HALL RESEARCH

User's Manual

UH18

4K Video and USB HDBaseT 2.0 Extender

Extends 18G HDMI (4K @60Hz 4:4:4) and USB 2.0 to 100 meters

Also extends RS-232 and IR
Can be powered from either side

Part Number	Function
UH18-S	Video and USB HDBasetT 2.0 Sender
UH18-R	Video and USB HDBasetT 2.0 Receiver

UMA1285 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 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

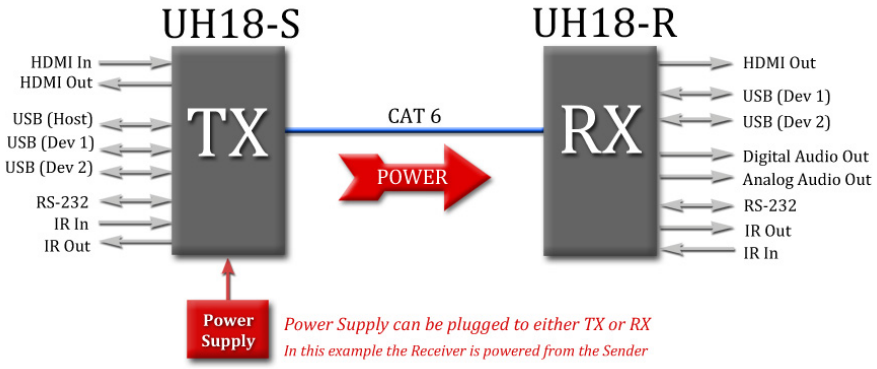
The UH18 extends HDMI Video and USB 2.0 on a single CAT6 cable to 100 meters or more. The extender kit consists of a Sender (UH18-S) and Receiver (UH18-R). Power, USB, RS-232 and IR (remote) extend on the same cable. The power supply connects to either side of the extender.

The UH18 provides 18 Gbps video bandwidth and supports HDMI resolutions up to and including 4K @ 60 Hz 4:4:4 (UHD). The Sender has a built in video splitter and features a convenient local HDMI video output connector.

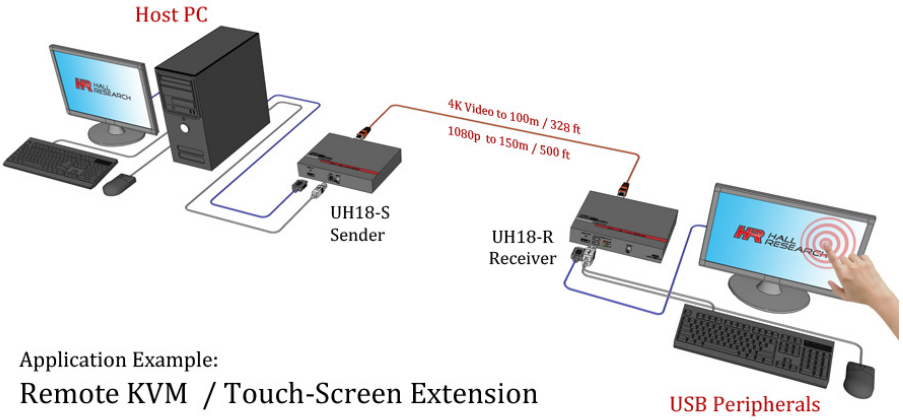
USB 2.0 extends from a USB host connected at the Sender. Both the Sender and the Receiver have USB hubs with two USB device ports for connecting USB devices such as a keyboard, mouse, touch screen, printer, flash drive, web cam or other USB 1.1/2.0 device.

The extender kit also provides a user selectable "LONG REACH" mode switch. In this mode, the extender kit can support distances to 150 meters (500 feet) with a maximum resolution of 1920x1080 (1080p).

HDMI audio extracts in both stereo analog (L/R) and digital (SPDIF) RCA formats.



Functional Block Diagram



Typical Connection Diagram

1.1 Features

- Extends 4K @ 60 Hz up to 100m and 1080p @ 60 Hz up to 150m
- HDMI 2.0, HDCP 2.2 compliant and supports HDR10
- HDMI loop-output on the Sender
- Audio Extraction on the Receiver (Analog and SPDIF)
- Support LPCM 7.1, DTS-HD, Dolby-HD
- Fully compliant with HDBaseT 2.0 specifications
- Bi-directional IR and RS-232 Pass-through
- Plug and Play Installation - takes minutes to setup
- EDID Management
- Only one power supply needed (power is sent over UTP cable to other side)
- Perfect for Server Rooms with local and remote access to the PCs
- Works with KVM Switches and KVM Consoles

2.0 Package Contents

UH18-S

- (x1) Model UH18-S Sender
- (x2) Side Brackets with screws for surface mounting
- (x1) 3-pin terminal strip for RS-232
- (x1) IR Emitter cable (can be used on Sender or Receiver)
- (x1) USB Type A to Type B cable
- (x1) USB micro USB to Type A cable
- (x1) 24 VDC Power Supply with adapters
- (x1) User Manual Card

