HALL RESEARCH

USER'S MANUAL

UH-2D-3S

3-Port HDMI on Dual UTP Extender

1 input, 1 Local HDMI output + 3 Dual UTP Outputs

4K

Supports 4K Video. HDCP Compliant. EDID Routing

CUSTOMER SUPPORT INFORMATION

FREE technical support, call 714-641-6607
Hall Research, 1163 Warner Ave. Tustin, CA 92780
www.hallresearch.com info@hallresearch.com

UMA1219 Rev. N/C

Contents

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FEDERAL COMMUNICATIONS COMMISSION
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.

RoHS Compliant

1. Introduction

General

Hall Research's Model UH-2D-3S is a member of the Mini-CAT® video extension product line. The UH-2D-3S is used to extend HDMI™ audio/video signals on Cat6 cables to 3 remote receivers (Model UH-2D-R). The device provides one local HDMI output and 3 sets of RJ45 pairs for connection to the remote receivers.

The UH-2D-3S is compatible with HDMI™ versions 1.2a, 1.3 and 1.4 in terms of 3D, deep-color, and 4K video support. The remote receiver (UH-2D-R) includes state of the art automatic equalization to compensate for signal losses in the cables and produces a crisp image as clear as the original.

The unit is housed in a compact sturdy metal enclosure that is 1RU high. Two can be mounted side-by-side using Hall Research Model RMS-1U-1A rack shelf (UH-2D-3S has threaded holes on the bottom for this purpose), or a single unit can be mounted using the Model RMK-05 Rack Mount Kit

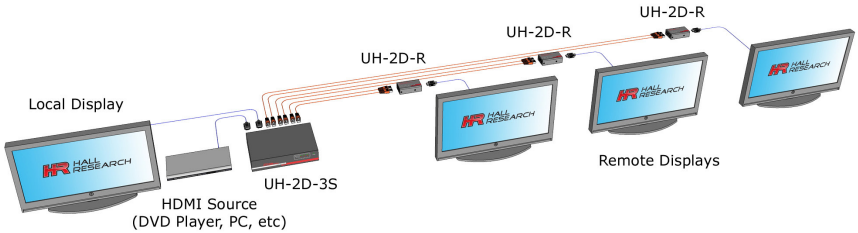
RMS-1U-1A rack shelf

RMK-05 Rack Mount Kit

Features

- Compact unit sends uncompressed HDMI video to 3 remote displays on 2 Cat6
- Drives cables to 170 ft @ 1080i/720p or 130 ft at 1080p 60 Hz 24 bit
- Local HDMI output for direct connection to a local display
- Supports HDMI 1.4 Deep-Color (up to 12 bits per color) and 3D formats
- Supports PC & HDTV resolutions, VGA~WUXGA and 480p~4Kx2K
- LED indicators for power and status of 3 remotes (power and HPD detection)
- Supports LPCM 7.1CH, Dolby TrueHD and DTS-HD Master Audio
- Built-in power supply with standard IEC320/C14 AC power jack
- Includes HDMI input cable
- 1 RU, half-wide compact size with optional mounting tray and ears
- Supports DVI-D single link extension with optional adapter cables
- Intelligent EDID Pass-through or EDID Emulation (user selectable)
- Low power (consumes less than 6 watts fully loaded)

2. Connection Block Diagram



3. Package Contents

- One UH-2D-3S HDMI Splitter/Extender
- HDMI input cable, 1m (3.28ft)
- Power Cord with IEC320/C13 plug (some export models may not have this cord)
- One User's Manual

4. Controls, Functions and Indicators

UTP PORT Status Indicators
Each of the 3 UTP outputs has two LED indicators

REMOTE PWR: Indicates that the UH-2D-R remote receiver is powered up
LCD DETECT: Indicates that HPD (Hot-Plug Detect) signal is active

Power Indicator
The power indicator is illuminated when power is applied to the unit.

100/240 VAC Power Input Jack
Connect this jack to AC using standard power cables

HDMI Input Connector
Connect the HDMI SOURCE to this connector using the provided cable.

UTP Output #1 thru #3
These outputs are labeled as A and B (on some units A is labeled as CAT6-1 and B as CAT6-2). The UH-2D-R remote receivers have corresponding RJ45's. Connect A to A and connect B to B

HDMI Output (loop out)
Connect a compatible HDMI Display device to this connector. Note the order of HDMI output connections determines the EDID presented to the HDMI SOURCE described below.

Service Connector
No user functionality- for factory use only.

EDID Selection Switch
Default position is NORM. In this mode the unit will scan the outputs and create an EDID based on connected LCD's. In EMUL mode the unit will use a generic EDID that is independent of connected LCD's. Read more about EDID in the next section.

5. EDID Handling

NORM (pass-thru EDID)
After power-up, the unit scans the outputs and looks for connected display devices (SINK). The local HDMI output has priority and if the unit detects a connected sink its EDID is read and recorded in internal memory and is passed on to the input source. If no display is connected to this output then the unit will look for a display on the UTP outputs and the first one discovered will have its EDID read.

