



# SC-HDMI-2A

## HDMI Scaler & Audio Extractor

Scale HDMI or DVI signal and extract or embed  
digital or analog audio to HDMI

UMA1196 Rev. A

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](http://www.hallresearch.com) E-mail: [info@hallresearch.com](mailto:info@hallresearch.com)



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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.



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# 1. Introduction

## 1.1 General

The SC-HDMI-2A can scale a DVI or HDMI signal up or down to various resolutions. It can embed external analog or digital audio sources in to the output HDMI stream, and conversely can extract audio from HDMI source and output it in both analog (L/R line level) and digital (S/PDIF TOSLINK) formats.

The SC-HDMI-2A has the ability to output a wide range of resolutions and refresh rates regardless of the input timing and resolution. The output resolution can be set to match the native resolution of the display or manually specified by the user. The unit is also able to perform a real-time horizontal axis flip (mirroring) which makes it ideal for teleprompting applications.

The SC-HDMI-2A features an OSD menu for configuration, picture setup, system information and other advanced options.

## 1.2 Features

- Scales any DVI or HDMI video signal up or down
- Extracts audio from an HDMI source and outputs it simultaneously on analog and digital S/PDIF audio
- Embeds audio to an HDMI stream from analog or digital S/PDIF audio source
- Horizontal axis flip (mirroring) for teleprompter apps
- State-of-the-art video scaling for real-time frame rate capture & conversion
- Supports 50/60Hz frame rate conversion
- Motion video adaptive, temporal de-interlacing, and 3:2 / 2:2 pull-down
- Embed audio into DVI video from PC and create an HDMI output at the native resolution of your display

## 2. Installation

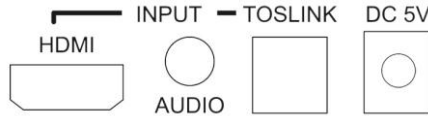



Figure 1 - Inputs

**HDMI** – HDMI input from source

**AUDIO** – 3.5mm stereo jack input from source

**TOSLINK** – S/PDIF Optical (TOSLINK) input from source

**DC 5V** – 5V DC voltage, center positive



**Notice**

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

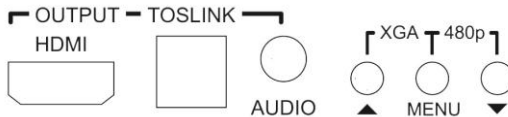


Figure 2 - Outputs

**HDMI** – HDMI output to display

**AUDIO** – 3.5mm stereo jack output to audio system

**TOSLINK** – S/PDIF Optical (TOSLINK) output to digital audio receiver

**Up arrow** – Navigate up in OSD menu. Push in combination with MENU button to switch to XGA resolution.

**MENU** – Push to bring up OSD menu. Push to select in OSD.

**Down arrow** - Navigate down in OSD menu. Push in combination with MENU button to switch to 480p resolution.

## 3. Operation

### 3.1 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
CONTRAST		0 to 100%
BRIGHTNESS		0 to 100%
FINETUNE	HUE	0 to 100%
	SATURATION	0 to 100%
	SHARPNESS	0 to 100%
COLOR	RED	0 to 100%
	GREEN	0 to 100%
	BLUE	0 to 100%
SIZE		FULL, OVERSCAN, UNDERSCAN, LETTERBOX, PANSCAN
OUTPUT		NATIVE , 640x480, 800x600, 1024x768, 1280x800, 1440x900, 1280x1024, 1400x1050, 1600x1200, 1680x1050, 1920x1200, 480i, 480p, 576i, 576p, 720p50, 720p60, 1080i50, 1080i60, 1080p50, 1080p60
AUDIO	SOURCE	HDMI, L/R, OPTICAL
	DELAY	OFF, 40ms, 110ms, 150ms
	SOUND	ON, MUTE
OSD	H-POSITION	0 to 100%
	V-POSITION	0 to 100%
	TIMER	0 to 100
	BACKGROUND	0 to 100%
	OSD TEXT	OFF, ON
FACTORY RESET		Reset unit parameters to default state
INFORMATION		SOURCE (Input Interface) INPUT ( Input Resolution) OUTPUT (Output Resolution) VERSION (Firmware Version)
MIRROR		OFF, ON
EXIT		EXIT OSD


## 3.2 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. Since most settings are done by means of an on-screen display (OSD), it is necessary to get an image on the display first.

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 480p 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 if necessary.

At any time, pressing the **UP ARROW**  and **MENU** button together will change the output resolution to 1024x768 @ 60 Hz.

Pressing the **MENU** and **DOWN ARROW**  together will change the output resolution to 480P @ 60 Hz.

## 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 through the available resolutions listed. See Section 5.1 below for a list of all available resolutions.

### 3.4 Extracting Audio

The SC-HDMI-2A can extract audio from the HDMI™ source input and simultaneously output to analog and digital S/PDIF audio out.

Note that the extracted HDMI™ audio may lead the video as it appears on the display by several milliseconds. This is due to added latency due to processing of video that occurs in the display. The SC-HDMI-2A can correct for this with a built-in audio delay of 40ms, 110ms, or 150ms. If a different delay time is needed then we recommend using the Hall Research Universal Audio Delay Processor (AD-340) which is capable of delaying digital or analog audio for any amount of time up to 510ms.

### 3.5 Embedding Audio

The SC-HDMI-2A can embed audio into the HDMI™ output stream. To embed audio you must pull up the OSD menu, navigate to the AUDIO menu item, and change the source to wherever you want audio to come from: HDMI, L/R (analog stereo), or OPTICAL (digital S/PDIF).

Note that embedding audio does require a display. If no display is connected then the HDMI™ source will not output a stream.

### 3.6 Factory Defaults

There are two ways to reset the unit back to its factory default configuration.

1. If you are able to access the OSD menu you can select the option from the main menu.
2. You can also set the device back to factory defaults by pressing and holding the MENU button while connecting the power supply.

## 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 3.2 to obtain a picture first. If that does not work, try resetting back to the Factory Defaults as described in 3.6.

### 4.1 Contacting Hall Research

If you determine that your device 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.

### 4.2 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. Specifications

Inputs	(1) HDMI (1) 3.5mm AUDIO, (1) OPTICAL AUDIO
Outputs	(1) HDMI (1) 3.5mm AUDIO, (1) OPTICAL AUDIO
Power Supply	5V/2.6A DC (CE/FCC/UL certified)
Dimensions	4" (W) x 6.5" (D) x 1" (H) (101.6mm) x (165mm) x (25.4mm)
Weight	0.75 Lbs (340g)
Chassis	Aluminum
Operating Temp	32 to 122 DegF (0 to 50 DegC)

### 5.1 Supported Resolutions

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







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