

# Gefen

## Audio/Video Scaler Pro with Amplifier

EXT-AVSCALER-PRO

User Manual



[www.gefen.com](http://www.gefen.com)

**1080P**  
PROGRESSIVE

**HDMI**  
HIGH-DEFINITION MULTIMEDIA INTERFACE

**HDTV**

**Blu-ray Disc**

## ASKING FOR ASSISTANCE

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# CONTENTS

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- 1 Introduction
- 2 Operation Notes
- 3 Features
- 4 Unit Panel Layout
- 5 Unit Panel Descriptions
- 6 Unit Panel Descriptions
- 7 Connecting The Audio/Video Scaler Pro with Amplifier
- 8 RMT-SR-IR Remote Description
- 9 Operating The Audio/Video Scaler Pro with Amplifier
- 15 RMT-SR-IR Remote Installation
- 16 RMT-SR-IR Code Configuration
- 17 RS-232 Serial Control Interface
- 18 RS-232 Commands
- 20 Rack Mount Installation
- 21 Specifications
- 22 Warranty

# INTRODUCTION

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Congratulations on your purchase of the Audio/Video Scaler Pro with Amplifier. Your complete satisfaction is very important to us.

## **Gefen**

Gefen delivers innovative, progressive computer and electronics add-on solutions that harness integration, extension, distribution and conversion technologies. Gefen's reliable, plug-and-play products supplement cross-platform computer systems, professional audio/video environments and HDTV systems of all sizes with hard-working solutions that are easy to implement and simple to operate.

## **The Gefen Audio/Video Scaler Pro with Amplifier**

The Gefen Audio/Video Scaler Pro is an all-in-one, commercial-grade, rack-mountable AV switcher and scaler for a myriad of AV source types. Amplified 20W audio outputs for external speakers save further space by removing the need for a separate amplifier. The Gefen Audio/Video Scaler Pro allows you to scale video and digitally enhance key aspects such as color, aspect ratio, and AV noise. External audio and video are digitized and combined into an HDMI output signal along with external digital audio (S/PDIF and TOSLINK).

Video inputs can be standard definition or high definition television, computer or High-Definition DVI-I (DVI-A or DVI-D), Component, Composite, S-Video, and HDMI resolutions of up to 1080p. Outputs consist of two HDMI digital video outputs, two digital audio outputs (S/PDIF, TOSLINK), and two 20W speaker terminal outputs.

Anything from set-top boxes and DVD players to the next generation of gaming consoles including the Xbox 360 and PS3 can be plugged into the Audio/Video Scaler Pro.

Computer users will especially benefit with the scaling of VGA and DVI video to make better use of their viewing areas on wide screen monitors or televisions.

## **How It Works**

Audio/Video sources are connected to free ports on the scaler (see the next paragraph for further details). Output devices such as HD displays connect to one of the HDMI outputs. Easy to use on-screen menus accessible through the IR remote control allow for effortless setup and image adjustment to accommodate different viewing modes and screen sizes.

In order for HDMI output to contain digital audio, each video input source must be paired with a like type of analog or digital audio in order for the scaler to output HDMI with digital audio. For example, analog video sources VGA, Component and Composite/S-Video are input along with analog 2-channel L/R audio. For multichannel digital results, two HDMI or DVI-D sources could be input with external digital audio (S/PDIF or TOSLINK). The result in both cases is a single HDMI signal emerging from the two HDMI output jacks, with both embedded and external digital audio available on the coaxial and optical outputs.

## OPERATION NOTES

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### READ THESE NOTES BEFORE INSTALLING OR OPERATING THE AUDIO/VIDEO SCALER PRO WITH AMPLIFIER

- When initially powering on HDMI or DVI-D sources, it is important to have the A/V Scaler Pro with Amplifier's input selected to that source to ensure that the EDID (display information) is relayed properly.
- Only use speakers with an impedance of  $8\Omega$  with the A/V Scaler Pro with Amplifier.
- Discrete switching is available using the RS-232 serial communications port. Please see page 17 for more information.
- Only 2-channel stereo audio sources are output through the amplified speaker terminals. Multi-channel audio will not be output through these speaker outputs.
- HDMI 1.2 compliant
- HDCP compliant.

