HALL RESEARCH

USER'S MANUAL

SC-VHD-HD

VGA / YPbPr to HDMI™ Converter with Audio

Convert and Scale VGA video from PC or YPbPr from DVD to HDMI

UMA1240 Rev 1

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

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FCC RADIO FREQUENCY INTERFERENCE STATEMENT

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

Contents

1. Introduction

1.1 General

Thank you for purchasing Hall Research's SC-VHD-HD. This unit can convert and scale Component Video (YPbPr) or VGA video from PC along with audio into an HDMI™ signal. The unit takes advantage of the HDMI™ signal's ability to embed audio with video. For convenience, both stereo analog and optical digital audio inputs and outputs are provided.

The SC-VHD-HD has the ability to output a wide range of resolutions and refresh rates regardless of the input timing and resolution. The output resolution can automatically match the native resolution of the display connected to its output (based on the EDID setting of the display), or it can be specified by the user.

The video processor combines the functions of a video scaler, scan-converter, and format transformer. The SC-VHD-HD also includes a horizontal mirroring feature, which is useful for Teleprompters and rear projection systems.

The unit encodes the audio input signal from TOSLink (Optical) or Analog (L/R) to both digital and analog formats and outputs it on HDMI™ along with video. For convenience, the unit features integrated mounting brackets.

The SC-VHD-HD features an OSD menu for configuration, picture setup, system information and other advanced options.

1.2 Features

- HDMI™, HDCP, and DVI Compliant
- Any PC or HDTV video signal can be scaled up or down to any other PC or HDTV resolution
- State-of-the-art video scaling for real-time frame rate capture & conversion
- OSD adjustment of contrast, brightness, color, size, sampling clock, phase, position, audio source and delay
- Horizontal mirroring (X-axis flip)
- Analog and digital (LPCM) audio inputs and outputs

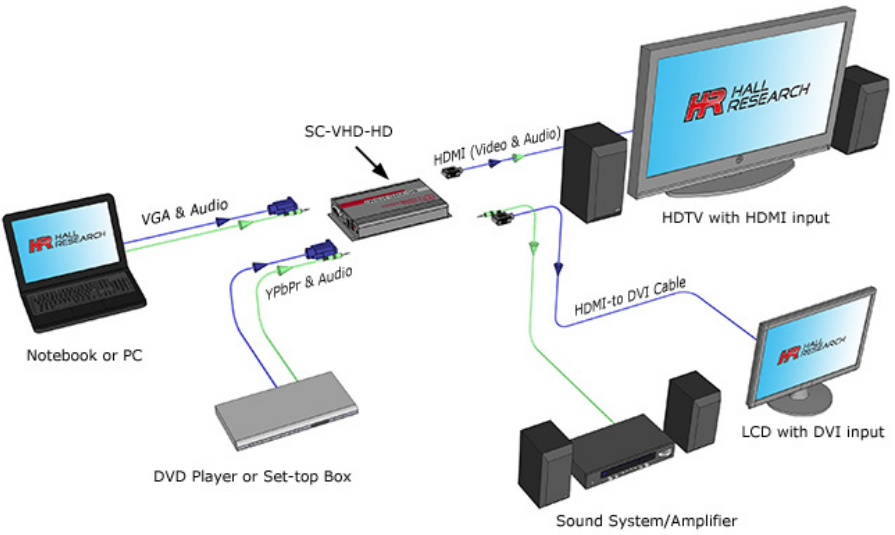
2. Installation

2.1 Connections

The SC-VHD-HD accepts either analog PC or component YPbPr inputs. The output is HDMI™, but can also connect to DVI monitors using HDMI-to-DVI cable (not included).

For YPbPr sources, use a 3-RCA to DB15 cable (included).

2.2 Connection Block Diagram



2.3 Package Contents

(1) Model SC-VHD-HD
(1) 5V DC Universal Power Supply (Do Not Substitute)
(1) HD15 to 3-RCA Component video input cable
(1) HD15 to HD15 VGA video input cable
(1) 3.5mm to (2) RCA Audio Cable
(1) User's Manual

3. Configuration & Operation

3.1 Input and Output

3.2 OSD Menu

Pressing the Menu button will bring up the OSD menu controls on the screen. Use the up and down arrows to your desired item, then press MENU to select and enter into sub menu. Select EXIT from a submenu to go back to the main menu or from the main menu to exit the OSD.

Top Menu	Sub-Menu	Value
PICTURE SETTING	CONTRAST	0 to 100% (DEFAULT=43)
	BRIGHTNESS	0 to 100% (DEFAULT=54)
	EXIT	
FINETUNE	PHASE	0 to 100% (DEFAULT=61)
	CLOCK	0 to 100% (DEFAULT=50)
	H-POSITION	0 to 100% (DEFAULT=50)
	V-POSITION	0 to 100% (DEFAULT=50)
COLOR SETTING	RED	0 to 100% (DEFAULT=48)
	GREEN	0 to 100% (DEFAULT=48)
	BLUE	0 to 100% (DEFAULT=52)
	EXIT	
OUTPUT SETTING	SIZE	FULL, OVERSCAN, UNDERSCAN, LETTERBOX, PANSCAN (DEFAULT=FULL)
	RESOLUTION	NATIVE* , 640x480, 800x600, 1024x768, 1280x800, 1440x900, 1280x1024, 1400x1050, 1600x900, 1600x1200, 1680x1050, 1920x1200, 480p, 576p, 720p50, 720p60, 1080i50, 1080i60, 1080p50, 1080p60 (DEFAULT= NATIVE)
	MIRROR	OFF or ON (DEFAULT = OFF)
	TIMING SHIFT	OFF or ON (DEFAULT = OFF)
	EXIT	
AUDIO SETTING	DELAY	OFF/40ms/110ms/150ms (DEFAULT = OFF)
	INPUT	ANALOG / OPTICAL(DEFAULT = ANALOG)
	SOUND	ON or MUTE (DEFAULT = ON)
	EXIT	

