



Hall Research Technologies, Inc.

VGA / HDTV Video Processor

Scalable (Up/Down) Resolution & Mirroring Converter

Changes the resolution and refresh rate of your video signal !

Can also change VGA to HDTV Component and Vice-Versa




Model SC-VGA-2

**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 Technologies, 1163 Warner Ave. Tustin, CA 92780
Web site: www.hallresearch.com • E-mail: info@hallresearch.com

UMA1063 Rev. 2E

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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.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.



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Hall Research Technologies, Inc.



Home of the Mini-Cat®

1. Introduction

1.1 General

SC-VGA-2 is a high-performance universal VGA / HDTV to VGA / HDTV Scan Rate converter. It also offers the capability to "Mirror" the VGA input signal on the X-axis.

The Video Processor combines the functions of a video scaler, scan-converter, and format transformer and is packed into a compact and durable metal housing with easy-to-use touch buttons. The SC-VGA-2 is controlled via push button and OSD menu.



The controls include input/output setup picture adjustment, H/V phase adjustment, System information and many other advance options.

The SC-VGA-2 allows you to specify a resolution and refresh rate for its output. Then it will output a steady (uninterrupted) VGA signal to your display device at your specified rate regardless of the input. This effectively allows any VGA switch, such as HRT's VS-2 or VS-4, to become a seamless switch. The output timing is constant regardless of what is happening at the input. So when you switch from one input to another, the display device does not see any interruption in the signal coming to it.

1.2 Features

- The resolution of any PC or HDTV video signal can be scaled up or scaled down to any other PC or HDTV resolution. It can also change the frame rate of the output.
- Large Video memory for real-time frame rate capture & conversion.
- Signal format conversion between RGBHV and YPbPr.
- Input: PC (VGA/SVGA/XGA/SXGA) + HDTV(480i 576i 480p 567p 720p 1080i), @ 60 to 85 Hz
- Output: PC (VGA/SVGA/XGA/SXGA) + HDTV(480p/576p/720p/1080i)
- Automatically detects input mode and timing parameters

- Allows fine-tuning the output picture to optimum through adjustment of sampling clock, phase, and position on screen.
- Easy- to- use push buttons and OSD menu control.
- Can Mirror VGA output Horizontally; perfect for teleprompting and rear projection systems

2. Installation

2.1 Input connection

The SC-VGA-2 can accept both PC and HDTV inputs. When accepting a PC input use the 15-pin D-sub cable to connect the output of a PC device to the input connector labeled PC/HDTV on the back of SC-VGA-2.

When accepting a HDTV input use a 15-pin D-sub to YPbPr/3 RCA cable to connect the YPbPr/output (or YCbCr) of a HDTV device to the PC/HDTV input connector of the SC-VGA-2.

The SC-VGA-2 can automatically detect the mode and resolution of the PC/HDTV input.

2.2 Output connection

The SC-VGA-2 can output a variety of PC resolutions as well as a number of HDTV resolutions.

When one of the PC resolutions is selected as output, use the 15-pin D-Sub VGA cable to connect the PC/HDTV output of the SC-VGA-2 to the VGA input of a display monitor.

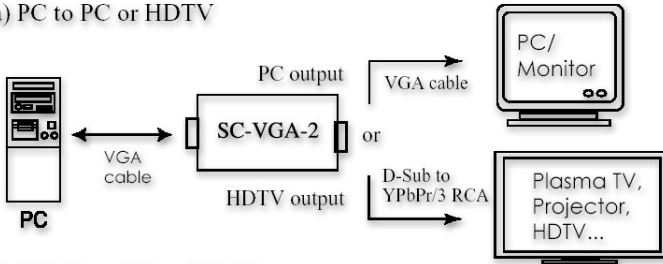
When one of the HDTV resolutions is selected as the output, use a 15-pin D-Sub to YPbPr/3 RCA adaptor cable to connect the PC/HDTV output of the SC-VGA-2 to the YPbPr input of a HDTV device.

Note

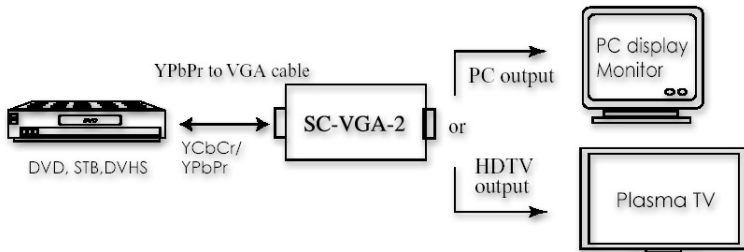
If you need a 2nd un-altered version of the input Video, please use a Model 200 Video Splitter at your video source. For example when the SC-VGA-2 is set to mirror the video, you can have a mirrored and a non-mirrored output.

