HDMI Video Extender
Wall Plate Transmitter
with Optional IR, and RS232 Add-on

Send HDMI Video up to 500 ft (150 m) using a single Cat6 cable

Model numbers covered in this User's Manual:

Individual Transmitters
UHBX-S-WP   HDMI on Cat6 (HDBaseT) Wall Plate Transmitter
UHCOM-WP   RS232+IR Add-on Wall Plate for UHBX-S-WP

Kits
UHBX-WP-P2   HDMI on Cat6 (HDBaseT) Wall Plate Transmitter and PSE Receiver
UHBX-WPC-P2 HDMI+RS232+IR Wall Plate Transmitter and PSE Receiver

Accessories
511-POH-30W PoH Compliant Power Inserter with Universal AC Input

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TRADEMARKS USED IN THIS MANUAL

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FCC RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been designed to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are intended to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

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

1.0 Introduction

This manual covers Hall Research's wall plate components of UHBX series of HDMI extenders. The wall plate transmitters can be purchased just by themselves or as a kit that includes a compatible receiver. The basic HDMI sender fits in a single gang Decora® style wall plate and is capable of sending a video signal to a compatible receiver to a maximum of 150 meters (500 ft) using a single Cat6 cable (Receiver type determines the max distance that can be 70m, 100m, or 150m).

A second single-gang module can be added to the wall plate to provide RS-232 and IR extension in both directions. The RS-232 can operate at any baud rate including 115,200 at all times.and the IR extension is fully compatible with all standards (SONY, NEC, RC5, SHARP, RCA, etc).

The wall plate is powered though the Cat6 cable eliminating the need for a separate power supply connection. The wall plate conforms to HDBaseT power standard (PoH or IEEE802.3af), making it compatible with any certified HDBaseT power sourcing equipment.

The wall plate sender may be connected to projectors or TVs that have direct HDBaseT inputs. In this case no external receiver would be needed. A PoH inserter will be required (Hall Research part number 511-POH-30W).

2.0 Features

- Extends HDMI or DVI video up to 500 ft on just one Cat6
- RS232 and IR extension in both directions with optional add-on
- Supports all HDMI or DVI resolutions including 4K (UHD)
- Wall plate does not need power connection (powered via UTP)
- Power-over-HDBaseT (PoH) meets IEEE 802.3af standard
- Sturdy and compact metal construction
- Fully compatible with HDBaseT standard
- Includes Mud-Ring for easy installation (no electrical box needed)
- RS232 supports baud rates to 115K
- IR extension meets all standards regardless of format or frequency
- Fully isolates ground between TX and RX sides
- Locking HDMI input connector
- Made in USA

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4.0 UHBX-S-WP   Wall plate Transmitter

The UHBX-S-WP is an HDMI on Cat6 (HDBaseT) single gang wall plate Transmitter. The package includes the following:

- UHBX-S-WP Decora® metal insert
- Standard white plastic Decora® face-plate
- Mud-ring for dry wall installation.

4.1 Compatible Receivers

The wall plate sender is compatible with any HDBaseT receiver that complies with PoH (or IEEE 802.3af) and can source power (PSE) such as Hall Research Model UHBX-R-PSE.

The UHBX-R-PSE receiver supplies power to the wall plate, and also features "Long Reach" mode allowing extension to 150 m (approx 500 ft). This combination is of UHBX-S-WP (wall plate sender) and UHBX-R-PSE (receiver) can be purchased as a kit that includes both. The kit part number is UHBX-WP-P2.

The wall plate can also be used with the lower cost UH-1BTX-R (max distance 100 meters) or the economical UH-1BT-R (max distance 70 meters), however since these do not provide power, a compatible PoH inserter is required (Hall Research part number 511-POH-30W).

4.2 Connection Block Diagrams

Following are typical ways to configure the extension system.