# FEATURES

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## Features

- Both digital and analog inputs are format converted and pixel re-scaled through the Home Audio/Video Scaler Pro with Amplifier. It outputs a large range of formats and resolutions that will easily match the native resolution/format of your display to ensure highest picture quality.
- DVI/HDCP/HDMI compliant input: Operates up to 165Mhz (Up to WUXGA @60Hz)
- Supports digital HD output up to 1080p
- Integrated 8-bit triple-ADC/PLL.
- Dual high quality scaling engines.
- Dual 3-D motion adaptive de-interlacers with smooth low-angle edge.
- Automatic 3:2 pull-down & 2:2 pull-down detection and recovery.
- High performance frame rate conversion engine.
- The Proprietary Advanced Color Engine technology gives: Brilliant and fresh color, Intensified contrast and details, Vivid skin tone, Sharp edge, Accurate and independent color control
- Option to select audio input from HDMI or TOSLINK/SPDIF audio source
- 3D noise reduction on analog inputs only.
- Operates through on-screen display (OSD) menu control and remote control
- Digital Audio Delay to match audio/video timing
- Less than one frame delay allowing for gaming
- Aspect Ratio Control
- Reset Button

## Package Includes

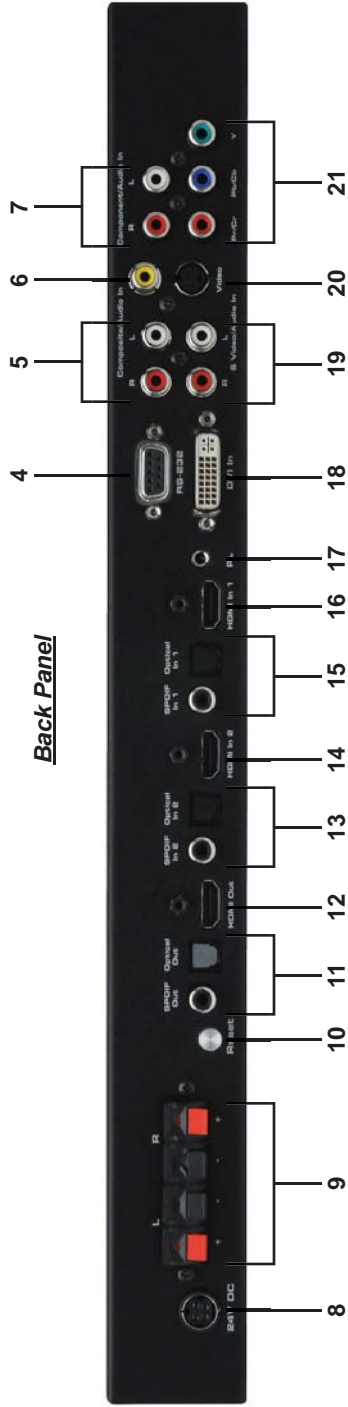
- (1) Gefen Audio Video Scaler Pro
- (1) 6 Foot HDMI Cable (M-M)
- (1) 24V DC Power Supply
- (1) IR Remote control
- (1) Set of Rack Ears
- (1) User's Manual

# UNIT PANEL LAYOUT

## Front Panel



## Back Panel



## UNIT PANEL DESCRIPTIONS

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### **1 IR Receiver**

This receiver will accept commands from the included RMT-SR-IR remote control. There must be line-of-sight between this receiver and the remote control for successful operation to occur.

### **2 Power Indicator LED**

This LED indicator will become active once the included 5V DC power adapter has been properly connected between the sender unit and an open wall power socket.

### **3 Selected Input LED**

Each input source has an LED that will become active when it is selected. All input sources are listed below.

CV	Composite input
SV	S-video input
Comp	Component input
HDMI 1	HDMI 1 input
HDMI 2	HDMI 2 input
DVI	DVI input

### **4 RS-232 Serial Communications Port**

This port can accept commands from an RS-232 device to control the input switching. Please see page 17 for more details on this feature.

### **5 Analog Stereo Input Port for Composite**

This input will accept audio from one pair of RCA analog stereo cables for use with the composite input.

### **6 Composite Input Port**

This input will accept video from one RCA composite source. The composite source will be digitally converted for output through the HDMI Output Port.

### **7 Analog Stereo Input Port for Component**

This input will accept audio from one pair of RCA analog stereo cables for use with the component input.

### **8 24V Power Supply Input Port**

Connect the included 24V DC power supply to this input. Once properly connected between the unit and an open wall power socket, the Power Indicator LED should become active.

### **9 Stereo Speaker Terminals**

The stereo speaker output terminals use spring-loaded compression. These terminals are designed to accept 8Ω speakers.

## UNIT PANEL DESCRIPTIONS

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### **10 Reset Button**

This button will reset the unit and cycle power off and on again.

### **11 Digital Audio Output Ports**

There are two digital audio output types, S/PDIF (coaxial) and TOSLINK (optical). Both digital outputs are always active.

### **12 HDMI Output Port**

Connect the HDMI capable device to this output port. This output port supports both audio and video.

### **13 Digital Audio Input Ports for HDMI 2**

There are two digital audio input types, S/PDIF (coaxial) and TOSLINK (optical). Both these inputs are individually selectable in the GUI for use with the HDMI 2 input.

### **14 HDMI 2 Input Port**

Connect a HDMI source device to this input port. This input port supports both audio and video.

