HALL TECHNOLOGIES

User's Manual

ULTRA-4K

Dual 4K UHD HDMI and USB 2.0 Extender over 1 CAT6 to 100m/328ft With 3-Port Splitter Sender and Daisy-Chainable Receiver

Part Number	Function
ULTRA-4K-S	Dual Video + USB Sender with 3-Port Splitter
ULTRA-4K-R	Dual Video + USB Receiver with Daisy-Chain output

UMA1275 Rev E

CUSTOMER SUPPORT INFORMATION

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

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1.0 Introduction

Product Description

The ULTRA-4K is comprised of the ULTRA-4K-S Sender and the ULTRA-4K-R Receiver. The system is used to extend USB 2.0 and dual display HDMI video supporting various resolutions including 1080p @ 60 Hz and 4K UHD @ 30 Hz. Dual video and USB can be extended to one or more Receivers up to a distance of 100 m (328 ft.) over a single CAT6 cable.

The Sender features two HDMI inputs and one USB input for connection to a dual-head PC. It provides two local HDMI outputs (corresponding to the two HDMI inputs) and features an internal USB hub with two local USB outputs. Additionally, there are three separate RJ45 output ports to extend video and USB to multiple remote locations.

The Receiver provides two HDMI outputs and 6 USB ports. Two of the USB ports are labeled for use with keyboard and mouse; however, they can also be connected to other USB devices such as KVM switches or touch-screen displays if desired.

For connection of other USB devices such as printers or scanners, four additional general-purpose USB 2.0 ports are available. For security purposes, USB memory devices are not supported by default. If you want to enable USB memory support, please contact Hall Technologies.

In a setup with one sender going to only one Receiver, the USB ports automatically pair with the Sender. However when there are more than one ULTRA-4K Receiver connected to the same sender, only one Receiver can be paired at a given time. Pairing is accomplished using a push button on the front panel of the Receiver. A corresponding LED next to the button indicates USB pairing status with the Sender.

Each Receiver features an RJ45 “LINK OUT” port that can be daisy-chained to down-stream Receivers. All signals are re-buffered, so the LINK OUT port can drive cables to 100 meters long.

It is important to note that the RJ45 output ports (on the Sender or the Receiver), can also be connected to ULTRA-V Receivers. ULTRA-V Receivers provide only one video output and no USB. The ULTRA-V Receivers show Video A by default, however, they can be configured to display Video B if desired. Please refer to the ULTRA-V User’s Manual for further details.

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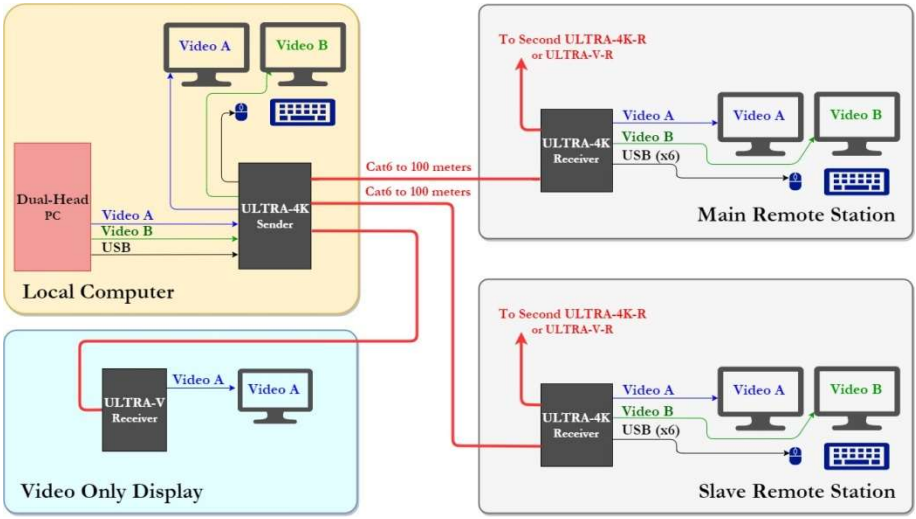

