



# SSW-HD-4


**4 input HDMI Seamless Switcher  
with  
Real-time Multi-view Modes  
Front Panel, RS-232 and IR Control  
SPDIF Audio Output  
Free Windows® GUI**

UMA1252 Rev 2.1

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## FCC 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.



## 1.0 Introduction

The SSW-HD-4 is a 4x1 HDMI seamless video switch with multi-view capabilities where all inputs can be shown in real-time (60 frames per second) on the output in a variety of modes. When only one input is shown, switching between different inputs is completely seamless (with zero delay transition). The switcher supports Input and Output resolutions up to 1080p Full HD.



The SSW can display four Hi-definition sources on a single display and comes with pre-configured multi-view layouts (4 equal images as shown here, or one large and 3 smaller windows in various positions).

Individual buttons for each input allow quick selection from the front panel. Control of switching and multi-view window layouts can be accessed via Front panel, IR remote control (included), RS-232, or a PC GUI (that controls the device via RS-232).

The product is shipped with rack ears for 1U rack mounting.



## 2.0 Features

- Seamless Switching
- Pre-configured Multi-view Layouts
- Control via Front Panel, IR, PC-GUI and RS-232
- Input and Output Resolutions up to 1080p Full HD
- HDCP Compliant
- Includes IR Remote Control
- Includes Rack Mount Ears
- De-embedded S/PDIF audio out with RCA Connector
- Supports Locking HDMI Cables
- Includes Universal Power Supply w/ Locking DC Connector

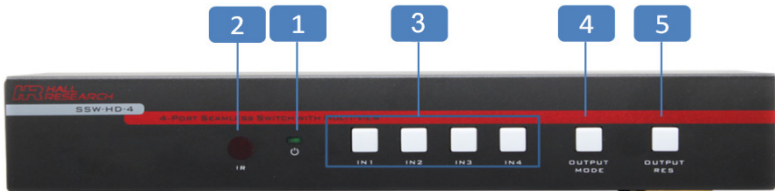
## 2.1 Package Contents

- Qty (1) SSW-HD-4 Seamless Switcher
- Qty (1) Locking 12V DC Universal Power Supply
- Qty (1) IR Remote Control
- Qty (1) DB9 male-to-female RS232 cable
- Qty (1) User's Manual
- Qty (1) Rack mount ears



## 3.0 Product Description

### 3.1 Front Panel Layout



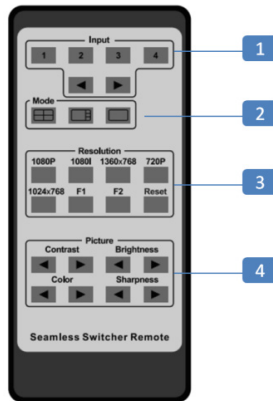
	Name	Description
1	Power	The green LED lights when SSW is powered.
2	IR	The IR detector receives signal from the included IR Hand held remote controller.
3	Input Buttons	Use this buttons to switch HDMI Inputs seamlessly. The active Input will be indicated with a back light RED LED.
4	Output Mode	Use this button to change the Multiview Layouts. By default, the SSW comes has 3 Pre-defined layouts. Refer Multiview layouts for more information. Hold this button for 7 seconds to enable "Auto Scan" feature.
5	Output Resolution	Use this button to change the Output resolution to [780p 1080i 1024x768 1360x768 1080p] @60HZ. Hold this button to factory default the unit.

### 3.2 Rear Panel Layout



1	HDMI Inputs	Connect the HDMI video sources using HDMI cables. Use HR HDMI Locking cable for secure locking.
2	HDMI Output	Connect the HD Display using HDMI cable.
3	Audio Output	Use RCA connector to connect to audio devices.
4	RS-232	Connect the RS-232 port to the PC using RS-232 cable.
5	Power Supply	Plug the 12VDC power supply and connect the adapter to the AC Wall Outlet.