### **15 Digital Audio Input Ports for HDMI 1**

There are two digital audio input types, S/PDIF (coaxial) and TOSLINK (optical). Both these inputs are individually selectable in the GUI for use with the HDMI 1 input.

### **16 HDMI 1 Input Port**

Connect a HDMI source device to this input port. This input port supports both audio and video.

### **17 Analog Stereo Input Port for DVI**

This input will accept audio from one 3.5mm analog stereo cable for use with the DVI input.

### **18 DVI-I Input Port**

This input port will accept a DVI-A (analog) or DVI-D (digital) signal. DVI-A signals will be digitally converted for output through the HDMI Output Port.

### **19 Analog Stereo Input Port for S-Video**

This input will accept audio from one pair of RCA analog stereo cables for use with the s-video input.

### **20 S-Video Input Port**

This input will accept video from one s-video source. The s-video source will be digitally converted for output through the HDMI Output Port.

### **21 Component Input Port**

This input will accept video from one 3 RCA component source. The component source will be digitally converted for output through the HDMI Output Port.

# **CONNECTING THE AUDIO/VIDEO SCALER PRO WITH AMPLIFIER**

## **How to Connect the Audio/Video Scaler Pro with Amplifier**

1. Connect source devices to the Audio/Video Scaler Pro with Amplifier using user supplied cables. The following input options are available.

- Composite - Single RCA video cable.
- S-Video - Single s-video cable.
- Component - 3 RCA video cables.
- HDMI 1 - Single HDMI cable.
- HDMI 2 - Single HDMI cable.
- DVI - Single DVI-I, DVI-A, or DVI-D cable.

**NOTE:** All analog video sources will be converted to digital an output through the HDMI Output Port.

2. Connect audio sources to the Audio/Video Scaler Pro with Amplifier using user supplied cables. Audio input options are available for the following source inputs.

- Composite - Analog stereo using a 2 RCA analog stereo cable.
- S-Video - Analog stereo using a 2 RCA analog stereo cable.
- Component - Analog stereo using a 2 RCA analog stereo cable.
- HDMI 1 - Embedded audio through the HDMI cable and both a digital S/PDIF (coaxial) and digital TOSLINK (optical) using digital audio cables.
- HDMI 2 - Embedded audio through the HDMI cable and both a digital S/PDIF (coaxial) and digital TOSLINK (optical) using digital audio cables.
- DVI - Analog stereo using a 3.5mm analog stereo cable.

**NOTE:** All analog sources will be converted to digital and output through the HDMI, digital S/PDIF, and digital TOSLink outputs.

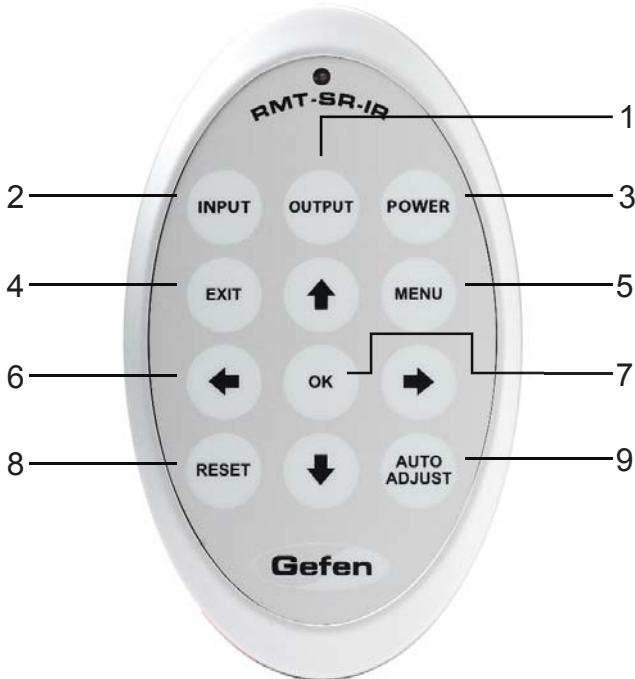
3. Connect a HDMI cable device to the Audio/Video Scaler Pro with Amplifier's HDMI Output Port using the supplied HDMI cable.
4. Connect a right and left speaker to the spring-loaded speaker terminals.

**NOTE:** Speaker impedance must be 8Ω or higher.

5. Optionally, connect the digital S/PDIF (coaxial) or digital TOSLINK (optical) audio outputs to a digital audio input device.
6. Connect the included 24V DC power supply to the Audio/Video Scaler Pro with Amplifier and to an open wall power socket.
7. Power on the display first and the sources second.