2.3 Connection Block Diagram

(a) PC to PC or HDTV



(b) HDTV to PC or HDTV



3. Configuration & Operation

3.1 Front and Rear Panels



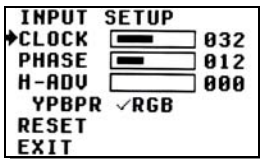
3.2 Menus and Adjustments

Pressing the Menu button will bring up the OSD menu controls on the screen as follows:



Use +, or - to move the arrow cursor to your desired selection, then press MENU to confirm your selection and enter into sub menu.

Input set up - When it is selected, a sub menu of input signal capture adjustments will appear.



Use +, - to choose the parameter you want to adjust and then press the Menu (Enter) to highlight your selection. Then use +, - to increase or decrease the setting. Press Menu (Enter) again to leave the setting.

“CLOCK” changes the number of samples per display line. The unit samples the video at the nominal pixel rate. For example a 1024x768 resolution signal is sampled 1024 times during the active video time. Changing the clock has the effect of adjusting horizontal size of the displayed output. When you change this setting; the right edge of the video moves to the left (shrinking the width) or to the right (expanding the width).

“PHASE” refers to nanosecond timing position of each sample taken. This adjustment can be used to align the pixels grabbed by the SC-VGA-2 to those created by the VGA card in the PC.

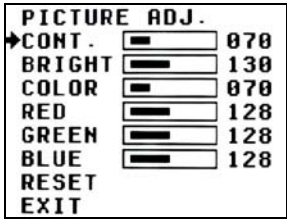
“H-ADV” refers to the point at which active video sampling starts. Its effect is to start sampling earlier thereby showing more of the left edge of the image. Use this adjustment if the left edge of the image seems to be cut off and you don’t seem to be correct it by the H V ADJUST menu selection. Some Video cables or video amplifiers may cause different delay to the RGB color signals as compared to the H&V sync signals, this could cause the left edge of the image to be shifted from nominal; this adjustment is provided to give the user 10 pixel advanced

sampling adjustment range. Using 5-coax extension cables (rather than 3 coax+ 4 TP) maintains the timing differential in long cable runs.

Under normal condition the unit automatically detects and shows the input format as YPbPr or RGB. However, you can manually select the YPbPr or RGB to match the format of your input. Selecting a format that doesn't coincide with your input will result in an abnormal picture.

Output set up - When it is selected, a sub-menu appears, that gives you choices for the *Output Mode* (refresh-rate and resolution) and *Mirroring Status*. use +, - button to choose your desired PC or HDTV resolution and mirroring state. Please refer to Table 3.1 on page 7 for a list of available output Modes

Picture Adjust - When it is selected the following adjust parameters will appear:

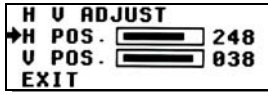


The factory preset values are shown above. Use + -, and MENU/Enter to adjust the value of your selected parameter. Select reset to reset all adjustment back to the factory preset value.

Table 3.1 – Output Modes

	PC Resolutions	HDTV Resolutions	
SXGA	1280 X 1024@60/75Hz	720p-RGB	1280X 720@60Hz
1280A	1280 X 960@60Hz	576p-RGB	720X 576@60Hz
XGA	1024 X 768@60/70/75/85Hz	480p-RGB	720 X 480@60Hz
WXGA	1280 X 768@60Hz	720p-YPbPr	1280 X 720@60Hz
SVGA	800 X 600@60/72/75/85Hz	576p-YPbPr	720 X 576@60Hz
VGA	640 X 480@60/72/75/85Hz	480p-YPbPr	720 X 480@60Hz
VGA 70	720 X 400@70Hz	1080i-YPbPr	1920 X1080@60Hz
VESA 85	640 X 400@85Hz		
	1152 X 864@ 70/75Hz		

HV adjust - When it is selected the following sub-menu appears.

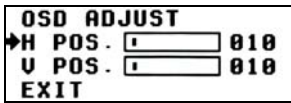


Some versions have a "SIZE" menu choice

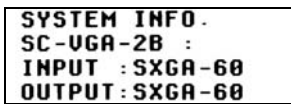
Use + - to adjust the best horizontal and vertical position.

