



Audio / Video Scaler Pro

EXT-GSCALER-PRO

User Manual



www.gefen.com

1080P
PROGRESSIVE

HDMI™
HIGH DEFINITION MULTIMEDIA INTERFACE

HDTV

Blu-ray Disc™

ASKING FOR ASSISTANCE

Technical Support:

Telephone (818) 772-9100
(800) 545-6900

Fax (818) 772-9120

Technical Support Hours:

8:00 AM to 5:00 PM Monday thru Friday.

Write To:

Gefen Inc.
c/o Customer Service
20600 Nordhoff St
Chatsworth, CA 91311

www.gefen.com
support@gefen.com

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INTRODUCTION

Congratulations on your purchase of the A/V Scaler Pro. 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 A/V Scaler Pro

The A/V Scaler Pro offers a plug and play solution for upscaling and switching between multiple analog and digital audio/video formats. Video is delivered in the HDMI format at 1080p full HD resolution.

The A/V Scaler Pro works with all of today's audio/video sources including set-top boxes, DVD players and gaming consoles including the Xbox 360 and PS3.

It is designed to offer a simple, high quality method of integrating multiple A/V components and delivering 1080p full HD with supplemental audio for an engaging HDTV experience.

It supports one component source with analog audio, one composite or s-video source with analog audio, one DVI source with analog audio and two HDMI sources with digital audio. The audio from the analog sources is digitized in the HDMI format.

The DVI-I input with analog audio enables direct PC connections, supporting both VGA and DVI formats that can be used for analog or digital graphics card input. With support for analog stereo audio, the unit supports all multimedia applications. On-screen menus accessible through the IR remote allow for an easy system setup and image adjustment to accommodate different viewing modes and screen sizes. Discrete codes have been added to the IR to enable complete control over switching. An RS232 control port is included so each input can be separately accessed, if desired.

The A/V Scaler Pro is rack mountable, fitting in all standard racks, making it suitable for professional installations with rack ears or as a stand-alone solution. All connection ports are located on the backside for easy accessibility.

How It Works

Connect all audio and video source devices to the A/V Scaler Pro. Connect your HDMI display to the output on the rear of the unit. Power on the unit and use the included IR remote to navigate the GUI and change settings. All scaling and analog to digital format conversions are done automatically for superior audio and video output.

OPERATION NOTES

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE A/V SCALER PRO

- When initially powering on HDMI sources, it is important to have the A/V Scaler Pro's input selected to that source to ensure that the EDID (display information) is relayed properly.
- Compatible with all HDMI and DVI* displays
- Discrete input switching is available through the RS-232 port or by using a remote that will accept hex commands. These hex commands are available at www.gefen.com
- HDMI/HDCP compliant
- NOTE: *When used with a DVI to HDMI adapter

FEATURES

Features

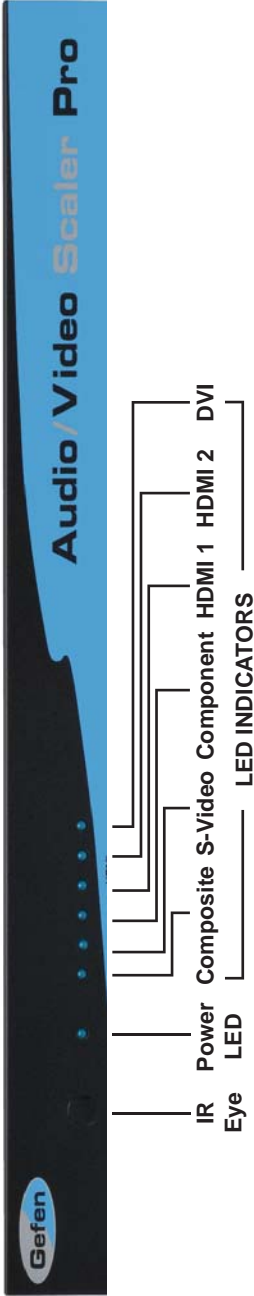
- Both digital and analog inputs are format converted and pixel re-scaled through the A/V Scaler Pro. It outputs a large range of formats and resolutions that will easily match the native resolution/format of your display to ensure highest picture quality.
- DVI/HDCP/HDMI compliant input: Operates up to 165MHz (Up to UXGA @60Hz).
- Supports digital HD output up to 1080p.
- Integrated 8-bit triple-ADC/PLL.
- Integrated DVI/HDCP/HDMI compliant receiver.
- Dual high quality scaling engines.
- Dual 3-D motion video 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 you 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 Optical/SPDIF audio source.
- 3D noise reduction on analog inputs only.
- Operates through on-screen menu control, remote control, and RS-232 serial control.
- Aspect Ratio Control.
- Digital Audio Delay to match audio/video timing.
- Less than one frame delay for gaming devices.