UH18-R

- (x1) Model UH18-R Receiver
- (x2) Side Brackets with screws for surface mounting
- (x1) 3-pin terminal strip for RS-232
- (x1) IR Detector cable (can be used on Receiver or Sender)
- (x1) User Manual Card

3.0 Setup

3.1 Installation

- Connect the HDMI Input on the UH18-S (Sender) to your HDMI Source using a High quality HDMI cable such as Hall Research CHD-SF* SnugFit™ High Speed Latching HDMI cable (HDMI cables are not included).
- Use the included USB 2.0 Type A-male to B-male cable or other quality USB cables to connect the USB 2.0 port on the Sender to your PC or USB Host.
- If you need to connect any local USB devices such as a keyboard, mouse or KVM Switch; the UH18-S provides two USB ports for this purpose. This is useful particularly if your PC or laptop has a limited number of USB ports.
- If required, connect the HDMI loop output of the Sender to a Display.

NOTE Do not block the vents on Sender and Receiver and allow enough space around the units for air circulation to prevent units from overheating.

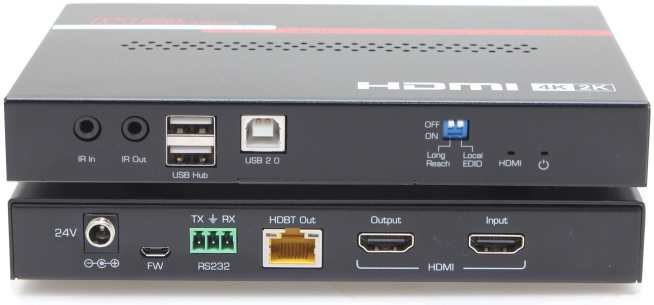
- Use a single CAT6 UTP or STP cable to connect the HDBaseT output (HDBT OUT) on the Sender to the HDBaseT input (HDBT IN) on the Receiver.
  (Shielded CAT6 cable is recommended for maximum distance or for cases where the CAT6 cable is pulled with other data communication, or electrical cables).

NOTE If you are extending more than 100 meters and your resolution is 1080P maximum, enable **Long Reach Mode** on **both** the Sender and the Receiver using the switch on the front panel.

- Use the supplied 24 VDC Power Supply to power the Extender. Only one power supply needed and may connect to either the Sender or Receiver depending on your requirements. By default, the power supply is only included with the Sender (UH18-S).
- Connect USB 2.0 devices that you want to extend to the USB Hub on the Receiver
- The extender set includes only one *IR Detector* cable, and one *IR Emitter* cable. It can extend IR Remote control signals in either direction (from Sender to the Receiver or vice versa. If you are going to extend IR Remote control signals along with the HDMI video, you should first decide in which direction you want to send the signal. For example, if there is a Cable TV box at the Sender that you want to control from the remote end where the TV is located, then you want to plug the IR Detector cable to the IR IN of the Receiver and the IR emitter cable to the IR OUT of the Sender. That way you can use the Cable TV Remote from the remote side to control it.
- Connect any Serial Devices/Controllers to the RS-232 port as required. The RS-232 extension is pass-through and supports all baud rates up to 115 Kbps.
- Connect any speakers or audio equipment to the de-embedded HDMI audio outputs on the Receiver.

4.0 Connector and Indicator Functions

4.1 UH18-S (front and back)



UH18-S (Sender) front and back

IR In	Connects to the IR Detector Cable
IR Out	Connects to the IR Emitter Cable
USB Hub	Connects to any USB 2.0 local devices
USB 2.0	Connects to computer with USB 2.0 Type A to B Cable
Long Reach	OFF (default) – Extend video to 100m including 4K
	ON –Extend video to 150m up to 1080p
Local EDID	OFF (default) – Use the remote EDID of display at the Receiver
	ON – Use the local EDID of display at the Sender
HDMI LED	ON when HDMI Source is detected
PWR LED	ON when power applied to Sender
24V	Connects to the 24V DC Universal Power Supply
FW	Firmware Update Port (not used for normal operation)
RS-232	Connects to the RS-232 device
HDBT Out	Connects to the Receiver with CAT6 UTP or STP
	(Shielded CAT6 cable is recommended for maximum distance or for cases where the CAT6 cable is pulled with other data communication, or electrical cables)
HDMI Input	Connects to the HDMI source with an HDMI cable
HDMI Output	Connects to the local display with an HDMI cable

4.2 UH18-R (front and back)

UH18-R (Receiver) front and back

IR In	Connects to the IR Detector Cable
IR Out	Connects to the IR Emitter Cable
USB Hub	Connects to any USB 2.0 remote devices
Long Reach	OFF (default) – Extend video to 100m including 4K
	ON –Extend video to 150m up to 1080p
Mute Audio	OFF (default) –HDMI Output audio is not muted
	ON – HDMI Output audio is muted
24V	Connects to the 24V DC Universal Power Supply
FW	Firmware Update Port (not used for normal operation)
RS-232	Connects to the RS-232 device
HDBT In	Connects to the Receiver with CAT6 UTP or STP
	(Shielded CAT6 cable is recommended for maximum distance or for cases where the CAT6 cable is pulled with other data communication, or electrical cables)
HDMI Output	Connects to the remote display with HDMI cable
SPDIF	Connects to a SPDIF RCA Cable
L/R	Connects to a 3.5mm L/R Analog Cable

5.0 Functions

5.1 EDID Management

The UH18-S Sender can pass either the Local or Remote EDID to the video source.

