HALL RESEARCH

User's Manual

SP-HD-4C
1x4 HDMI Video Splitter

Supports 4K UHD @ 60 Hz 4:4:4, HDCP 2.2 and HDR
De-embedded Analog and Digital Audio Outputs
Smart EDID Management
Can Scale 4K to 1080p at each Output

Contents

FCC Class B Statement

This equipment generates, uses, and can radiate radio frequency energy. If not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. This unit is 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, intended to provide reasonable protection against such interference when the equipment is used in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference, in which case the user, at their 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. Introduction
1.1 General

Thank you for purchasing the SP-HD-4C, a 4-channel HDMI Splitter from Hall Research.

This Splitter can distribute an HDMI audio/video source to up to 4 displays simultaneously without any loss. It is compliant to HDCP 2.2 and supports 4K UHD resolutions up to 4K @ 60Hz (4:4:4), HDR and 3D. This splitter can drive each buffered output up to 12 meters (40 feet) on quality HDMI cables.

The splitter is capable of scaling 4K signal down to 1080p independently for each output. This allows users to accept a 4K video source and distribute it to a mix of 4K and 1080p TVs without downgrading the image for all outputs. Users can simply set the max resolution at each output to be 4K or 1080p.

The device is HDCP compliant, digitally splits, and buffers the input signal for a 100% perfect image and sound reproduction on all outputs. The splitter also provides analog L/R and digital SPDIF (TOSLINK) outputs for connection to audio amplifiers, headphones, etc.
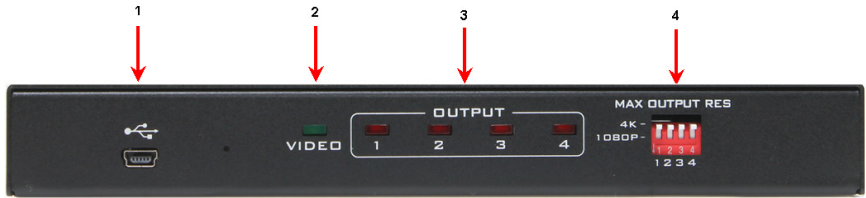
1.2 Features

- Lossless Ultra HD 4K distribution to 4 UHD or HD outputs
- Supports 4K UHD @ 60 Hz 4:4:4, HDCP 2.2 and HDR
- Supports 30/36/48 bit color depth
- Full 3D video support including frame packing up to a 297 MHz TMDS clock
- Provides De-embedded analog and digital audio outputs
- Can Scale 4K to 1080p independently at each output (can mix 4K and 1080p TVs)
- Smart EDID Management
- LED status indicators for source signal, and 4 output connections
- High bit-rate digital audio - DTS-HD, Dolby True HD, DTS, Dolby- AC3, LPCM 7.1 and DSD
- Can be cascaded up to 3 levels
- Each of the buffered outputs can run up to 12 meters (40 feet) using quality HDMI cables
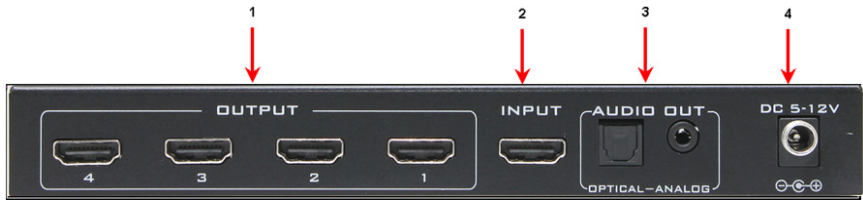- Locking DC input power supply connector