4.2.1 Recommended Connection Scheme

The UHBX-R-PSE receiver is recommended for use with the HDMI wall plate sender. It is a compact box with only a single 5v power supply. It complies with the required PoH handshake and only injects power on to the UTP cable after detecting a compliant device on the other end.

The UHBX-R-PSE receiver also features a user settable switch for activating "Long Reach" mode in order to support distances in excess of 100 meters (to 150 m). It also provides RS-232 and IR connectors to allow adding extension of control signals (see section 5.2).

This Configuration is available in kit form
Kit part number: UHBX-WP-P2
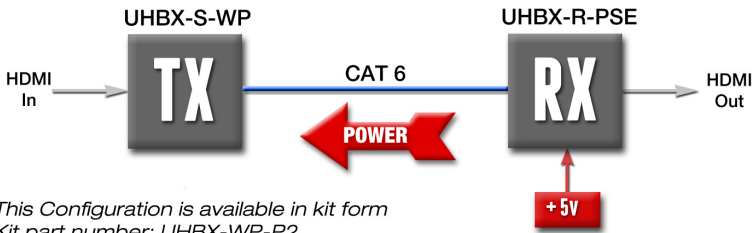
4.2.1 Alternate Connection Scheme

It is possible to use the lower cost receivers UH-1BTX-R (max distance 100 meters) or the economical UH-1BT-R (max distance 70 meters), however since these do not provide power, a PoH inserter is required (Model 511-POH-30W).
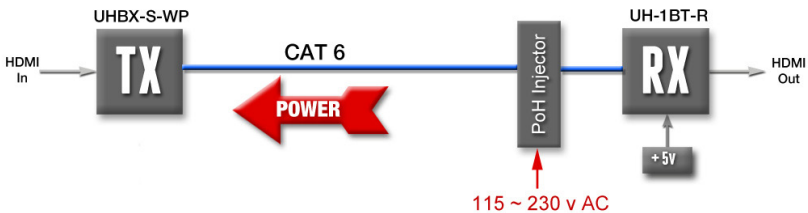
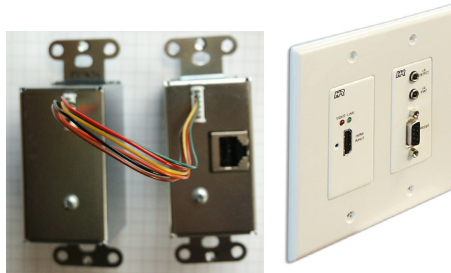## 5.0 UHCOM-WP   RS232+IR Accessory for UHBX-S-WP

The UHCOM-WP is a single gang wall plate option for UHBX-S-WP to add RS232+IR compatibility. The package includes the following:

- UHCOM-WP Decora® metal insert
- Standard 2-gang white plastic Decora® face-plate
- 2-gang mud-ring for dry wall installation.
- Interconnect cable for connection to UHBX-S-WP

5.1 Connecting to UHBX-S-WP

As mentioned above the UHCOM-WP includes a short cable for connection to the UHBX-S-WP Sender . On the rear of both wall plates there is a small connector. Plug the supplied cable to both connectors. The plug and receptacles are keyed so there is only one way to plug them in.

5.2 Connection Block Diagram

This Configuration is available in kit form
*Kit part number: UHBX-WPC-P2*
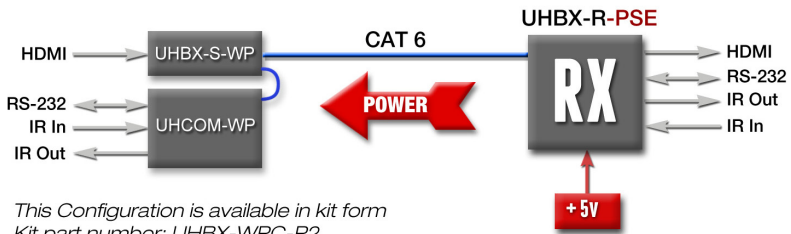
6.0 Model 511-POH-30W   PoH Power Inserter

The 511-POH-30W is a PoH power inserter that can be used to power one end of an HDBaseT link. It passes the RJ45 data across and at the same time injects 48v power for the PD (powered device). The supply complies with the IEEE 802.3af and will only apply power to the cable only if a compliant PoE or PoH device is detected.