Typical Connection Diagram

Features

- Supports high resolution HDMI video including FHD (1920x1080), WQHD (2560x1440), and 4K UHD (3840x2160)
- Two video streams and one USB port extended over a single CAT6 cable up to 100 m/328 ft.
- Full plug-and-play support with USB keyboard, mouse, and connected peripherals
- Computer OS independent - No driver or software required
- Local HDMI and USB outputs on the Sender
- Three Sender extension outputs and one Receiver daisy-chain output to distribute video to multiple locations
- No video calibration required; no video quality reduction due to cable length or resolution
- Locking power supply connector to prevent inadvertent disconnection
- Sender includes mounting ears for standard 19” rack; Receiver includes mounting brackets for surface mounting.

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2.0 Package Contents

ULTRA-4K-S

(x 1) ULTRA-4K-S
(x 2) RACK MOUNT EARS and screws
(x 1) POWER SUPPLY (Hall P/N 511-IEC5V4AP5L, Mfg P/N 3A-186DB05)
(x 1) USER'S MANUAL CARD

ULTRA-4K-R

(x 1) ULTRA-4K-R
(x 2) Surface-mount brackets
(x 1) POWER SUPPLY (Hall P/N 511-IEC5V4AP5L, Mfg P/N 3A-186DB05)
(x 1) USER'S MANUAL CARD

3.0 Setup

Installation

- Connect the PC HDMI outputs to the ULTRA-4K-S ports marked "HDMI A IN" and "HDMI B IN" using quality HDMI cables
- Connect the PC USB to the ULTRA-4K-S port marked "USB IN" using a USB cable
- Optionally, connect HDMI displays to the HDMI A/B OUT ports, and USB peripherals to the USB LOCAL ports
- Using a CAT6 cable, connect the ULTRA-4K-S "LINK OUT" port to the ULTRA-4K-R "LINK IN" port
- Connect remote HDMI displays to the ULTRA-4K-R HDMI A and HDMI B output ports
- Connect keyboard, mouse, KVM Switch, or touch-screens to the ULTRA-4K-R ports marked as KBRD/MOUSE
- Optionally, connect other USB devices to any of the USB 2.0 ports
- Once all other connections have been made, apply power to the ULTRA-4K-S and ULTRA-4K-R using the included power supplies

NOTE ULTRA-V-R Receivers may be connected for cases where only a single video display is required.

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DisplayPort Adapters

While HDMI is the most widely adopted video standard, there are a number of computer and display manufacturers that rely on DisplayPort for higher resolutions such as 2560 or 4K. Hall Technologies offers 4K compatible adapters to convert between these two video standards.

> **NOTE** These adapters are unidirectional. For example, the DisplayPort to HDMI adapter cannot convert an HDMI signal to DisplayPort.

To connect to a source (PC) with Displayport output, use GC-DP-HD.

Model GC-DP-HD: DisplayPort source to HDMI output

Virtually all monitors and TVs have HDMI (or DVI) inputs, but if your display only has Display port input, the following adapter converts HDMI to DP.

Model GC-HD-DP: HDMI source to DisplayPort output

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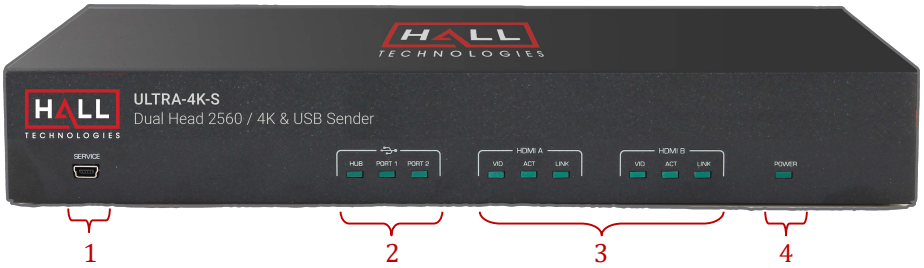
4.0 Connector and Indicator Functions

