HALL RESEARCH

User's Manual

UH-BT & UH-BTX Series

4K UHD HDMI on Single UTP Cable To 230/328 ft (70/100 m)

Part Number	Function
UH-BT-S	230 ft (70 m) HDMI Sender with RS-232
UH-BTX-S	328 ft (100 m) HDMI Sender with RS-232
UH-BT-R	230 ft (70 m) HDMI Receiver with RS-232
UH-BTX-R	328 ft (100 m) HDMI Receiver with RS-232

UMA1271 Rev nc

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 desinged 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.

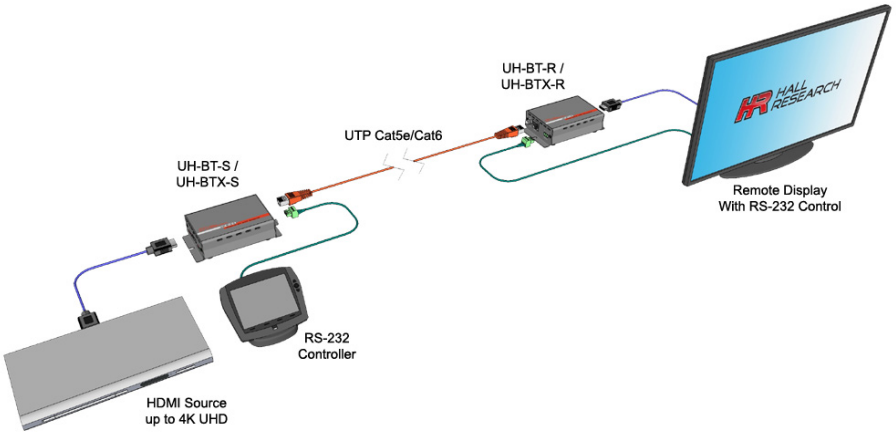
1.0 Introduction

The UH-BT and UH-BTX are a family of HDBaseT™ compliant Senders and Receivers used to extend uncompressed HDMI video and RS-232 control signals up to 230 ft (-BT models) or 328 ft (-BTX models) over a single CAT5e/CAT6 UTP cable.

The extenders are comprised of a Sender (-S) and a Receiver (-R) and extend all PC and HD resolutions without compression, up to 4K UHD.

Full-duplex RS-232 extension is provided via 3-pin terminal blocks, supporting all baud rates up to 115,200 bps.

NOTE The UH-BT and UH-BTX Senders and Receivers are compatible with each other; however the maximum distance achievable is dictated by the lower of the two - 230 ft / 70 m.



Typical Connection Diagram

Features

- Extends HDMI (or DVI) + RS-232 over a single CAT5e/CAT6 UTP cable up to 230/328 ft (70/100 m) depending on Model
- Optional Long Reach mode (BTX Only) to extend 1080p up to 492 ft /150 m.
- Utilizes HDBaseT™ extension technology
- Can connect to all HDBaseT™ and HDBaseT-Lite™ compliant products
- Full HD support for 1080p deep color, 3D, and 4K UHD
- HDCP Compliant with pass-thru EDID from display back to source
- CEC pass-thru for simplified control among compatible devices
- Uncompressed digital video extension guarantees 100% fidelity
- Reliable, trouble free operation
- Plug and Play – no user configuration required
- Sturdy, compact metal enclosures with mounting provisions
- Compatible with Locking HDMI connectors
- Universal Power Supplies with Locking connectors
- Designed and manufactured in USA

2.0 Package Contents

Model UH-BT or UH-BTX (Kit)

(x1) UH-BT(X)-S
(x1) UH-BT(X)-R
(x2) 3-pin Screw Terminal Connector
(x2) Universal Power Supply – 5 VDC @ 2A
(x1) User's Manual

Model UH-BT(-S/-R) or UH-BTX(-S/-R) (Individual)

(x1) UH-BT(X)-S **OR**
(x1) UH-BT(X)-R
(x1) 3-pin Screw Terminal Connector
(x1) Universal Power Supply – 5 VDC @ 2A
(x1) User's Manual

3.0 Setup

Installation

- Connect the HDMI source to the HDMI input on the Sender
- Connect the HDMI display to the HDMI output on the Receiver
- Connect Sender and Receivers using quality CAT5e/CAT6 cable (see table below for cable recommendations based on the model and distance capabilities)
- If the extension is longer than 328 ft / 100 m, ensure the mode switch under the Receiver's HDMI connector is set to Long Reach (L.R.) position. (Only available on UH-BTX models)
- *Optionally,* connect the RS-232 to the screw terminal connectors.
- Apply power using included power supplies.