Package Includes

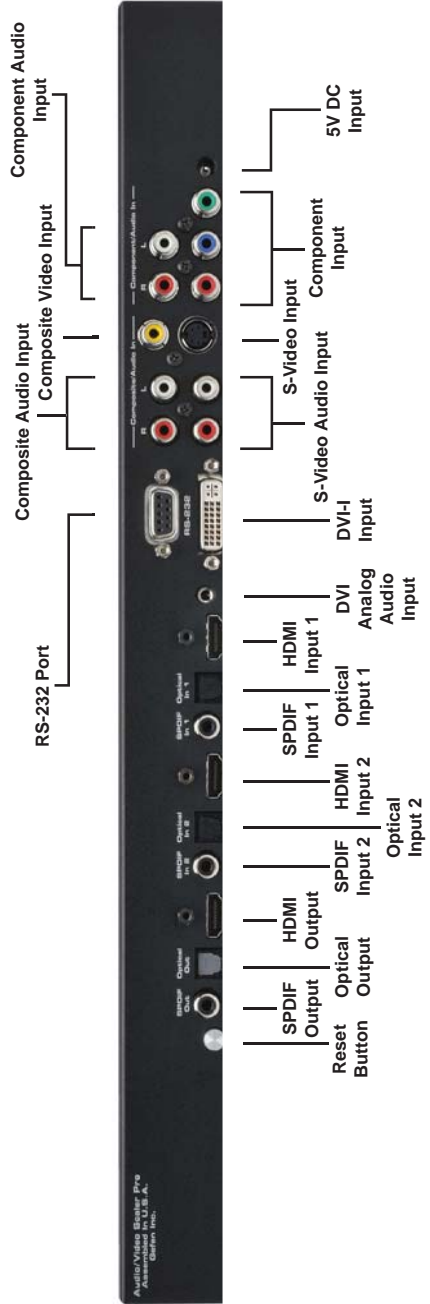
- (1) A/V Scaler Pro
- (1) HDMI 6 Foot cable (M-M)
- (1) 5V DC power supply
- (1) IR remote control
- (1) Rack Ears

PANEL LAYOUT

Front Panel



Back Panel



CONNECTING THE A/V SCALER PRO

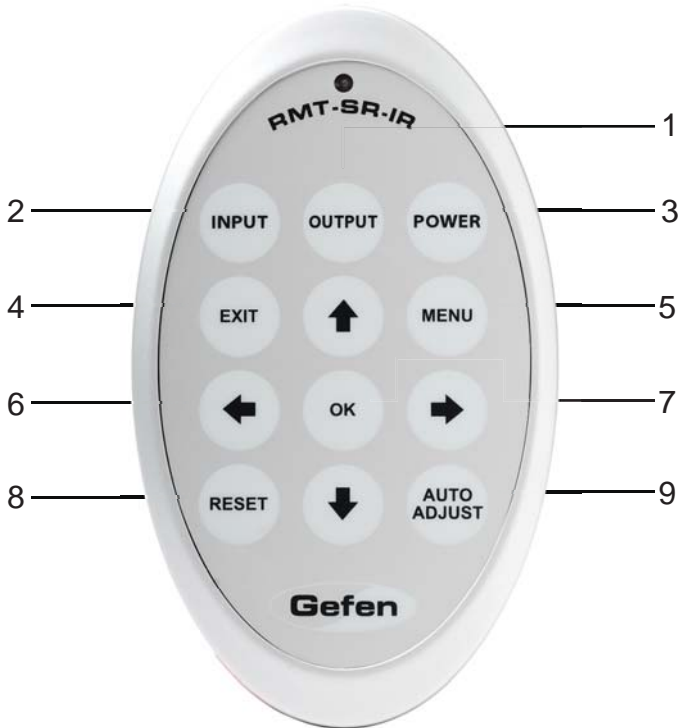
1. Connect the HDMI output on the A/V Scaler Pro to the display using the supplied HDMI cable.
2. Connect either the digital SPDIF or digital Optical audio output to the display or an external audio processor using user supplied digital audio cables.
3. Connect the sources to the A/V Scaler Pro using user supplied cables.
 - Connect up to two HDMI sources with optional digital SPDIF/Optical audio using HDMI cables and digital audio cables.
 - Connect one Component source with analog audio using a 3 RCA Component video cable and a 2 RCA analog audio cable.
 - Connect one S-Video source with analog audio using a S-Video cable and a 2 RCA analog audio cable.
 - Connect one Composite source with analog audio using a 1 RCA Composite video cable and a 2 RCA analog audio cable.
 - Connect one DVI-I source with analog audio using a 1 RCA Composite video cable and a stereo mini-jack analog audio cable.
4. Plug the 5V DC power supply into the A/V Scaler Pro.
5. Press the POWER button on the RMT-SR-IR remote to begin operation of the A/V Scaler Pro.
6. Power on the display.
7. Power on the source(s).

