



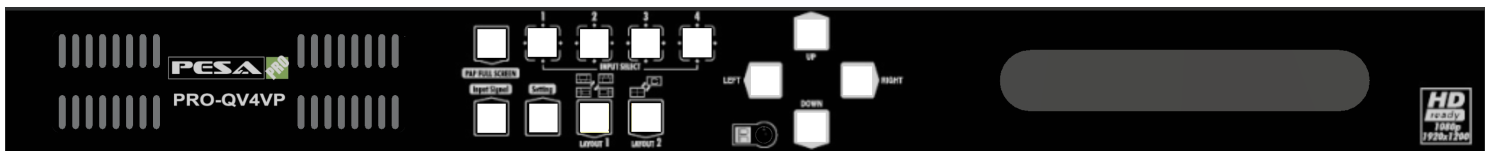
PESA



PRO-QV4VP

3G/HD/SD-SDI Quad-view Video Processor

User Manual



Made in Taiwan rev.1110



Safety and Notice

The PESA **PRO-QV4VP 3G/HD/SD-SDI Quad-view Video Processor** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipment, the PRO-QV4VP should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might cause damage away from the device and assure the unit is placed on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.



Warranty Information

PESA Switching Systems, Inc., (PESA) warrants this equipment against defective workmanship or materials for a period of one (1) year from date of shipment. The sole warranty responsibility of PESA, shall be to replace or repair product proved to be defective. During the warranty period, defective parts will be replaced at no charge. Labor to repair or replace defective parts covered under the warranty will be performed at no charge at PESA. This warranty covers only products manufactured by PESA, and the components used in their manufacture. The warranty on assembled products sold by PESA., but manufactured by others shall be that of the original manufacturer. This warranty does not include shipping damage or damage caused by abuse, neglect, tampering by unauthorized personnel, damage inadvertently caused by the user, preventative maintenance, or any equipment or part thereof whose serial number has been removed or defaced. Neither the seller nor the manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the inability to use the product. Before using, user shall determine the suitability of the product for the intended use, and user assumes all risk and liability whatsoever in connection therewith. This warranty is effective only at the PESA factory in Huntsville, Alabama, USA. If possible, retain the original packing material for use in the unlikely event that your equipment must be returned to the PESA factory. When shipping your equipment, the shipping charges must be prepaid. The repaired unit will be returned to you, freight prepaid. This warranty is exclusive and in lieu of all other warranties, whether expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose.

