



## **SP-HD-2B**

2-Channel HDMI 2.0 Splitter  
With Analog and Optical Audio Output

Supports 4Kx2K UHD Video

UMA1289 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](mailto:support@hallresearch.com)  
**Hall Research**, 1163 Warner Ave. Tustin, CA 92780  
[www.hallresearch.com](http://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

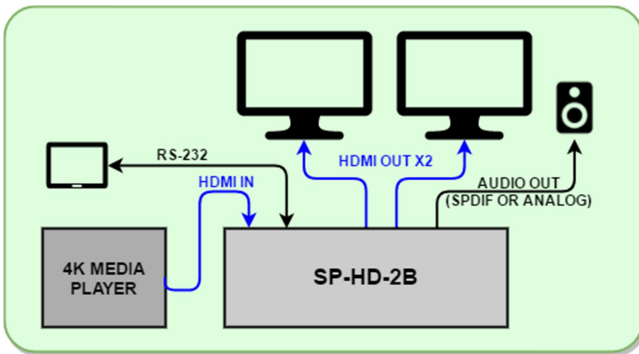
The SP-HD-2B is a compact 2-port HDMI 2.0 splitter that can produce two identical outputs from a single HDMI or DVI source for display on two displays. It supports PC and HD resolutions from 480p up to UHD - 4K @ 60 Hz 4:4:4. It is HDCP 2.2 compliant, and supports deep color, 3D, and HDMI audio formats including LPCM 7.1, Dolby TrueHD, and DTS-HD Master Audio. Each HDMI output can be independently downscaled from 4K to 1080p if needed.

The SP-HD-2B also extracts audio from the HDMI source and outputs it as analog (L/R) stereo and digital optical TOSLINK for connection to an audio amplifier or other device. If no display is connected, the SP-HD-2B will emulate a display using an internal EDID, so the source will still output HDMI video, and the splitter will still be able to extract the audio signal.

RS-232 is available for basic configuration and control, if needed. For convenience, a pair of mounting brackets and hardware is included for installation either under-desk or surface-mount.



Mounting Brackets



Typical Connection Diagram

**Features**

- 1 x 2 HDMI 2.0 Splitter supports PC and HDTV resolutions from VGA to WQXGA and 480p to UHD 4K @ 60 Hz 4:4:4
- 18 Gbps bandwidth for a sharp digital image up to 4Kx2K
- HDCP 2.2 compliant
- Optional Downscaling of 4K to 1080p for each Output
- Extracts HDMI Audio to both L/R analog and TOSLINK (optical)
- Supports LPCM 7.1 CH, Dolby TrueHD, and DTS-HD Master Audio
- Audio extraction does not require connected displays
- Plug and play installation with smart EDID management
- Unplugging one output will not cause interruption of the other
- LED indication for power, source, and output connections
- RS-232 configuration and control
- Mounting brackets included
- Universal power adapter

**2.0 Package Contents****Model SP-HD-2B**

- (x1) SP-HD-2B
- (x1) 3-position Phoenix connector for RS-232
- (x1) 5 V DC Universal locking power adapter
- (x2) Mounting brackets with screws
- (x4) Anti-skid Mounting feet
- (x1) Manual Card

## 3.0 Setup

### Installation

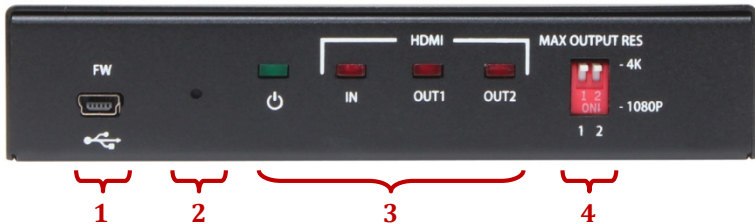
- Connect the HDMI source to the “INPUT” port.
- Connect each HDMI display to the “VIDEO OUT” ports.
- Connect and securely attach the included power supply to the power jack.
- *Optionally*, connect the “AUDIO OUT” to an amplifier or audio device.

**NOTE** If the video source sends multi-channel audio, the 3.5 mm analog audio output is muted and the extracted audio output will only be available as digital on the TOSLINK output.

- When no display devices are detected on the “VIDEO OUT” ports, the default internal EDID will be seen by the HDMI source.
  - The external display EDID is read only on power-up. By default, the EDID from Output 1 is used. If Output 1 is not available, Output 2 is used. If neither is available, the internal EDID is used.
- *Optionally*, connect the RS-232 to a PC or serial control device.
- *Optionally*, use the “MAX OUTPUT RES” dipswitches to downscale a 4K image to 1080p for one or both of the displays, if needed.