## RMT-SR-IR REMOTE DESCRIPTION

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1. Output - Cycles through the available output resolutions. Please see the section A/V Scaler Pro with Amplifier CONFIGURATION / Output on page 8 for the output resolution table.
2. Input - Cycles through all of input sources. The selectable inputs are Composite, S-Video, Component, HDMI 1, HDMI 2, and DVI.
3. Power - Turns the unit on and off (standby).
4. Exit - Exits the current menu option and menu system.
5. Menu - Displays the menu system for adjustment of options.
6. Navigation Keys - These include up, down, left, and right buttons for navigating the menu system. (When not in the GUI, up and down will control the up and down volume for the amplified speaker outputs.)
7. The OK button will select specific menu options for adjustment and will also confirm/cycle-through selections (Output/Input). (When not in the GUI, the OK button will mute/un-mute all audio outputs)
8. Reset - Resets the input and output resolutions to factory default.
9. Auto Adjust - Sets the display for optimal resolution and aspect ratio based on the display's EDID information and the currently selected sources output resolution.

# OPERATING THE AUDIO/VIDEO SCALER PRO WITH AMPLIFIER

## Entering the Menu System

Pressing the Menu button on the included RMT-SR-IR remote control will display the GUI (graphical user interface) for adjustment options.

The GUI is overlaid onto the outgoing video to the display. Therefore, the selected source must be outputting a compatible resolution for viewing on the display. If video is not visible on the display, the GUI will also fail to be displayed. To correct this, please follow the steps below.

1. Verify that the source is on and outputting a video signal.
2. Verify that the RMT-SR-IR remote channel is in the default position (page 13).
3. Verify that the A/V Scaler Pro with Amplifier is selected to the chosen source.
4. Press the Output button on the RMT-SR-IR remote control to cycle through output resolutions until video is displayed. Please see page 8 for a listing of the available output resolutions and cycle order.

## Navigation

Use the directional buttons to navigate the menu system. Press the OK button to enter a sub category and also to select a menu item for adjustment. Use the Left and Right buttons to adjust the selected menu item. Press the EXIT or OK button to return to the previous menu. Use the LEFT and RIGHT buttons to adjust selected options. Pressing the EXIT button while in the main menu will exit out of the menu system.

## MAIN MENU

The following are the main menu options. Use the UP and DOWN buttons to choose your desired subcategory and press OK to enter it.

**VIDEO**  
**COLOR**  
**OUTPUT**  
**OSD**  
**AUDIO**  
**INFORMATION**

## VIDEO

### Picture Mode

Preset and user configurable settings for different viewing scenarios. Preset settings will not allow user adjustment. **Only the USER option will allow customized video settings. The USER settings are saved.**

Options:

- Standard - useful for general content
- Movie - useful for dimly lit environments
- Vivid - useful for accentuating colors for a more vibrant image
- User - user configurable settings

**NOTE:** User settings are saved. However, user settings for the digital inputs (HDMI 1, 2 and DVI) are linked and user settings for the analog inputs (Composite, S-Video, and Component) are linked. i.e. adjustments to video user settings made on HDMI 1 will be reflected in HDMI 2.

# OPERATING THE AUDIO/VIDEO SCALER PRO WITH AMPLIFIER

## VIDEO CONTINUED

Press OK to begin adjusting settings. Use the LEFT and RIGHT buttons to change settings. Press the OK button once the desired settings are made.

### Contrast

Adjusts the contrast in increments of 1 on a scale of 1 to 100 (default 50).

### Brightness

Adjusts the brightness in increments of 1 on a scale of 1 to 100 (default 50).

### Hue

Adjusts the hue in increments of 1 on a scale of 1 to 100 (default 50).

### Saturation

Adjusts the saturation in increments of 1 on a scale of 1 to 100 (default 50).

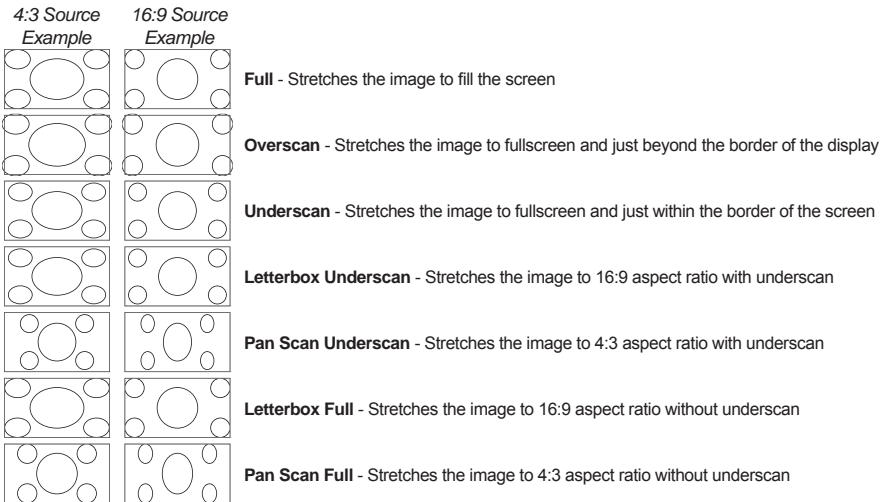
### Sharpness

Adjusts the sharpness in increments of 1 on a scale of 1 to 100 (default 50).