This Side
Provides Power

For example you can use the power injector to power the UHBX-S-WP wall plate transmitter when connecting to TVs or projectors with HDBaseT inputs or any HDBaseT Receiver that does not supply PoH/PoE power
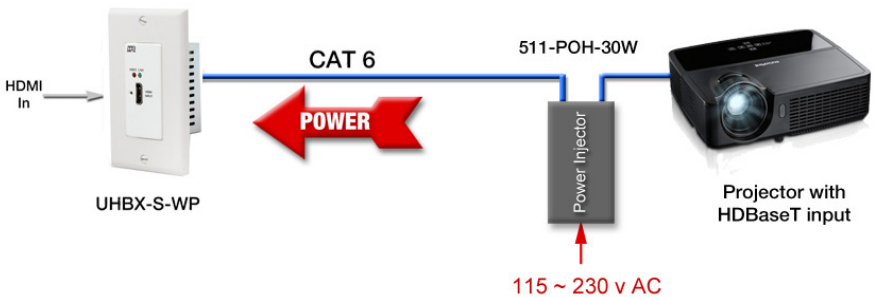
The inserter has a universal AC input and can be connected to 115~230v AC. The package and includes North American Power cord (customer must provide their own AC input cables when used with other standards).

The inserter can be connected at either end, but it is recommended to locate it at the remote end of the HDBaseT extension as shown above.

7.0 Installation

When using UHBX-R-PSE receiver, please refer to its User Manual (UMA1215) for details on that device including configuration of the Long Reach mode or details on IR and RS-232 extension.

7.1 Mounting the Transmitter and Heat Dissipation

The UHBX-S-WP comes with a single gang mud-ring. When used in conjunction with the UHCOM-WP add-on, a two gang mud-ring is supplied. It is recommended to use the mud rings for installation. The mud ring has no back so the unit's rear is not sealed and allows for better heat dissipation.

If for some reason you have to use an electrical box, make sure to use a metal box with open the holes to allow airflow. Never use a plastic box as it restricts airflow and insulates the device causing excessive heat build-up that can shorten the device's life.

| Mud ring | Metal open back | Metal holes punched | Plastic Box |
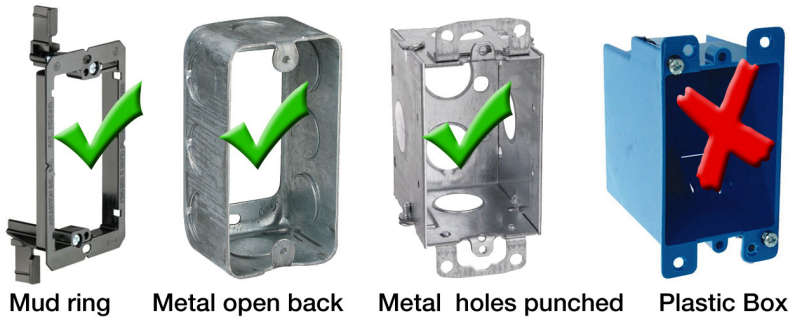
The UHBX-S-WP dissipates approximately 2.5 watts of power, so the unit will be warm to the touch, this is normal, the temperature is well within UL limits and the circuit components are designed to operate at these temperatures. Do not install the unit in a plastic electrical box, though the device will continue to operate, the elevated circuit temperature may cause the unit to fail prematurely.

> **Note**   *The Decora® units are 1.8" deep and have connectors on the back side. If a wall box is to be used, we recommend a wall box which has a depth of at least 2.5 inches to accommodate the connectors and cables.*

7.1 LED indicators

Link: *UTP Link. Solid on means Sender & Receiver are communicating*
Video: *Off= No Video, Blink = Video without HDCP, ON = Video with HDCP*

8.0 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. Loose connections are often the cause of issues.