NOTE: When initially powering on HDMI or DVI sources, it is important to have the A/V Scaler Pro's input selected to that source to ensure that the EDID is relayed properly.

OPERATING THE AUDIO/VIDEO SCALER PRO

The A/V Scaler Pro has a built in GUI for navigating the various functions. The GUI is navigated by the included IR remote control. Please see the RMT-SR-IR Remote Description on the next page for functional information. Control of certain functions are also available using the RS-232 serial communications port located on the back panel. For RS-232 serial communications control commands please see page 13.

A/V SCALER PRO REMOTE DESCRIPTION



1. Output - Cycles through the available output resolutions. Please see the section A/V Scaler Pro 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, and HDMI 2.
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.
7. The OK button will select specific menu options for adjustment and will also confirm/cycle-through selections (Output/Input).
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 A/V SCALER PRO

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 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 and 2) 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 A/V SCALER PRO

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).

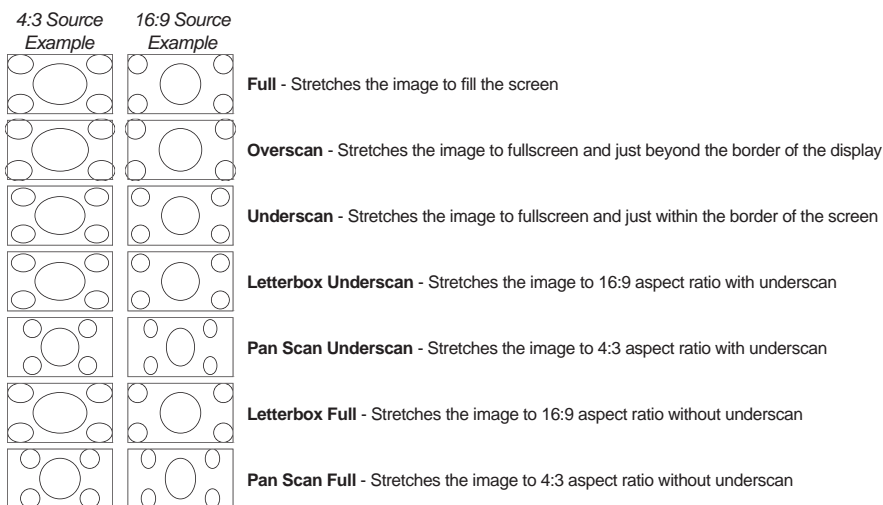
Sharpness

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 A/V SCALER PRO

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 A/V SCALER PRO

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 A/V SCALER PRO

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

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

***Coaxial is also know as SPDIF**

OPERATING THE A/V SCALER PRO

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

RS-232 SERIAL COMMUNICATIONS CONTROL



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 COLORTEMP 0-3	> COLORTEMP 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

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
Single Link Range	1080p/1920 x 1200
Analog Video In Connector 1	3 RCA Component
Analog Video In Connector 2	1 RCA Composite
Analog Video In Connector 3	1 S-Video
Analog Audio In Connector	3x2 RCA R+L
Digital Audio In Connector	2 Optical TOSLINK and 2 Coaxial SPDIF
Digital Audio Out Connector	1 Optical TOSLINK and 1 Coaxial SPDIF
HDMI Input Connector	2 Type A 19 pin female
HDMI Output Connector	1 Type A 19 pin female
DVI Input Connector	DVI-I 29 pin female
Power Consumption	8 Watts (max)
Dimensions	17.1" W x 1.75" H x 6.75" D
Shipping Weight	5 lbs.

20600 Nordhoff St., Chatsworth CA 91311

1-800-545-6900 818-772-9100 fax: 818-772-9120

www.gefen.com support@gefen.com