### Scale

Adjusts the aspect ratio of the video.

Options: Full, Overscan, Underscan, Letterbox Underscan, Pan Scan Underscan, Letterbox Full, Pan Scan Full



### N.R. (Noise Reduction) - Only for Composite and S-Video Inputs

Reduces video noise inherent in analog video signals.

Options:

- Off - default
- Low
- Middle
- High

# OPERATING THE AUDIO/VIDEO SCALER PRO WITH AMPLIFIER

## VIDEO CONTINUED

### H-Pos (Horizontal Position)

Adjusts the image's horizontal position on the screen.

- Adjusts in increments of 1 on a scale of 1 to 100 (default is 50)

### V-Pos (Vertical Position)

Adjusts the image's vertical position on the screen.

- Adjusts in increments of 1 on a scale of 1 to 100 (default is 50)

### Y/C Separation - Only for Composite Input

Selects the method in which the brightness and color are separated from the composite video signal.

Options:

- Auto - automatically selects the optimal method (default)
- 2D - Separation based on single frame analysis
- 3D - Motion adaptive color separation based on multiple frame analysis

### Coring - Only for Composite Input

Adjusts the threshold level for pixel noise evaluation. This relates to how much of the image is processed in regards to noise reduction.

- Adjusts in increments of ~6.5 on a scale of 1 to 100. (default is 20)

## OUTPUT

This menu sets the output resolution for all video sources. Use the directional buttons to choose your desired output resolution and press the OK button to set it. These outputs can be cycled through in the numbered order below when not in the menu system by pressing the OUTPUT button on the RMT-SR-IR remote control.

1	VGA	6	480i	11	576i	16	WXGA
2	SVGA	7	480p	12	576p	17	WSXGA
3	XGA	8	720p 60	13	720p 50	18	WUXGA
4	SXGA	9	1080i 60	14	1080i 50		Native
5	UXGA	10	1080p 60	15	1080p 50		

### Native

This option will select the native resolution of the connected display based on the EDID from the display.

**NOTE:** If a resolution that is not supported by the display is selected, the menu GUI will not longer be visible. To correct this, press the OUTPUT button on the RMT-SR-IR remote control and cycle through the output resolutions until a supported mode is displayed.

# OPERATING THE AUDIO/VIDEO SCALER PRO WITH AMPLIFIER

## COLOR

Press OK to begin adjusting settings. Use the LEFT and RIGHT buttons to change settings. Press the OK button once the desired settings are made.

### Color Tone

Sets the color for the appearance of white. Only the USER option will allow customized settings. The USER settings are saved.

- Normal - Normal white color appearance (default)
- Warm - Slight red shift to white appearance
- Cool - Slight blue shift to white appearance
- User - User adjustments to Red, Green, and Blue

### Red

Adjust the red color in regards to the appearance of white for the USER setting.

- Adjustments are in increments of 1 from 1 to 100 (default is 50)

### Green

Adjusts the green color in regards to the appearance of white for the USER setting.

- Adjustments are in increments of 1 from 1 to 100 (default is 50)

### Blue

Adjusts the blue color in regards to the appearance of white for the USER setting.

- Adjustments are in increments of 1 from 1 to 100 (default is 50)

## OSD (ON SCREEN DISPLAY)

Press OK to begin adjusting settings. Use the LEFT and RIGHT buttons to change settings. Press the OK button once the desired settings are made.

### H-Pos (Horizontal Position)

Adjusts the OSD's horizontal position on the screen.

- Adjustments are in increments of 1 from 1 to 100 (default is 50)

### V-Pos (Vertical Position)

Adjusts the OSD's vertical position on the screen.

- Adjustments are in increments of 1 from 1 to 100 (default is 50)

### Time Out

Adjusts the amount of idle time, **in seconds**, before the OSD is automatically exited.

- Adjustments are in increments of 1 from 1 to 100 (default is 10)

### Background

Sets the transparency level of the OSD background.

- Adjustments are in increments of ~12.5 on a scale of 1 to 100 (default is 50)

# **OPERATING THE AUDIO/VIDEO SCALER PRO WITH AMPLIFIER**

## **OSD (ON SCREEN DISPLAY) CONTINUED**

### **Remote Channel**

Sets the remote channel for use with the RMT-SR-IR remote control. If the selected channel in this menu and does not match the channel set in the RMT-SR-IR remote, the unit will cease to respond to IR commands from the remote.

- Selectable remote channel from 1 to 4 (default is 1)

## **AUDIO**

Press OK to begin adjusting settings. Use the LEFT and RIGHT buttons to change settings. Press the OK button once the desired settings are made.