ULTRA-4K-S (front)



1) SERVICE: USB-Mini connection, used for upgrading firmware or configuring parameters such as EDID via free PC GUI.
2) USB HUB/PORT 1/PORT 2: LEDs show presence of USB Input and local devices. The Hub LED indicates that the hub is active (note that PC/Host has the ability to put the hub in "selective suspend" mode in which case the Hub LED will turn off. Hosts usually do this if no downstream devices are connected to the hub. The Port 1 and 2 LEDs correspond to the two USB (type A) ports available on the rear panel. They should be on if there is a USB device connected to them.
3) VID/ACT/LINK: Status indicators of HDMI A/B
    a. VID: This LED is lit when HDMI video input is present.
    b. ACT: This LED blinks when HDMI extender core processor is active (normal).
    c. LINK: When this LED is solidly on, it indicates the system has detected at least one Receiver and is actively transmitting video and data. Blinks if the system has never seen a compatible Receiver or it is not transmitting video.
4) POWER: Power LED lights when power is supplied.

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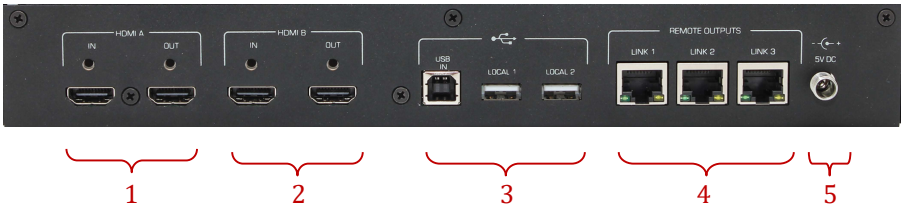
ULTRA-4K-S (Rear)



1) HDMI A IN/OUT: HDMI A input port and local output. HDMI A IN is extended to ULTRA-4K-R HDMI A OUTPUT.
2) HDMI B IN/OUT: HDMI B input port and local output. HDMI B IN is extended to ULTRA-4K-R HDMI B OUTPUT.
3) USB IN/LOCAL1/LOCAL2: USB Input port, and local outputs. USB IN is extended to ULTRA-4K-R USB 1.1/USB 2.0 ports.
4) REMOTE OUTPUTS/LINK 1/LINK 2/LINK 3: Three separate outputs for connection to remote ULTRA-4K-R Receivers. Use CAT6 cable to extend up to 100 m/328 ft.
    a. GREEN LED on left side of ports indicates an active link to ULTRA-4K-R or ULTRA-V-R.
5) 5V DC: Power input. Connect supplied 5V DC locking power supply to power Sender.

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ULTRA-4K-R (front)

1) SERVICE: USB-Mini connection, used for upgrading firmware or configuring parameters such as USB Mass Storage Class device filtering via free PC GUI.
2) USB 2.0 PAIRING: When only one Receiver is connected to a Sender, the Receiver will automatically pair by default and the PAIRING LED will be on. If multiple Receivers are connected, the user needs to decide which Receiver's USB ports is to be paired with the Sender. To change pairing to a different Receiver, press the button and the PAIRING LED will light. If the pairing LED is solidly lit, the Receiver has sucessfully paired with the sender, but if it is blinking, the pairing was unsuccessful and you should press the pairing button again until the LED is solidly lit.
3) HDMI A/B VID/ACT/LINK: Status indicators of HDMI A/B
    a. VID: This LED is lit when HDMI video is being output.
    b. ACT: This LED blinks when HDMI processor is active (normal).
    c. LINK: This LED indicates the system is actively receiving video and data. Blinks if the system is not receiving video.
4) POWER : Power LED lights when power is supplied.

