or shows glitches, place the HDBaseT link in Long Reach mode. In Long Reach mode, the signal is much stronger, can go farther and offers extra immunity to interference and electrostatic discharge (ESD). When using an UHBX-R-PD as receiver, put the link into Long Reach mode using the small slide switch located under the HDMI output connector.
- Update the firmware in the splitter if available (contact Hall Research Support)
- Make sure, only high quality UTP or STP cables are used.
- If you still are unable to get the system working, contact Hall Research support with a detailed description of the issue and the steps you have taken.

Do not open or try to repair the unit yourself, as this will void your warranty. To return the extender for repair, you must contact HR Support at 714-641-6607 or via email or web. To ship the unit back for repair, make sure to obtain a Return Material Authorization (RMA) number.

NOTE Backup any existing device configuration prior to resetting factory defaults. All user programming will be erased.

Contacting Hall Research

If you determine that your splitter is malfunctioning, do not attempt to repair the unit instead, contact Hall Research Technical Support at 714-641-6607. To return the unit to Hall Research you must first get a Return Authorization (RMA) number. Package the unit carefully, if returning. We recommend that you use the original container.

6.0 Specifications

Input & Output ports

Input Port	1x HDMI Female (Type A)
Output Port	1x HDMI Female (Type A), 3x or 6x RJ45 connectors

Video

Standards	DVI (single link) and HDMI (compliant with 12 bit color depth, 3D video)
Signal type	HDBaseT
Connectors	Locking HDMI
Resolutions	DVI signal VGA (640x480) thru WUXGA (1920x1200) HDTV signal 480i through 1080p Digital Cinema 4K (4096x2160) – Not supported in Long Reach

Audio

Formats	All HDMI Embedded Audio including: LPCM 7.1CH, Dolby TrueHD and DTS-HD Master Audio (32-192kHz sample rate)
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Other Signals

DDC	Pass-Thru DDC for reading EDID directly from remotely connected LCD and HDCP handshake
CEC	Pass-Thru CEC for Consumer Electronics Control compatible devices
RS232	Bidirectional (full-duplex) any baud rate up to 115,200
PoH	Power-over-HDBaseT meets IEEE 802.3af standard. PD side identifies as Class 2 (3.84–6.49 watts).

General

Power Supply	100 VAC to 240 VAC, 50-60 Hz, external; 48 VDC 1.5A
Power	UHBX-3S: 10.15 watts max UHBX-6S: 19 watts max
Temp/humidity	Storage: -40 to +158 °F (-40 to +70 °C) 10~ 90%, non-condensing Operating: +32 to +122 °F (0 to +50 °C) 10~ 90%, non-condensing
Cooling	Convection
Mounting	Threaded nuts on bottom for rack-shelf mounting or optional rack ears
Enclosure type	Metal
Dimensions (HxWxD)	UHBX-3S: 1.66" x 8.42" x 5.59" (42mm x 214mm x 141mm) UHBX-6S: 1.66" x 11.23" x 6.59" (42mm x 285mm x 167mm)
Product weight	UHBX-3S Product: 2.5 lbs (1.13kg), Shipping: 3 lbs (1.36 kg) UHBX-6S Product: 4.5 lbs (2.05kg), Shipping: 5.5 lbs (2.49 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Safety	CE
EMI/EMC	CE, FCC Class A
MTBF	90,000 hours (estimate)

Specifications are subject to change without notice



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