### 3.3 IR Remote Controller



1	Input	Use these buttons to select the Input. ◀▶ Use these buttons to quickly switch the Inputs.
2	Mode	Use these buttons to change the Multiview layout.
3	Resolution	Use these buttons to change the resolution of the output video. Supported Resolutions: 780p, 1080i, 1024x768, 1360x768, 1080p @ 60Hz.
4	Picture	Use these buttons to change the Contrast, Brightness, Color and Sharpness properties of the Output video. Note that the changes will affect all the four Inputs simultaneously. ◀▶ Use this buttons to change the Picture parameters.

## 4-port Seamless-Switch with Multi-view

If the SSW-HD-4 needs to be installed in a standard 19” rack, you can use the included rack ears.



### 3.4 Multi View Layouts

SSW supports three different Multiview modes. The Output modes can be configured using Front panel, IR Remote Controller PC-GUI and RS-232. When an input is selected in Multiview mode it is considered as a primary input and the other inputs dynamically arrange themselves in the layout as shown below. Note that Auto Scan can be enabled in Multiview mode.



### Multi View Modes

#### 3.5 Auto Scan (Auto Switch)

The Auto Scan feature is another important feature of the seamless switcher. When the Auto Scan feature is enabled, the SSW automatically switches to the latest input plugged. So even if currently selected input has video and you plug in a new input, it will switch to the new input.

In this mode, when the selected input is unplugged, the SSW automatically switches to another input with active video (scans from input 4 to input 1).

To enable Auto Scan, hold **Output Mode** button for 7 Seconds or until the button light starts blinking.

Auto Scan mode is disabled as soon as you switch the input manually. However, it remains active when changing the Output Mode or Output Resolution. Note that you can lock the front panel buttons using RS-232 commands.

### 3.6 Locking

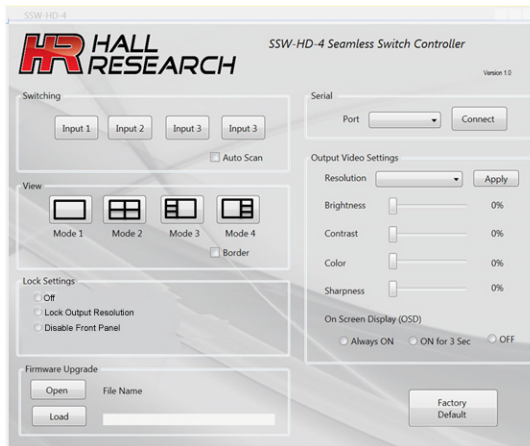
The Locking feature provides two modes to disable the front panel buttons partially or fully. The locking modes can be accessed using RS-232 or PC-GUI.

### 3.7 Factory Default

Factory default applies default setting to the unit. Factory default can be done from Front panel, RS-232 and PC-GUI. To do the Factory default from the front panel hold the **Output Resolution** button for 7 seconds or hold until you see all the inputs buttons blink once.

### 3.8 PC-GUI

The SSW-HD-4 can be controlled using a free PC GUI. The PC-GUI uses the RS-232 port on the device. Windows® GUI is available on the product's webpage.