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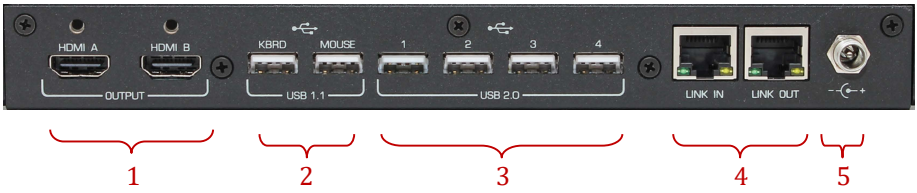
ULTRA-4K-R (Rear)



1) HDMI A/HDMI B OUTPUT: Ouputs HDMI from ULTRA-4K-S HDMI A/HDMI B Input ports respectively.
2) USB 1.1/KBRD/MOUSE: Connect keyboard/mouse/KVM Switches or other HID input devices including touch-screens to these ports.
3) USB 2.0: These are general purpose ports for other USB devices sucha s printers or scanners. By default USB memory devices are not allowed and these USB ports do not support USB webcams.
4) LINK IN/LINK OUT: LINK IN receives video/USB from ULTRA-4K-S; LINK OUT is used to daisy-chain to another ULTRA-4K-R or ULTRA-V-R.
    - GREEN LED on left side of ports indicates an active link to ULTRA-4K-S.
5) DC 5V: 5V DC: Power input. Connect supplied 5V DC locking power supply to power Reciever.

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5.0 Troubleshooting

If you are experiencing problems getting the ULTRA-4K to work properly, please use the following troubleshooting suggestions.

- Ensure that all connections are secure. Check all status LEDs to ensure proper operation.
- Try resetting the system by unplugging the power supply, waiting 5 seconds and plugging it back.
- Try restoring factory defaults using the PC GUI.

NOTE There are no user-serviceable parts inside. Do not attempt to try to repair the unit yourself, as this will void your warranty.

Contacting Hall Technologies

If you determine that your ULTRA-4K is malfunctioning, do not attempt to repair the unit.

Instead, contact Hall Technologies Technical Support at 714-641-6607. To return the unit to Hall Technologies you must first get a Return Authorization (RMA) number.

Package the unit carefully, if returning. We recommend that you use the original container.

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6.0 Specifications

Video

Standards	DVI (single link) HDMI 1.4a video specifications including 12 bit color depth, 3D video HDCP 1.4
Connectors	**ULTRA-4K-S** (2) HDMI Inputs , (2) HDMI Outputs (1) USB-B Host Port, (2) USB-A Device Ports (3) RJ45 Link Outputs (1) 2.1 mm Locking DC Power Input **ULTRA-4K-R** (2) HDMI Outputs (2) USB-A 1.1 Device Ports (4) USB-A 2.0 Device Ports (1) RJ45 Link Input , (1) RJ45 Link Output (1) 2.0mm Locking DC Power Input
Resolutions	PC VGA to WQXGA (2560x1600) HDTV 480p to 4K/UHD including QHD (2560x1440)
Refresh Rates	60 Hz for resolutions up to and including HD (1920x1080) and WUXGA (1920x1200 30 Hz for resolutions above and including QHD (2560x1440)

Other Signals

USB	ULTRA-4K-S: USB 2.0 (2) from built-in hub ULTRA-4K-R: USB 1.1 (2) and USB 2.0 (4)

General

Power Supply	100 VAC to 240 VAC, 47-63 Hz, External; 5 VDC
Temp/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, non-condensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, non-condensing
Typical DC Current Draw	5 VDC, 4.0 A Power Supply ULTRA-4K-S: 2.5 A DC depending on # and type of connected USB devices ULTRA-4K-R: 1.5 A DC depending on # and type of connected USB devices
Cooling	Convection
Enclosure type	Metal (Steel)
Dimensions	ULTRA-4K-S: 6.09" L x 11.23" W x 1.66" H ULTRA-4K-R: 5.04" L x 9.00" W x 1.12" H
Product weight	Model Only ULTRA-4K-S: 2.8 lbs (1.3 kg) ULTRA-4K-R: 1.3 lbs (0.6 kg) Shipping ULTRA-4K-S: 4.4 lbs (2.0 kg) ULTRA-4K-R: 3.1 lbs (1.4 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

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