- Try resetting the system by unplugging the power supply connected to the PSE side, and after 5 seconds, plugging it back in.

- Check the state of the LED's on the front of both the sender and the receiver. Refer to section 7.1 to interpret the status being indicated.

- Make sure the cable length does not exceed the capability of the remote Receiver. UH-1BT can go a max distance of 70m (229 ft), UH-1BTX is capable of 100 meters (330 ft), and the UHBX-R-PSE has a mode switch for 100 meter or 150 meter. (see Receiver User Manual).

- Make sure the display is compatible with the video source by connecting them directly.

- Make sure that you are using good quality UTP or STP cables particularly if the cable distance is approaching the max specifications. Never use low-skew cable for digital video extension (low skew cables are suited for analog video extension, but do not work well for digital video). We recommend 23 Gauge Cat6 cable and if the length is close to the specified maximum distance, augmented Cat6 is recommended.

- The extender requires that the source DDC signals of its HDMI output operate at100 KHz or less and support clock-stretching. The vast majority of sources meet these requirements. But if you determine that a particular source does not (by substituting a video pattern generator, or a different source), a Hall Research model EMX-HD-AUD is recommended to resolve source incompatibility issues.

If you still are not able to get the system working properly, contact Hall Research support (preferably via email or the form on support page of www.hallresearch .com) with a detailed description of the issue and the troubleshooting 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.

9.0 Specifications

Video

Standards	DVI (single link) and HDMI (compliant with HDMI 1.4 video specifications including 12 bit color depth, 3D video and 4K support)
Signal type	TMDS
Connectors	Locking HDMI input, RJ45 HDBaseT output
Resolutions	DVI signal VGA (640x480) thru WUXGA (1920x1200) HDTV signal 480i through 1080p Digital Cinema 4K (4096x2160)

Audio

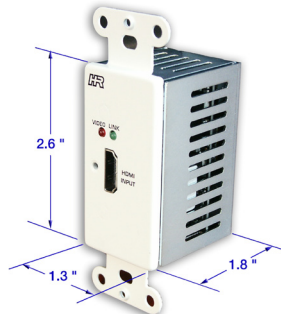|	
Formats	All HDMI Embedded Audio including: LPCM 7.1CH, Dolby TrueHD and DTS-HD Master Audio (32-192kHz sample rate)

Other Signals

DDC	Pass-Thru DDC for reading EDID directly from remotely connected LCD and HDCP handshake
CEC	Pass-Thru DDC for Consumer Electronics Control compatible devices
RS232	Bidirectional (full-duplex) any baud rate up to 115,200
IR	Extended in both directions. Carrier modulation range from 30 KHz to 60 KHz
PoH	Power-over-HDBaseT meets IEEE 802.3af standard. PD side identifies as Class 2 PoE device

General

Power Supply	100 VAC to 240 VAC, 50-60 Hz, external; 5 VDC, 3.2 A, regulated Actual DC current (powering both –PSE and –PD sides) 1.8A max
Power	3.0 watts (10 BTU) maximum
Temp/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, non-condensing Operating: +32 to +104 °F (0 to +40 °C) / 10% to 90%, non-condensing
Cooling	Convection
Enclosure type	Metal
Dimensions	2.6" H x 1.3" W x 1.8" D (66mm H x 33mm W x 46mm D) dimensions exclude mounting tabs on front for Decora® plate
Product weight	Product: 5 oz (0.31 lb or 142 g) Shipping: 8.5 oz (0.53 lb or 241 g) includes: mud-ring & faceplate
Vibration	ISTA 1A in carton (International Safe Transit Association)
Compliance	CE, FCC Class A
MTBF	90,000 hours (Calculated Estimate)

Specifications are subject to change without notice