2. Package Contents

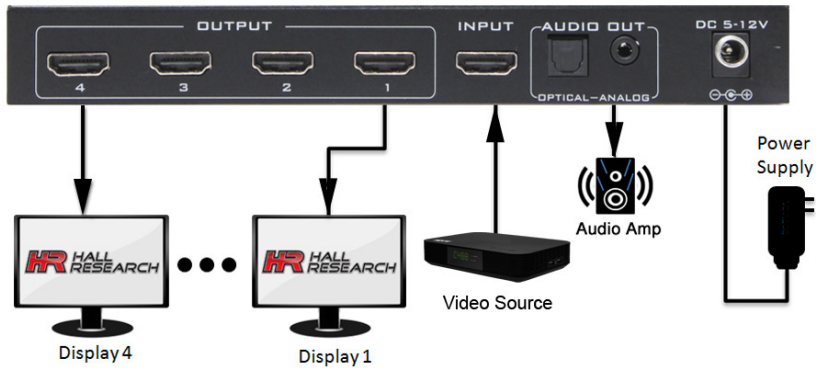|	
SP-HD-4C HDMI Splitter unit	1 pc
12V 1 ADC Power Supply (w/ universal AC plug kit)	1 pc
User's Manual	1 pc

3. Controls, Functions and Indicators

Front Panel

1	USB Mini-B	Used for firmware updates
2	HDMI Video Indicator	LED lights when receiving HDMI Video
3	HDMI Output Indicator 1- 4	LEDs light when HDMI display is connected
4	Max Output Resolution	Controls HDMI output down sampling to 1080p • When set to 4K (default), the output resolution is the same as input resolution. • When set to 1080p, the output resolution is the same as input up to 1080p, but if the input resolution exceeds 1080p, it gets scaled down per the following *3840x2160 is down sampled to 1920x1080p* *4096x2160 is down sampled to 2048x1080p* This allows users to use a 4K video source and show it as 4K with no reduction in quality on 4K displays but they can also use legacy 1080p TVs and get a display on them with 1080p resolution.

Rear Panel

1	HDMI Output 1-4	Used to connect all the sink displays
2	HDMI Input	Used to connect HDMI
3	Audio Output	Extracted audio (analog audio L/R and SPDIF). Note that both outputs are active at the same time.
4	DC Input Power Jack	Connect 12 vDC 1 A power supply (Included)

4. Installation

Connection Block Diagram

Perform the following steps to install the SP-HD-4C.

1. Make sure your HDMI Sources and Displays that you are intending to connect are powered off and disconnected from power sources.
2. Using Hi-speed HDMI cables, connect each display to the Outputs ports of the splitter.
3. Similarly connect the video source to the Input port of the splitter.
4. Power the splitter using the supplied DC power supply.

> ⚠ Only use the regulated 12 vDC supply (center positive) supplied with the unit. Never substitute any other power supply as this can destroy the unit.

5. Power on all the displays followed by source.
6. Make sure the LED indicators for the HDMI Input and corresponding HDMI Outputs are illuminated.
7. Verify audio and video at each output display.

5. Smart EDID Management

When the unit powers up or when it first detects that a video source is connected the device, it creates an EDID for the source based on the first display found scanned from #1 to #4, in order.

If you have a mix of 4K and 1080p displays, make sure to connect the 4K display to output #1. That way the EDID generated for the source will have 4K native causing the source to output a 4K image. Then for the displays that do not support 4K, set the max resolution Dip Switch on the front panel to 1080p (see next section).