To pass the remote EDID of the display connected to the HDMI Output of the Receiver, turn the Local EDID DIP switch on the front panel OFF. This is the default mode.

To pass the local EDID of the display connected to the Local HDMI Output of the Sender, turn the Local EDID DIP Switch on the front panel ON.

The Sender will remember the last EDID connected until a different display is connected.

Disconnecting the remote display will not affect the video on the HDMI Output on the Sender.

5.2 Long Reach Mode

Use Long Reach Mode to extend video and audio beyond the 100 m range.

You can extend 1080P @ 60 Hz video maximum up to 150 m.

If you do not intend to extend 4K (UHD) video, you can set the Long Reach DIP switch to ON.

This reduces the bandwidth utilized in the UTP cable and improves signal immunity to outside interference.

In Long Reach Mode, an internal custom EDID informs the source to output 1080p @ 60 Hz video.

> NOTE USB Devices such as Webcams that require isochronous transfers may not work in Long Reach Mode.

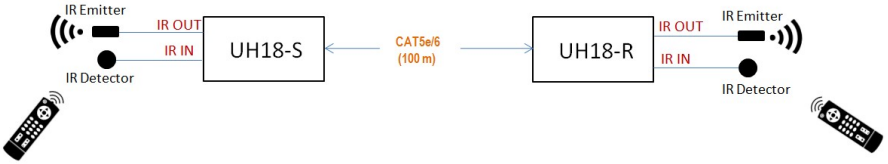
5.3 IR Extension

The bi-directional IR extension is pass-through.

Connect the IR Detector and Emitter cables to the Sender and Receiver to extend IR in both directions.

Only one IR Detector cable and one IR emitter cable are provided in the extender kit.

To extend IR simultaneously in both directions, you need to purchase extra IR cables. Contact Hall Research Sales for more information.

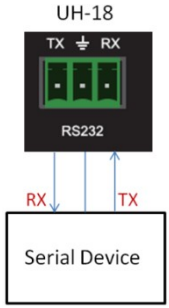


 **Emitter**	Tip = Anode (+) Sleeve = Cathode (-) *Replacement P/N: CIR-KIT-EMT2*
 **Detector**	Tip = Data Ring = +5V DC Sleeve = Ground *Replacement P/N: CIR-DET-P2*

Note: *The above images are representative; the actual cable may look different*

5.4 RS-232 Extension

The RS-232 Extension in UH18 is pass-through and works up to 115K baud.
The baud rate settings of the serial device connected at the Sender must match with the serial device connected at the Receiver end for successful full-duplex communication.



6.0 Troubleshooting

USB 2.0 Camera is Lagging *Check if Long Reach mode is ON. If so, turn it off.* *Isochronous transfers may not work if Long Reach mode is ON.*
No video on the Receiver *Check the PWR led on both Sender and Receiver* *Check if HDMI LED on the Sender is Turned ON* *Check if the HDMI LED on the Receiver is Turned ON* *Check the Cable Length*

6.1 Contacting Hall Research

If you determine that your UH18 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.

7.0 Specifications

Video

Standards	HDMI 2.0, HDCP 1.4/2.2
Resolutions	DTV/HDTV up to 4K @ 60 Hz YUV 4:4:4

Audio

HDMI	LPCM 2.0/5.1/7.1 channel , DTS-HD, Dolby-HD
Audio Extraction	Analog (Line Level) and SPDIF Note: Analog output is only active when the HDMI Audio is 2-channel. SPDIF output is always active regardless of audio format of 2.0, 5.1 or 7.1 channels

Peripherals

RS-232	Full Duplex Pass-through at any baud rate
USB	Supports all USB 2.0/1.0 Devices
IR	Bi-directional Pass-through 56K carrier

General

Power	Input: 100-240 VAC, 50-60 Hz 0.8 A (US/EU Standard, CE/FCC/UL Certified) Output: 24 VDC @ 1.0 A Consumption: 14 Watts Total Type: DUAL POC (Power only required at one end)
Operational Temp/Humidity	+32 to +122 °F (0 to +50 °C) 10 to 90 % RH (non-condensing)
Enclosure	Metal (Steel)
Dimensions	6.87” (172.4 mm) W × 4.45” (113.2 mm) D × 0.95” (24 mm) H All protrusions included
Product weight	1.3 Lbs
Shipping weight	5.2 Lbs (Sender + Receiver)
Safety	CE
EMI/EMC	CE, FCC Class A
MTBF	90,000 hours (estimated)
Warranty	3 years parts and labor

Specifications are subject to change without notice

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