### **Source**

Sets the audio source for current input.

Options for Composite:

- L/R1 - Composite analog audio input (default)

Options for S-Video:

- L/R2 - S-Video analog audio input (default)

Options for Component:

- L/R3 - Component analog audio input (default)

Options for HDMI 1:

- HDMI1 - HDMI 1 internal audio (default)
- Optical1 - Optical input 1
- Coaxial1\* - SPDIF input 1

Options for HDMI 2:

- HDMI2 - HDMI 2 internal audio (default)
- Optical2 - Optical input 2
- Coaxial2\* - SPDIF input 2

Options for DVI:

- L/R4 - DVI analog audio input (default)

### **Delay**

Sets the audio delay for lip syncing correction.

- Off - No delay (default)
- 40ms - 40 millisecond audio offset
- 110ms - 110 millisecond audio offset
- 150ms - 150 millisecond audio offset

### **Sound**

Select general audio output function. Mute/Un-mute can also be accessed by using the OK button on the included RMT-SR-IR remote control when not in the GUI.

- On - Use selected audio source (default)
- Mute - No sound output

**\*Coaxial is also know as SPDIF**

## **AUDIO CONTINUED**

### **Volume**

Adjusts the amplified speaker output volume. The volume can also be accessed by using the UP (volume up) and DOWN (volume down) buttons on the included RMT-SR-IR remote control when not in the GUI.

- Adjusts in increments of 1 on a scale of 1 to 100 (default is 50)

## **INFORMATION**

This menu will allow the user to view general information. There are no configurable options in this menu.

- Source - Displays current source
- Input - Displays current input source resolution
- Output - Displays current output resolution
- Version - Displays current firmware revision

## RMT-SR-IR REMOTE INSTALLATION

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1. Remove battery cover from the back of the RMT-SR-IR remote.
2. Verify that dip switches 1 & 2 are in the down (OFF) position. (See page 13)
3. Insert the battery, hold the battery so that you can see the positive side facing up. The side that is not marked must be facing down.
4. Test the RMT-SR-IR remote by pressing ONLY one button at a time. The indicator light on the remote will flash once each time you press a button.

### **WARNING:**

Do not press multiple buttons simultaneously and do NOT press buttons rapidly. These actions will cause the remote to reset and steps 1-4 will have to be repeated.

Note: The RMT-SR-IR ships with two batteries. Only one battery is required for operation, the other battery is complimentary.



# RMT-SR-IR CODE CONFIGURATION

## How to Resolve IR Code Conflicts

In the event that IR commands from other remote controls conflict with the supplied RMT-SR-IR remote control, changing the remote channel will alleviate this issue. The RMT-SR-IR remote control has DIP SWITCHES for configuring the remote channel. The A/V Scaler Pro with Amplifier must match the remote channel set in the RMT-SR-IR remote control. Please see page 10 for instruction on how to configure the channel on the A/V Scaler Pro with Amplifier. By default, both the A/V Scaler Pro with Amplifier and the RMT-SR-IR remote control are set to Channel 1.

### Remote



Remote Channel 1:  
Default



Remote Channel 2:



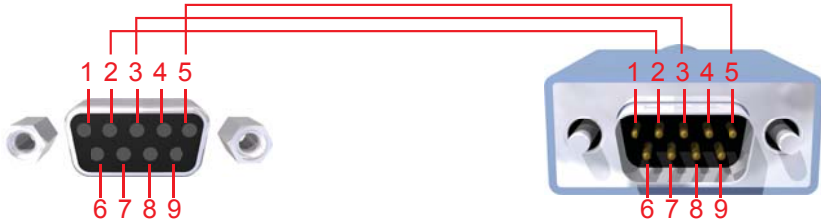
Remote Channel 3:



Remote Channel 4:



# RS-232 SERIAL CONTROL INTERFACE



Only Pins 2 (RX), 3 (TX), and 5 (Ground) are used on the RS-232 serial interface

## **RS232 Settings**

Bits per second ..... 19200

Data bits ..... 8

Parity ..... None

Stop bits ..... 1

Flow Control ..... None

## **Commands**

These commands are sent in ASCII format.