If your unit has a "SIZE" menu choice, you have the options of OVER and UNDER selected by the + and - buttons. Normal setting is OVER which stands for "OVER SCAN". It fits the output screen perfectly to your display borders. When converting a PC input to HDTV output (480p, 576p, 720p, or 1080i) you may crop some of the edges of the PC signal. In this case select the UNDER choice which stands for "UNDER SCAN" Note that the under scan feature only works for certain input/output resolution combinations. For example; with an input resolution of 800x600 and output resolution of 720p, the under scan feature shrinks both the width and height of the output. Also if the input resolution is 1280x1024, output settings of 480p and 576p will have full under scan functionality. At other input/output combinations, the under scan may only affect the height or width or neither!

OSD adjust - When it is selected, you can adjust the Horizontal and Vertical position of the OSD menu.



System information - When it is selected, it shows the input/output resolution and their vertical refresh rate on the screen.



Auto adjust - When it is selected the SC-VGA-2 will automatically adjust the capture parameters for the current input video resolution to the factory preset values.

Exit - Select to exit from the current menu page.

Notes

- ❖ The default output resolution of the SC-VGA-2 is XGA @ 60Hz.
- ❖ The unit has non-volatile memory and memorizes all your settings before power off and recalls those settings on next power on.

Quickly Jumping to XGA or 480p Output

At any time, pressing + and - buttons simultaneously for a few seconds will reset the output resolution to XGA@60Hz, and other settings back to factory default values. Pressing the Menu and – together for a few seconds will choose 480P output mode

4. Troubleshooting

There are no field serviceable parts or circuits in the device. If you think that the device is malfunctioning (or you have no picture output), please first try to reset to factory default settings by pressing the “+” and “-” buttons (or “menu” and “-” buttons) simultaneously for 2 seconds (See above).

Contacting Hall Research Technologies

If you determine that your scaler is malfunctioning, do not attempt to repair the unit. Contact HRT’s Tech. 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.

Shipping and Packaging

If you need to transport or ship your Video Processor:

- Package it carefully. We recommend that you use the original container.
- Before you ship the units back to Hall Research Technologies for repair or return, contact us to get a Return Authorization (RMA) number.

5. Specifications

General

Input Format	VGA PC RGBHV, or HDTV YPbPr or RGB
Input Signal Levels	RGB @ 0.7V p-p, 75 ohm. H&V Sync @ 3-5Vp-p, TTL Y @ 1V p-p, 75 ohm. Pb,Cb,Pr, Cr @ 0.7V p-p, 75 ohm
Output Format	RGBHV, YPbPr
Output Signal Levels	RGB @ 0.7V p-p, 75 ohm. H&V Sync @ 3-5V p-p, TTL Y @ 1 V p-p, 75 ohm. Pb,Pr @ 0.7V p-p 75 ohm
Input/Output Connector Type	HD 15 Female
Control	Front Panel Buttons
Information Display	On Scerrn Display
Video Adjustments	Brightness, Contrast, Color, R-G-B Levels
Weight	10 oz. (280 grams)
Dimensions-HxWxD	1.2" x 3" x 5.5" (30 x 75 x 140mm)
Power Source	Universal (100-240V, 50/60 Hz) Switching Supply. Output: 12V @ 1A

Input Resolutions

	PC Resolutions	HDTV Resolutions	
VGA	640 X 480@60/72/75/85Hz	1080i	1920 X 1080@60Hz
VGA 70	720 X 400@70Hz	720p	1280X 720@60Hz
VESA 85	640 X 400@85Hz	576p	720X 576@50Hz
SVGA	800 X 600@60/72/75/85Hz	576i	720X 576@50Hz
XGA	1024 X 768@60/70/75/85Hz	480p	720 X 480@60Hz
Mac	1152 X 864@ 70/75Hz	480i	720 X 480@60Hz
WXGA	1280 X 768@60Hz		
1280A	1280 X 960@60Hz		
SXGA	1280 X 1024@60Hz		

Output Resolutions

	PC Resolutions	HDTV Resolutions	
VGA	640 X 480@60/72/75/85Hz	1080i-RGB	1920 X 1080@60Hz
VGA 70	720 X 400@70Hz	720p-RGB	1280X 720@60Hz
VESA 85	640 X 400@85Hz	576p-RGB	720X 576@60Hz
SVGA	800 X 600@60/72/75/85Hz	480p-RGB	720 X 480@60Hz
XGA	1024 X 768@60/70/75/85Hz	1080i-YPbPr	1920 X 1080@60Hz
Mac	1152 X 864@ 70/75Hz	720p-YPbPr	1280 X 720@60Hz
WXGA	1280 X 768@60Hz	576p-YPbPr	720 X 576@60Hz
1280A	1280 X 960@60Hz	480p-YPbPr	720 X 480@60Hz
SXGA	1280 X 1024@60/75Hz		

Notes

Notes



The difference between a “good” installation and a “great” one!™

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