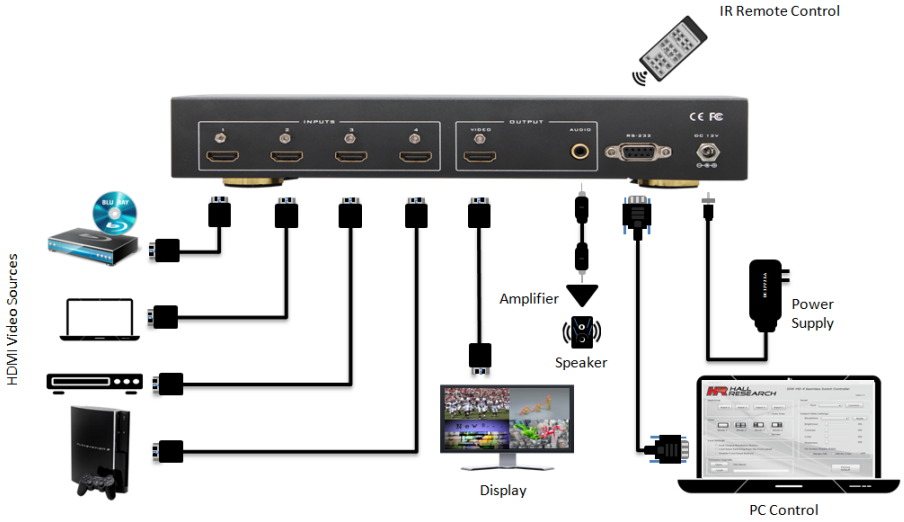


PC-GUI

## 4.0 Installation

1. Connect up to four HDMI Sources to the HDMI Input ports of SSW.
2. Connect an HD display to the HDMI Output port of SSW.
3. Optional: Connect an RS-232 Cable from the RS-232 port of SSW to the RS-232 connector of any RS-232 controller (PC).
4. Optional: Connect compatible audio devices using RCA cable to the SPDIF port.
5. Connect the included 12V DC Locking Power supply. Do not over tighten the locking power connector.
6. Connect the power supply to an available electrical outlet.

## 4-port Seamless-Switch with Multi-view



**Block Diagram**

### 4.1 RS-232

The Serial port on the SSW is always active. When the changes are made from the front panel or using IR controller the corresponding Serial commands are sent over RS-232 as a response. This allows easy integration of SSW-HD-4 with 3rd party controllers.

Description	Setting
Baud Rate	19200
Data bits	8
Parity	None
Stop bits	1
Flow control	None

### 4.2 Serial Commands

Note that all the commands should be in upper case and should end with Carriage Return <CR>.

Command	Description	Response
<b>S SOURCE n</b> n = 0 to 4	Selects the Primary HDMI Input.	
Note: <b>S SOURCE 0</b>	Blanks the Output .	-No Response-
E.g. <b>S SOURCE 1</b>	Selects the HDMI Input #1. <b>(Default)</b>	
<b>R SOURCE</b>	Read the status of primary HDMI	<b>SOURCE n</b>



<b>S OUTPUT n</b>	Set the Output resolution. n = 1 -- (1080p) <b>(Default)</b> n = 2 --(720p) n = 3 --(1080i) n = 4 --(1024x768) n = 5 -- (1360x768)	-No Response-
E.g. <b>S OUTPUT 1</b>	Set the Output resolution to 1080p	
<b>R OUTPUT</b>	Read the status of the Output resolution	<b>OUTPUT 1</b>
<b>S MODE n</b> <b>n = 1 to 4</b>	Set the Multiview mode. n = 1 -- Mode 1 <b>(Default)</b> n = 2 -- Mode 2 n = 3 -- Mode 3 n = 4 -- Mode 4	-No Response-
E.g. <b>S MODE 2</b>	Set Multiview Mode #2	
<b>R MODE</b>	Read the status of the Multiview mode	<b>MODE 2</b>
<b>S TILE n</b> <b>n=1 to 4</b>	Set the position of the Input in multi view mode.	<b>S TILE n</b>
<b>R TILE</b>	Read the status of the Tile.	<b>TILE n</b>
<b>S KEYLOCK n</b> <b>n = 0 to 2</b>	Set the lock for the front panel. n= 0 -- Turn off the Lock. <b>(Default)</b> n= 1 -- Lock the Resolution. n= 2 -- Lock the Front Panel. <b>Note:</b> The Keylock feature only disables the front panel, and does not apply to IR Remote.	<b>S KEYLOCK n</b>
<b>R KEYLOCK</b>	Read the status of the key lock.	<b>KEYLOCK n</b>
<b>S OSD n</b> <b>n=0 to 2</b>	Set the OSD mode. n=0 --OSD OFF <b>(Default)</b> n=1 --Display OSD for 3 Seconds n=2 --Always ON	<b>S OSD n</b>
<b>R OSD</b>	Read the status of the OSD.	<b>OSD n</b>
<b>S CONTRAST n</b> <b>n=0 to 100</b>	Set the Contrast. n=50 <b>(Default)</b>	<b>S CONTRAST n</b>
<b>R CONTRAST</b>	Read the status of the contrast.	<b>CONTRAST n</b>
<b>S BRIGHTNESS n</b> <b>n=0 to 100</b>	Set the Brightness. n=50 <b>(Default)</b>	<b>S BRIGHTNESS n</b>
<b>R BRIGHTNESS</b>	Read the status of the brightness.	<b>BRIGHTNESS n</b>
<b>S SATURATION n</b>	Set the Saturation.	<b>S SATURATION n</b>