Command Code	Response	Description
S POWER 0	> POWER OFF	POWER OFF
S POWER 1	> POWER ON	POWER ON
S SOURCE 0	> SOURCE CV	CV INPUT
S SOURCE 1	> SOURCE SV	SV INPUT
S SOURCE 2	> SOURCE COMP	COMP INPUT
S SOURCE 3	> SOURCE HDMI 1	HDMI INPUT 1
S SOURCE 4	> SOURCE HDMI 2	HDMI INPUT 2
S SOURCE 5	> SOURCE DVI	DVI INPUT
S OUTPUT 0	> OUTPUT NATIVE	NATIVE RESOLUTION OUTPUT
S OUTPUT 1	> OUTPUT VGA	VGA RESOLUTION OUTPUT
S OUTPUT 2	> OUTPUT SVGA	SVGA RESOLUTION OUTPUT
S OUTPUT 3	> OUTPUT XGA	XGA RESOLUTION OUTPUT
S OUTPUT 4	> OUTPUT SXGA	SXGA RESOLUTION OUTPUT
S OUTPUT 5	> OUTPUT UXGA	UXGA RESOLUTION OUTPUT
S OUTPUT 6	> OUTPUT 480I	480I RESOLUTION OUTPUT
S OUTPUT 7	> OUTPUT 480P	480P RESOLUTION OUTPUT
S OUTPUT 8	> OUTPUT 720P	720P 60HZ RESOLUTION OUTPUT

## RS-232 COMMANDS

Command Code	Response	Description
S OUTPUT 9	> OUTPUT 1080I	1080I 60HZ RESOLUTION OUTPUT
S OUTPUT 10	> OUTPUT 1080P	1080P 60HZ RESOLUTION OUTPUT
S OUTPUT 11	> OUTPUT 576I	576I 60HZ RESOLUTION OUTPUT
S OUTPUT 12	> OUTPUT 576P	576P 60HZ RESOLUTION OUTPUT
S OUTPUT 13	> OUTPUT 720P	720P 50HZ RESOLUTION OUTPUT
S OUTPUT 14	> OUTPUT 1080I50	1080I 50HZ RESOLUTION OUTPUT
S OUTPUT 15	> OUTPUT 1080P50	1080P 50HZ RESOLUTION OUTPUT
S OUTPUT 16	> OUTPUT WXGA	WXGA RESOLUTION OUTPUT
S OUTPUT 17	> OUTPUT WSXGA	WSXGA RESOLUTION OUTPUT
S OUTPUT 18	> OUTPUT WUXGA	WUXGA RESOLUTION OUTPUT
S SIZE 0	> SIZE FULL	SCALER FULL OUTPUT
S SIZE 1	> SIZE OVERSCAN	SCALER OVERSCAN OUTPUT
S SIZE 2	> SIZE UNDERSCAN	SCALER UNDERSCAN U.S. OUTPUT
S SIZE 3	> SIZE LETTERBOX U.S.	SCALER LETTERBOX U.S. OUTPUT
S SIZE 4	> SIZE PANSCAN U.S.	SCALER PANSCAN OUTPUT
S SIZE 5	> SIZE LETTERBOX FULL	SCALER LETTERBOX FULL OUTPUT
S SIZE 6	> SIZE PANSCAN FULL	SCALER PANSCAN FULL OUTPUT
S PICTUREMODE 0~3	> PICTUREMODE STANDARD~USER	0:STANDARD ; 1:MOVIE ; 2:VIVID ; 3:USER ,PICTURE MODE OUTPUT
S CONTRAST 0~100	> CONTRAST 0~100	CONTRAST 0~100 ADJUST
S BRIGHTNESS 0~100	> BRIGHTNESS 0~100	BRIGHTNESS 0~100 ADJUST
S HUE 0~100	> HUE 0~100	HUE 0~100 ADJUST
S SATURATION 0~100	> SATURATION 0~100	SATURATION 0~100 ADJUST
S SHARPNESS 0~100	> SHARPNESS 0~100	SHARPNESS 0~100 ADJUST
S NR 0~3	> NR OFF~HIGH	0:OFF ; 1:LOW ; 2:MIDDLE ; 3:HIGH ,NR CONTROL
S PCHPOSITION 0~100	> PCHPOSITION 0~100	H POSITION 0~100 ADJUST
S PCVPOSITION 0~100	> PCVPOSITION 0~100	V POSITION 0~100 ADJUST
S PCCLOCK 0~100	> PCCLOCK 0~100	PC MODE COLCK 0~100 ADJUST
S PCPHASE 0~63	> PCPHASE 0~63	PC MODE PHASE 0~63 ADJUST
S COLORETEMP 0~3	> COLORETEMP NORMAL~USER	0:NORMAL ; 1:WARM ; 2:COOL ; 3:USER ,COLOR TEMP SETTING
S RED 0~100	> RED 0~100	COLOR TEMP "RED" ADJUST
S GREEN 0~100	> GREEN 0~100	COLOR TEMP "GREEN" ADJUST
S BLUE 0~100	> BLUE 0~100	COLOR TEMP "BLUE" ADJUST
S OSDHPOSITION 0~100	> OSDHPOSITION 0~100	OSD H POSITION 0~100 ADJUST
S OSDVPOSITION 0~100	> OSDVPOSITION 0~100	OSD V POSITION 0~100 ADJUST
S OSDTIMEOUT 0~100	> OSDTIMEOUT 0~100	OSD TIMEOUT 0~100 SETTING
S OSDBACKGROUND 0~8	> OSDBACKGROUND 0~8	OSD OSDBACKGROUND 0~8 ADJUST
S AUDIOMUTE 0~1	> AUDIOMUTE OFF~ON	0:OFF ; 1:ON ,AUDIO MUTE CONTROL
S AUDIODELAY 0~3	> AUDIODELAY OFF~150MS	0:OFF ; 1:40MS ; 2:110MS ; 3:150MS ,AUDIO DELAY SETTING
S RESET 1	> RESET ON	RESET ACTION