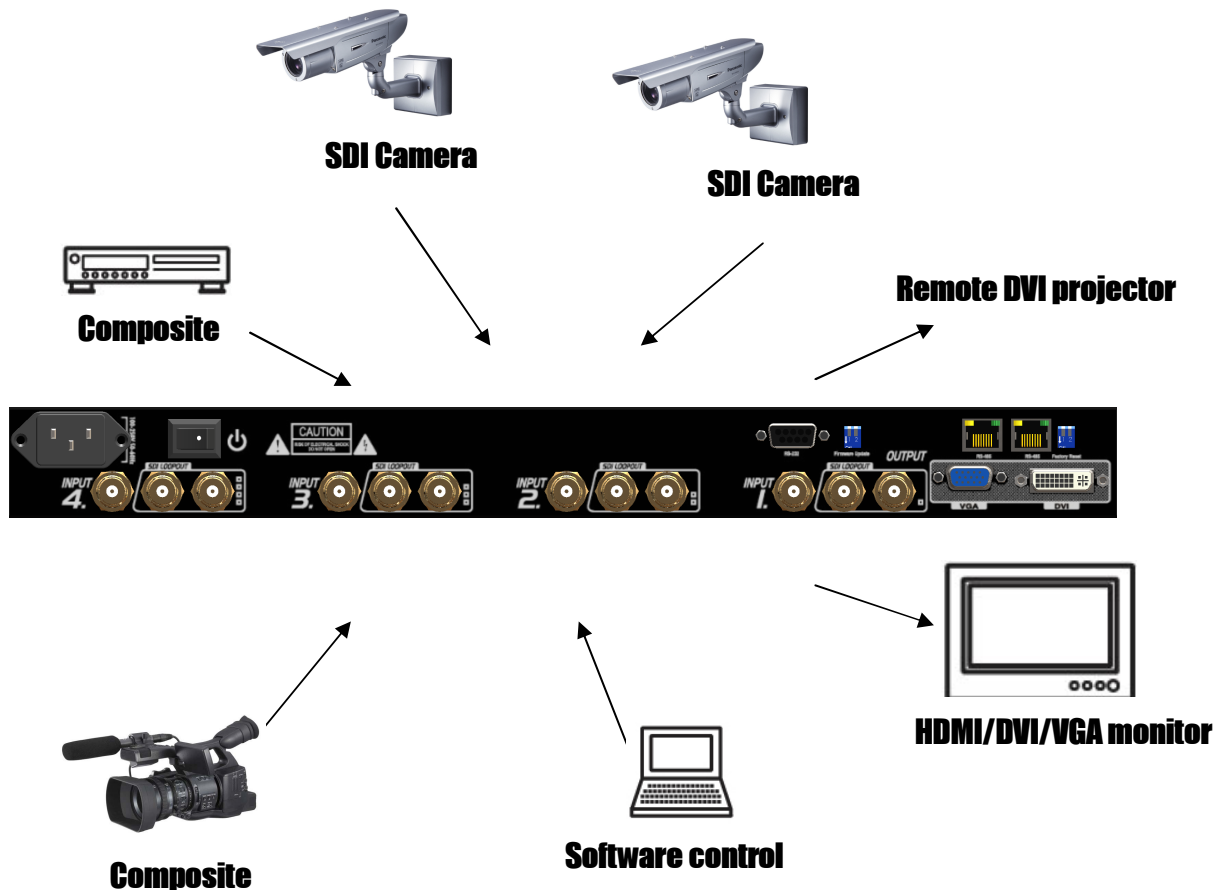
INTRODUCTION

General

PESA's **PRO-QV4VP Professional 3G-SDI Quad-View Video Processor** is an advanced video processor for multimedia presentations, and is an ideal solution for a wide range of applications including surveillance, where up to four SDI/CVBS video signals must be displayed on a single display. It supports up to 4 SDI/CVBS video inputs, and provides outputs of both DVI and VGA formatted to a user-configured display. Through software control, up to four video sources may be displayed simultaneously in the desired display layout. The PRO-QV4VP automatically detects 3G/HD/SD SDI or CVBS video inputs and the advanced video processor allows you to manipulate output images to the desired screen position and image size. With the two video output ports you may view the processed signal on two computers, two video devices or a combination of both.

The embedded processor converts signals from input sources to match the native resolution of monitors, flat panel displays or projectors; as well as user-selectable output settings up to WUXGA (1920x1200). Dual outputs are provided in both analog (VGA) and digital (DVI) format, one is connected to remote display and the other is connected to on-site display for real time monitoring.

Figure 1: Configuration Diagram



Features

- Supports 3G/HD/SD SDI video formats
- Input resolutions support interlaced or progressive video under SMPTE
- Dual outputs (DVI / VGA), 640x480 to 1920x1200
- Each SDI channel has 2 re-clocked SDI loop-outs for cascading
- Adjustable size & position through software
- Dynamic transition for video sizing and positioning
- Titles, borders and colored backgrounds
- Resize, position, zoom & pan and blend output video
- Image parameters and layouts are automatically saved in flash memory and can be recalled for later use
- Several Image parameters and layouts can be saved in computers and can be loaded for later use
- Video parameters adjustable (brightness, contrast, color temperature, etc.)
- User-selectable output settings, up to 1920x1200
- Perfectly as a video screen splitter, a video converter and a video switcher
- Firmware upgradable for support of new features and technology enhancements
- Software control through RS-232/RS-485 over Cat.X.
- Can be cascaded to obtain more images using RS-485 control path
- Control protocol available for customer proprietary design
- 1U size