If no displays are connected, the splitter uses an internal "default" Hall Research EDID so the HDMI source will always send a signal. This internal EDID will be used until an external display is connected to one of the output ports.
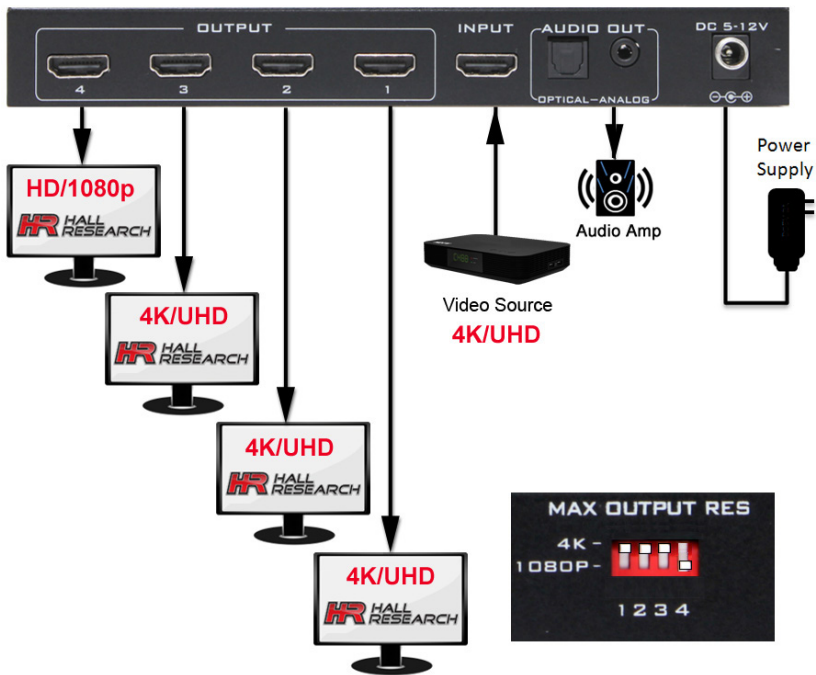
Once an external EDID is found, <u>it is retained until power is cycled</u>, even if the output display is exchanged for another.

The SP-HD-4C maintains the audio extraction feature even if there are no active displays connected to the outputs.

6. Per Output Downscaling from 4K to 1080p

If you have a mix of 4K and 1080p TVs, you can still use the splitter and maintain 4K resolution from the source to all the 4K TVs while downscale the 4K to 1080p so it can be displayed on the 1080p TVs.

The front panel has a 4 position Dip Switch for downscaling 4K video. Each switch position corresponds to each output. Make sure to connect your 4K TV to output #1 (so the EDID for video source uses 4K native), then for each of the TVs that do not support 4K, set the Dip Switch to 1080p max.

Example of mixing 4K and 1080p displays

7. Contacting Hall Research and Shipping/Packaging

7.1 Contacting Hall Research

If you determine that your HDMI video splitter is malfunctioning, do not attempt to repair the unit; instead, contact Hall Research Technical Support at 714-641-6607.

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

7.2 Shipping and Packaging

If you need to transport or ship your unit:

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

8. Specifications

Video	
Standards	HDMI 2.0, HDCP 2.2
Input Port	1 x HDMI Type A [19-pin female]
Output Port	4 x HDMI Type A [19-pin female]
Video Resolutions	Up to 4Kx2K @ 60 Hz (4:4:4 3840x2160 @ 60 Hz)
3D Format	1080P @ 60 Hz.
Color Space	RGB, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0
Color Depth	30/36/48
Bandwidth	Single-link to 340 MHz (10.2 Gbps)

Audio	
Supported Formats	LPCM 7.1, Dolby TrueHD, DTS-HD Master Audio, DTS, Dolby-AC3, DSD

General	
Power Supply	12 vDC, 1 ADC (with universal AC plug kit)
Max Power Consumption	10 W (Max)
Temperature/humidity	Storage: -20~60 °C / -4~140 °F
	Operating: 0~50 °C / 32~122 °F
	Relative Humidity: 20~90% RH (Non-condensing)
Enclosure type	Metal
ESD Protection	Human Body model:
	8 kV (air-gap discharge) & 4 kV (contact discharge)
Dimensions (W x D x H)	7.56 x 3.31 x 0.98 inch (84 x 192 x 25 mm)
Weight	Model - 1.65 lbs (0.75 kg)
	Shipping – 2.3 lbs (1.04 kg)

Specifications are subject to change without notice

CUSTOMER SUPPORT INFORMATION

Order toll-free in the U.S. 800-959-6439
FREE technical support, Call **714-641-6607** or fax **714-641-6698**
Mail order: **Hall Research**, 1163 Warner Ave. Tustin, CA 92780
Web site: www.hallresearch.com   E-mail: info@hallresearch.com