## 4-port Seamless-Switch with Multi-view

<b>n=0 to 100</b>	n=50 ( <b>Default</b> )	
<b>R SATURATION</b>	Read the status of the saturation.	<b>SATURATION n</b>
<b>S SHARPNESS n</b> <b>n=0 to 100</b>	Set the Sharpness. n=50 ( <b>Default</b> )	<b>S SHARPNESS n</b>
<b>R SHARPNESS</b>	Read the Sharpness.	<b>SHARPNESS n</b>
<b>S AUTOSCAN n</b> <b>n=0 to 1</b>	Set the Auto scan. n=0 -- Disable the auto scan n=1 -- Enable the auto scan See Auto Scan_ for more information.	<b>S AUTOSCAN n</b>
<b>R AUTOSCAN</b>	Read the status of the Auto Scan.	<b>AUTOSCAN n</b>
<b>S BORDER n</b> <b>n= 0 to 1</b>	Enable or Disable the border n=0 -- Disable the border ( <b>Default</b> ) n=1 -- Enable the border.	<b>S BORDER n</b>
<b>R BORDER</b>	Read the status of the border.	<b>BORDER n</b>
<b>S RESET 1</b>	Reset the unit to factory default.	<b>S RESET 1</b>

## 5.0 Troubleshooting

There are no field serviceable parts or circuits in the device. Opening the unit will void the warranty.

### 5.1 Contacting Hall Research

If you determine that the SSW-HD-4 is malfunctioning, do not attempt to repair the unit instead, contact Hall Research Technical Support at 714-641-6607 or [support@hallresearch.com](mailto:support@hallresearch.com).

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.

### 5.2 Shipping and Packaging

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.

### 5.2 Optional accessories

For controlling the device from a PC you may need a USB to RS-232 adapter

- Compliant with the USB Specifications
- Supports RS-232 serial interface
- Supports up to 15200 kbps data transfer rate
- Supports Plug & Play specification
- USB host device drivers supplied
- 



**Model USB-RS232-1**

## 6.0 Specifications

<b>Video Resolution</b>	Output: 1080p@60Hz, 1080i@60Hz, 720p@60Hz, 1024x768@60Hz, 1360x768@60Hz  Input: 480i@60Hz, 480p@60Hz, 576i@50Hz, 576p@50Hz, 720p@50/60Hz, 1080i@50/60Hz, 1080p@24/30/50/60Hz, 800x600@60Hz, 1024x768@60, 1280x720@60Hz, 1920x1080@60Hz
<b>Video Bandwidth</b>	Single-link to 165 MHz (4.95 Gbps)
<b>Audio Standards</b>	PCM [2/5.1/7.1]CH, Dolby Digital 2~5.1CH, DTS 2~5.1CH, Dolby True HD and DTS-HD Master Audio
<b>Input Ports</b>	4 x HDMI Female with Locking Capability 1 x RS-232
<b>Output Ports</b>	1 x HDMI Female with Locking Capability 1x S/PDIF audio out with RCA Connector
<b>Power Supply</b>	12 VDC @ 2.5A
<b>Power Consumption</b>	10W (Max)
<b>ESD Protection</b>	Human Body model: 8kV (air-gap discharge) 4kV (contact discharge)
<b>Dimensions</b>	9.85" (250mm) W x 4.65" (118mm) D x 1.25" (32mm) H
<b>Weight</b>	Product: 1.8 lbs (0.8 kg)
<b>Enclosure</b>	Metal
<b>Operating Temperature</b>	Storage: -4 to +140 °F (-20 to +60 °C) Operating: +32 to +122 °F (0 to +50 °C) 20% to 90% RH non-condensing



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