If no display is found on any of the outputs, an internal pre-programmed EDID is used and passed on to the input source.

EMUL (Emulated EDID)
After power-up, the unit uses an internal pre-programmed generic EDID and passes it on to the source. Please contact Hall Research Support for further details or questions.

6. Installation

Refer to the block diagram and the rear panel connections above. Place the sender by the video source. Use the supplied HDMI™ cable to connect the source to the sender. Use (2) Cat6 cables to connect the sender to the receiver. Do not cross the connections as this may cause damage to the unit or the power supply. The RJ45 outputs are labeled as A and B, so please label the ends of your UTP cables so that the end can be identified correctly.

The UH-2D-R remote **receivers require power supplies** attached to them (they come with a 5v power supply). So make sure to plug in the power supply to each receiver.

Receiver's front and rear views

Note about Twisted-Pair Cables

For best results we recommend using Shielded 23 gague Cat6 cables (STP). Unshielded 23 gague Cat 6 Cables also provide acceptable results and can be used in noise free environments.

Use TIA/EIA 568B straight through wiring termination. Avoid using Zero-skew or low skew cables. The low skew cables work well for analog video extension but since the UH-2D is a pure digital system, the cross-talk of the low skew cables will actually shorten the maximum achievable cable length

With 23 Gague Cat6 cables the maximum length of cable depends on the resolution as shown below:

Resolution	Max Cable length
480i, 480p, 576i, 576p, 720p, 1080i	170 ft (52 m)
1080p @ 60 Hz 8 bit per color (24 bit)	130 ft (40 m)
1080p deep-color 12 bit per color (36 bit)	80 ft (25 m)
4Kx2K	40 ft (12 m)

7. Troubleshooting

There are no field serviceable parts or circuits in the device. If you think that the device is malfunctioning, please try the following steps first:

- Make sure the 2 Cat6 cables are not crossed and RJ45 ends are fully inserted.
- Check the video connections. HDMI cables can come loose and cause video loss
- Unplug the power supply and re-attach it to cycle power
- Check the indicator lights on the front panel and on the top of the Receivers for clues
- Try placing the EDID routing switch in EMULATE mode (particularly if you don't have a local LCD hooked up).
- Connect the display directly to the source and make sure that an image is present without the extender. If so, then use the menus of the video source to lower the output resolution (such as 480p). Insert the extender and verify that you get an image. If so, then set the resolution to the next higher value (such as 720p). Continue this process until you get the highest possible resolution without loss of image or audio.
- The quality of the UTP cables is very important 23 gage Cat6 is recommended

8. Contacting Hall Research and Shipping/Packaging

If you determine that your HDMI video splitter/Extender is malfunctioning. contact Hall Research Technical Support at 714-641-6607 or send an email to support@hallresearch.com

Before you do, make a record of the history of the problem. We will be able to provide a more efficient and accurate assistance if you have a complete description of problem.

If you need to transport or ship your unit:

- Package it carefully. We recommend that you use the original container.
- Before you ship the units back to Hall Research for repair or return, contact us to get a Return Authorization (RMA) number.

9. Specifications

Input Port	1x HDMI Female (Type A)
Output Ports	1x HDMI Female (Type A), 3 sets of 2 RJ45 connectors (total of 6 RJ45)
Power Supply	Internal 90-260 VAC, 50-60 Hz, with IEC320/C14 AC power jack Actual power consumption: 3.5 ~ 6 watts depending on # outputs plugged in at 1080p
Video Resolutions	PC Resolutions : VGA - SVGA – XGA – SXGA – UXGA -WUXGA HDTV Resolutions : 480i - 480p - 720p - 1080i - 1080p, 4Kx2K@30
Bandwidth	10.2 Gbps total (or 3.4 Gbps per color, or 340 MHz TMDS clock)
Video Standards	HDMI 1.4 (for 3D, Deep-Color & 4K), HDCP1.1 and DVI1.0
Audio Formats	All HDMI Embedded Audio including: LPCM 7.1CH, Dolby TrueHD and DTS-HD Master Audio (32-192kHz sample rate)
Max UTP Cable Length	Using 23 Gauge Cat6: 480i, 480p, 576i, 576p, 720p, 1080i 170 ft (52 m) 1080p @ 60 Hz 8 bit per color (24 bit) 130 ft (40 m) 1080p deep-color 12 per color (36 bit) 80 ft (25 m) 4Kx2K 40 ft (12 m)
Temperature/humidity	Storage: -40 to +185 °F (-40 to +85°C) / 10% to 90%, non-condensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, non-condensing
Mounting	Threaded nuts on bottom for rack-shelf mounting or optional rack ears
Enclosure type	Metal
Dimensions	1.66" H x 8.42" W x 6.04" D (42mm H x 214mm W x 154mm D)
Product weight	Product – 2.5 lbs (0.386kg) Shipping – 3 lbs (0.681 kg)
EMI/EMC	CE, FCC Class A
MTBF	90,000 hours (Estimate)
Warranty	2 years parts and labor

Specifications are subject to change without notice