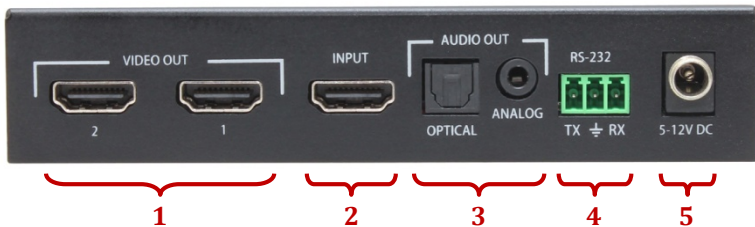
## 4.0 Connector and Indicator Functions

### SP-HD-2B (front)



- 1) FW: USB Firmware update port
- 2) FW switch: Used for firmware update.
- 3) LED Indicators:
  - a. Power: Power status indicator.
  - b. HDMI IN/OUT1/OUT2: HDMI input/output detection.
- 4) MAX OUTPUT RES: Use DIP switches to force 1080p output when source is 4K.

### SP-HD-2B (back)



- 1) VIDEO OUT: Connect to HDMI displays.
- 2) INPUT: Connect to HDMI source.
- 3) AUDIO OUT: Extracted audio from HDMI source.
  - a. OPTICAL: TOSLINK Digital audio output. Supports multi-channel audio.
  - b. ANALOG: 3.5mm stereo analog audio output. EDID must be 2-channel to use.
- 4) RS-232: RS-232 serial control for configuration and control.
- 5) 5-12V DC: DC power input. Use supplied locking power adapter.

## 5.0 Serial RS-232 Control

The SP-HD-2B is controllable via RS-232 to change EDID and audio settings, and to query the unit's status.

### Serial Communication Parameters

Baud rate: 115200, Bits: 8, Parity: None, Stop bits: 1, Flow Control: None

### Serial Commands

- Each Command and Response must be terminated with a Carriage Return <CR>
- Unknown or Invalid commands will return **INVALID COMMAND<CR>**

Command	Description	Response
<b>EMn</b>  <u>Where:</u> n = 0 for Auto (Default) n = 1 for Output 1 n = 2 for Output 2	Set the EDID mode	OK
<b>EM?</b>	Query the EDID mode	EMn  <u>Where:</u> n = 0 for Auto n = 1 for Output 1 n = 2 for Output 2
<b>AUn,m</b>  <u>Where:</u> n = Output [1,2]  m = 0 for Mute OFF m = 1 for Mute ON	Set the HDMI Output Audio state	OK
<b>SCn,m</b>  <u>Where:</u> n = Output [1,2]  m = 0 for Scaler OFF m = 1 for Scaler ON	Sets the HDMI Down scaler state	OK

<b>Command</b>	<b>Description</b>	<b>Response</b>
<b>SCn,?</b>  <u>Where:</u> n = Output [1,2]	Query the HDMI down scaler state	SCn,m  <u>Where:</u> n = Output [1,2]  m = 0 for Scaler OFF m = 1 for Scaler ON
<b>FD</b>	Reset unit to factory defaults	[after reset] HR [System Info]
<b>HR</b>	Show System Info	Model: SP-HD-2B FW: VX.X [ED, AU, SC Statuses]

## 6.0 Troubleshooting

If you are experiencing problems getting the SP-HD-2B to work properly, please use the following troubleshooting suggestions.

- Make sure that all of the connections are solid. Loose connections are the number one cause of issues.
- Check the LEDs on the front panel. The three red LEDs indicate if the device is receiving video, if it is detecting a display (that is turned on), and if it is sending video output to them.
- Check the Max Output Res switches. If a connected display does not support 4K UHD video, ensure the dipswitch is set to 1080P.
- If the 3.5 mm L/R analog audio output is not working, make sure your source is not sending multi-channel (Dolby, DTS, etc.) audio. In that case use the TOSLINK output or change the setting on your source device to output 2-channel PCM audio instead of multi-channel.

## Contacting Hall Research

If you determine that your SP-HD-2B 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 video specifications including 12 bit color depth, 3D video, and 4K/60 DVI (single link) HDCP 2.2
Connectors	HDMI (1x INPUT, 2x OUTPUT)
Bandwidth	18 Gbps total
Resolutions	HDTV signal      480i through 4K/60 4:4:4 DVI signal        VGA (640x480) thru WUXGA (1920x1200)

### Audio

Formats	All HDMI Embedded audio including: LPCM 7.1, Dolby TrueHD, and DTS-HD Master Audio (32-192 kHz sample rate)
Connectors	3.5 mm Stereo Analog Optical SPDIF Digital (TOSLINK)

### Other Signals

RS-232      (1) RX, TX and GND on Terminal Strip

RS-232 Baud Rate: 115200, N, 8, 1

FW Update      USB-Mini

### General

Power Supply	100 VAC to 240 VAC, 47-63 Hz, External; 5 VDC with universal blades
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, 1.0 A Power Supply 2.2 watts
Cooling	Convection
Enclosure type	Metal (Steel)
Dimensions	1.10" H x 5.35" W x 2.85" D (27.9 mm H x 135.9 mm W x 72.4 mm D)
Product weight	Splitter alone:      10.4 oz. (0.65 lb. or 295 g ) Package (shipping): 32 oz. (2 lb. or 920 g)
Vibration	ISTA 1A in carton (International Safe Transit Association)
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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1163 Warner Ave., Tustin, CA 92780  
Ph: (714)641-6607