Twisted Pair Cable Recommendations

	Distance	Cable Type	Gauge
UH-BT	*0 to 199 ft*	*CAT5e, CAT6, CAT6A*	*24, 23*
	200 to 230 ft	*CAT6, CAT6A*	*23*

	Distance	Cable Type	Gauge
UH-BTX	*0 to 299 ft*	*CAT5e, CAT6, CAT6A*	*24, 23*
	300 to 328 ft	*CAT6, CAT6A*	*23*
LR MODE	*329 to 449 ft*	*CAT5e, CAT6, CAT6A*	*24, 23*
	450 to 500 ft	*CAT6A*	*23*

NOTE

If the Category cable is to be run adjacent to or near interfering electrical sources such as ballasts, generators, motors etc., then Shielded Twisted Pair (STP) cabling is highly recommended.

4.0 Connector and Indicator Functions

Model UH-BT(X)-S Sender (front and back)

1) HDCP LED: Off = No Video. Blink = Video. On = Video + HDCP
2) LINK LED: Off = No Link. Blink = Low Power Link. On = Active Link
3) INPUT: HDMI (or DVI) Input. Connect to HDMI Source device.
    a. STD. Mode: Transmit up to 328 ft / 100m. 4K UHD Compatible.
    b. L.R. Mode: Transmit up to 492 ft / 150m. 1080p Maximum.
4) ACTIVITY LED: Off = Firmware not running. Blink = Firmware running.
5) PWR LED: Off = Unit not receiving power. On = Unit is powered.
6) 5V DC: 2.0mm Locking DC Power input. Use included power supply.
7) UTP: CAT5e/CAT6 extension output. Use straight-through cable to connect to a compatible Receiver.
8) RS-232: Use included screw terminal connector to extend RS-232 control signals to a compatible Receiver.
    a. RX = Receiving Pin.
    b. G = Ground Pin.
    c. TX = Transmitting Pin.

Model UH-BT(X)-R Receiver (front and back)

1) HDCP LED: Off = No Video. Blink = Video. On = Video + HDCP
2) LINK LED: Off = No Link. Blink = Low Power Link. On = Active Link
3) OUTPUT: HDMI (or DVI) Output. Connect to HDMI Display device.
    a. STD. Mode: Transmit up to 328 ft / 100m. 4K UHD Compatible.
    b. L.R. Mode: Transmit up to 492 ft / 150m. 1080p maximum.
4) ACTIVITY LED: Off = Firmware not running. Blink = Firmware running.
5) PWR LED: Off = Unit not receiving power. On = Unit is powered.
6) 5V DC: 2.0mm Locking DC Power input. Use included power supply.
7) UTP: CAT5e/CAT6 extension output. Use straight-through cable to connect to a compatible Sender.
8) RS-232: Use included screw terminal connector to extend RS-232 control signals to a compatible
    a. Sender. RX = Receiving Pin.
    b. G = Ground Pin.
    c. TX = Transmitting Pin.

5.0 Troubleshooting

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

- Ensure that all connections are solid, and that the UTP cable length and type are within recommended specifications.
- With all connections made and power applied, check for proper LED function at both Sender and Receiver:
    - PWR LED: ON
    - ACTIVITY LED: BLINKING
    - LINK LED: ON
    - HDCP LED: BLINKING OR ON
- Cycle power both the Sender and Receiver.

Contacting Hall Research

If you determine that your extender 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

Video

Standards	DVI (single link) HDMI 1.4 video specifications including 4K UHD, 12 bit color depth, and 3D video support. HDCP 1.4	
Connectors	**UH-BT(X)-S** (1) HDMI Input (1) 3-pin RS-232 screw terminal (1) UTP Output (1) 2.0 mm Locking DC Power Jack input **UH-BT(X)-R** (1) HDMI Output (1) 3-pin RS-232 screw terminal (1) UTP Output (1) 2.0 mm Locking DC Power Jack input	
Resolutions	DVI signal	VGA (640x480) thru WUXGA (1920x1200)
	HDTV signal	480i through 4K @30 Hz 4:4:4 or 4K @60 Hz 4:2:0 UHD

Audio

Formats	All HDMI Embedded Audio

Other Signals

RS-232	(1) RX, TX and GND on Terminal Strip. Supports all common baud rates including 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200
DDC	Pass-Thru DDC for reading EDID directly from remotely connected display + HDCP handshake
CEC	Pass-Thru Consumer Electronics Control (CEC) for compatible devices

General

Power Supply	100 VAC to 240 VAC, 50-60 Hz, External; 5 VDC 2.0 A, regulated	
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	
Typical DC Current Draw	5 VDC, 2.0 A Power Supply Sender: Receiver:	 2.25 watts max 4.25 watts max
Cooling	Convection	
Enclosure type	Metal (Steel ends, Aluminum extrusion)	
Dimensions	1.18” H x 2.75” W x 3.85” D (30 mm H x 70 mm W x 98 mm D) Depth excludes connectors	
Product weight	Model Only	0.75 lb (0.35 kg)
	Shipping	Single: 1.5 lb (0.70 kg) Kit: 3.0 lb (1.40 kg)
Safety	CE	
EMI/EMC	CE, FCC Class A	
MTBF	90,000 hours (estimate)	
Warranty	3 years parts and labor	

Specifications are subject to change without notice

1163 Warner Ave., Tustin, CA 92780
Ph: (714)641-6607