## RS-232 COMMANDS

### Status Commands

These commands are sent in ASCII format.

Command Code	Response	Description
R POWER	> POWER ON	SHOW POWER STATUS
R SOURCE	> SOURCE CV~HDMI	SHOW SOURCE STATUS
R OUTPUT	> OUTPUT NATIVE~WUXGA	SHOW OUTPUT STATUS
R SIZE	> SIZE FULL~PANSCAN	SHOW SIZE STATUS
R PICTUREMODE	> PICTUREMODE STANDARD~USER	SHOW PICTURE MODE STATUS
R CONTRAST	> CONTRAST 0~100	SHOW CONTRAST STATUS
R BRIGHTNESS	> BRIGHTNESS 0~100	SHOW BRIGHTNESS STATUS
R HUE	> HUE 0~100	SHOW HUE STATUS
R SATURATION	> SATURATION 0~100	SHOW SATURATION STATUS
R SHARPNESS	> SHARPNESS 0~100	SHOW SHARPNESS STATUS
R NR	> NR OFF~HIGH	SHOW NR STATUS
R PCHPOSITION	> PCHPOSITION 0~100	SHOW PC H-POSITION STATUS
R PCVPOSITION	> PCVPOSITION 0~100	SHOW PC V-POSITION STATUS
R PCCLOCK	> PCCLOCK 0~100	SHOW PC COLOK STATUS
R PCPHASE	> PCPHASE 0~63	SHOW PC PHASE STATUS
R COLORTEMP	> COLORTEMP NORMAL~USER	SHOW COLOR TEMP STATUS
R RED	> RED 0~100	SHOW COLOR TEMP RED STATUS
R GREEN	> GREEN 0~100	SHOW COLOR TEMP GREEN STATUS
R BLUE	> BLUE 0~100	SHOW COLOR TEMP BLUE STATUS
R OSDHPOSITION	> OSDHPOSITION 0~100	SHOW OSD H-POSITION STATUS
R OSDVPOSITION	> OSDVPOSITION 0~100	SHOW OSD V-POSITION STATUS
R OSDTIMEOUT	> OSDTIMEOUT 0~100	SHOW OSD TIMEOUT STATUS
R OSDBACKGROUND	> OSDBACKGROUND 0~8	SHOW OSD BACKGROUND STATUS
R AUDIOMUTE	> AUDIOMUTE OFF~ON	SHOW AUDIO MUTE STATUS
R AUDIODELAY	> AUDIODELAY OFF~150MS	SHOW AUDIO DELAY STATUS

## RACK MOUNT INSTALLATION

Rack mount ears are provided for installation of this unit into a 1U rack mount space.

1. Locate the side screws on the unit.
2. Remove the front 2 screws that are located closest to the front of the unit.
3. Using the removed screws, screw the rack mounting bracket into the unit.
4. Repeat the procedure on the opposite side of the unit.



## SPECIFICATIONS

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Digital Video Amplifier Bandwidth .....	165 MHz
Component Video Bandwidth .....	350 MHz
Input DDC Signal .....	5 Volts p-p (TTL)
Input Video Signal .....	1.2 Volts p-p
Maximum Resolution .....	1080p/1920 x 1200
Analog Video Connector (input) .....	1x VGA (via DVI-I Connector)
Analog Video Connector (input) .....	3x RCA Component Jacks
Analog Video Connector (input) .....	1x RCA Composite
Analog Video Connector (input) .....	1x S-Video
Analog Audio Connector (input) .....	1x 3.5mm Mini Jack
Digital Video Connector (input) .....	1x DVI-D (via DVI-I Connector)
Digital Video Connector (input) .....	1x HDMI
Digital Video Connector (output) .....	2x HDMI
Digital Audio Connector (output) .....	1x Optical TOSLINK
Digital Audio Connector (output) .....	1x Coaxial S/PDIF
Analog Audio Connector (output) .....	2x Pair L+R Spring-Loaded Speaker Terminals (Amplified 20W RMS max.)
Power Supply/Power Consumption .....	24V DC/60 Watts max.
Dimensions .....	17.2"W x 2.12"H x 6.8"D
Shipping Weight .....	6 lbs.