OSD SETTING	H-POSITION	0 to 100% (DEFAULT=10)
	V-POSITION	0 to 100% (DEFAULT=90)
	TIMER	0 to 100% (DEFAULT=10)
	BACKGROUND	0 to 100% (DEFAULT=63)
	DISPLAY	INFO/ON/OFF (DEFAULT = OFF)
FACTORY RESET		Reset unit parameters to default state
INFORMATION		SOURCE (Input Interface) INPUT (Input Resolution) OUTPUT (Output Resolution) VERSION (Firmware Version) MODEL SC-VHD-HD
EXIT		EXIT OSD

* The NATIVE output setting causes the scaler output to be the best matched to the native resolution of the connected display.

3.3 Setting the Output Resolution

3.3.1 Obtaining an image on the screen

As shipped from the factory, or after a factory default reset, the unit output resolution setting should be “NATIVE”. This means that upon power up the device will read the EDID of your display and output a compatible resolution resulting in a picture. However, if the output setting is not at “NATIVE”, or if the unit cannot ascertain the EDID of the display, then you may not get a picture and since most settings are done by means of an on-screen display (OSD), it is necessary to get an image on the display first, before you can navigate through the OSD menus.

For this purpose, you can use one of two preset button combinations to set a resolution that your display supports. Two options are available (depending on the display device):

1. If the display is HDTV compatible (with an HDMI connection); then a resolution of 720p should result in an image.
2. If the display is PC compatible (DVI), then XGA (1024x768) should result an image.

Once you have an image, you can call up the OSD menu to make further changes as necessary.

Setting Resolution using **Quick Select** buttons
*At any time, press the **UP ARROW** ↑ and **MENU** buttons together to directly set the output resolution to 1024x768 @ 60 Hz .*
*Press the **MENU** and **DOWN ARROW** ↓ together to set the output resolution to 720P @ 60 Hz.*

3.3.2 Recalling Factory Defaults

Factory defaults may be recalled via (2) methods:

1. Press the MENU button to display the OSD. Using the ↓↑ arrows buttons, move to highlight the 'FACTORY RESET' option and press the **MENU** button. The unit will reset all parameters to the factory defaults. The output resolution will be set at 'NATIVE', which should result in a picture being displayed. The actual resolution of the display monitor in this mode is dependant on the monitor and not the SC-VHD-HD.

2. Press and hold the **UP ARROW** ↑and **DOWN ARROW** ↓ button simultaneously for 3 seconds. This causes all parameters to revert to factory defaults.

3.3.3 Setting the output resolution

Press the **MENU** button to open the OSD and use the arrow buttons (**↑↓)** to select the OUTPUT option. Press the **MENU** button.

Use arrows to scroll thru the available resolutions listed. See Section 6 below for a list of all available resolutions.

The default output resolution after a factory reset of the SC-VHD-HD is "Native".

If connected to an HDTV via HDMI input, then use the highest resolution your display supports from among 480p, 720p50/60 or 1080i/p. If a DVI LCD is used, you have a wide range of PC resolutions available (see section 6 for a complete listing).

4. Troubleshooting

There are no field serviceable parts or circuits in the device. If you think the device is malfunctioning (or you have no picture output), please try to use the methods described in Section 3.3 to obtain a picture first.

4.1 Contacting Hall Research

If you determine that your SC-VHD-HD 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

5. Specifications

Video Bandwidth	225 MHz/6.75 Gbps
Input Ports	1x HD15 (supports both VGA or YPbPr), 1x 3.5mm audio, 1x optical audio, 1x USB (Service only)
Output Ports	1x HDMI, 1x optical audio, 1x 3.5mm audio
Power Supply	5 VDC @ 2.6A DC (US/EU Standard, CE/FCC/UL Certified)
Output Resolution	Up to 1080p & WUXGA@60
Audio Sample Rate	Up to 48 kHz / Optical & HDMI
Dimensions	6.5” (165.1mm) D x 4” (102mm) W x 1” (25.4mm) H
Weight	Shipping: 2.85 lbs (1.29 kg) Product: 0.74 lbs (0.34 kg) each
Chassis Material	Aluminum
Operating Temperature	+32 to +122 °F (0 to 50 °C) 20%~90%, non-condensing
Power Consumption	4.8W
ESD Protection	Human Body model: ±8 kV (air-gap discharge) ±6 kV (contact discharge)
MTBF	90,000 estimated

Notice

Use only regulated 5v DC supply (center positive) as supplied with the unit. Use of any other voltage will cause damage to the unit and void warranty.

6. Supported Input and Output Resolutions

	Input Resolutions Supported		Output Resolutions	
	PC	SD/HD	PC	SD/HD
640x480 (VGA) @60/72/75/85	☑		☑@60	
800x600 (SVGA)@56/60/7275/85	☑		☑@60	
1024x768 (XGA)@60/70/75/85	☑		☑@60	
1280x800 (WXGA)@60	☑		☑@60	
1440x900 (WXGA+)@60	☑		☑	
1600X900@60	☑		☑	
1280x1024 (SXGA)@60/75/85	☑		☑@60	
1400x1050 (SXGA+)@60	☑		☑	
1600x1200 (UXGA)@60	☑		☑	
1680x1050 (WSXGA)@50/60	☑		☑@60	
1920x1200 (WUXGA)@60	☑		☑	
480I		☑		
576I		☑		
480P		☑		☑
576P		☑		☑
720p@50/60		☑		☑
1080i@50/60		☑		☑
1080p@50/60		☑		☑

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