Specifications

Model Name		PRO-QV4VP
Technical		
Usage		Multiplexer / video processor
Dual output support		Yes [DVI & VGA]
Background video input		No
HDCP compliance		Yes
Video bandwidth		Composite [13.5MHz] SDI [2.97Gbps & 2.97/1.001Gbps]
Video support		480i / 576i / 720p / 1080i / 1080p
Audio support		No
Control		RS-232 and RS-485
Embedded video mixer		Yes
Cascadable		Yes
Input TMDs signal		N/A
ESD protection		Human body model — $\pm 19\text{kV}$ [air-gap discharge] & $\pm 12\text{kV}$ [contact discharge]
PCB stack-up		6-layer board [impedance control — differential 100Ω ; single 50Ω]
Input		4x SDI or CVBS + 1x RS-232 + 1x RS-485
Output		8 x SDI Loop-out + 1x DVI + 1x VGA
DVI connector		DVI-I [femal, 29-pin]
BNC connector		75Ω inter-locked socket
S-Video connector		9 pin
VGA connector		HD-15 [15-pin D-sub female]
RS-232 connector		DE-9 [9-pin D-sub female]
RCA connector		75Ω female
RJ-45 connector		WE/SS 8P8C with 2 LED indicators
Mechanical		
Housing		Metal enclosure
Dimensions (L x W x H)	Model	300 x 440 x 44mm [11.8" x 1'5.3" x 1.7"]
	Package	528 x 398 x 130mm [1'9" x 1'4" x 5.1"]
	Carton	548 x 422 x 282mm [1'10" x 1'5" x 11.1"]
Weight	Model	3800g [8.4 lbs]
	Package	5900g [13.0 lbs]
Mounting		1RU rack-mount with ears
Power supply		AC Power 100-240V
Power consumption		35 Watts [max]
Operation temperature		0~40°C [32~104°F]
Storage temperature		-20~60°C [-4~140°F]
Relative humidity		20~90% RH [no condensation]
Package Contents		1x PRO-QV4VP 1x IR Remote control 1x Rack-mounting ear set 1x User Manual 1x USB to RS-232 cable 1x UL AC C13 power cord 1x Installation software CD

Inputs and Outputs

The PRO-QV4VP has 4 SDI or CVBS inputs, and allows the user to display four of them simultaneously on the same screen. Figure 2 shows the rear panel connectors of a PRO-QV4VP and Table 1 illustrates how you can connect video devices and display to the PRO-QV4VP.



Figure 2: Rear Panel



**Default: Turn on the PRO-QV4VP then switch the circled DIP switch simultaneously up and down to factory default mode.*

**These IO ports support various resolutions from 480i up to 1920x1080p, for more details of the supported modes, please refer to the Appendix – Supported Resolution.*

Table 1: Input/Output Connectors

Input Connector	Video Source
CVBS-x SDI-x [x = 1~4]	[1] SDI: SD/HD/3G
	[2] CVBS — NTSC/PAL/SECAM
Output Connector	Display
DVI-I OUT	[1] DVI display
	[2] VGA display

Safety Precautions

- I. To prevent fire or shock hazards, do not expose this device to rain or moisture.
- II. When connecting other products such as DVD players, and personal computers, you should remove power to this product for protection against electric shocks.
- III. The product should be placed at least one foot away from heat sources such as radiators, heat registers, stoves, and other products (including amplifiers) that produce heat. In addition, do not place any material or devices on top of the device.
- IV. Do not use immediately after moving from a low temperature to high temperature, as this causes condensation.
- V. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious injury to a child or adult and serious damage to the product.
- VI. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- VII. Do not allow the same still picture to be projected for a long time or an abnormally bright video picture to be projected. The video image could be burned in to the display device.

Installation Procedures

Unpacking

Remove the PRO-QV4VP from the shipping container and examine it for any signs of shipping damage or missing items (check with package contents above). All shipping items should be saved if the product is to be moved or returned for service. Shipping unit back to dealers for service not in the original box may result in voiding warranty or additional cost.

Placement

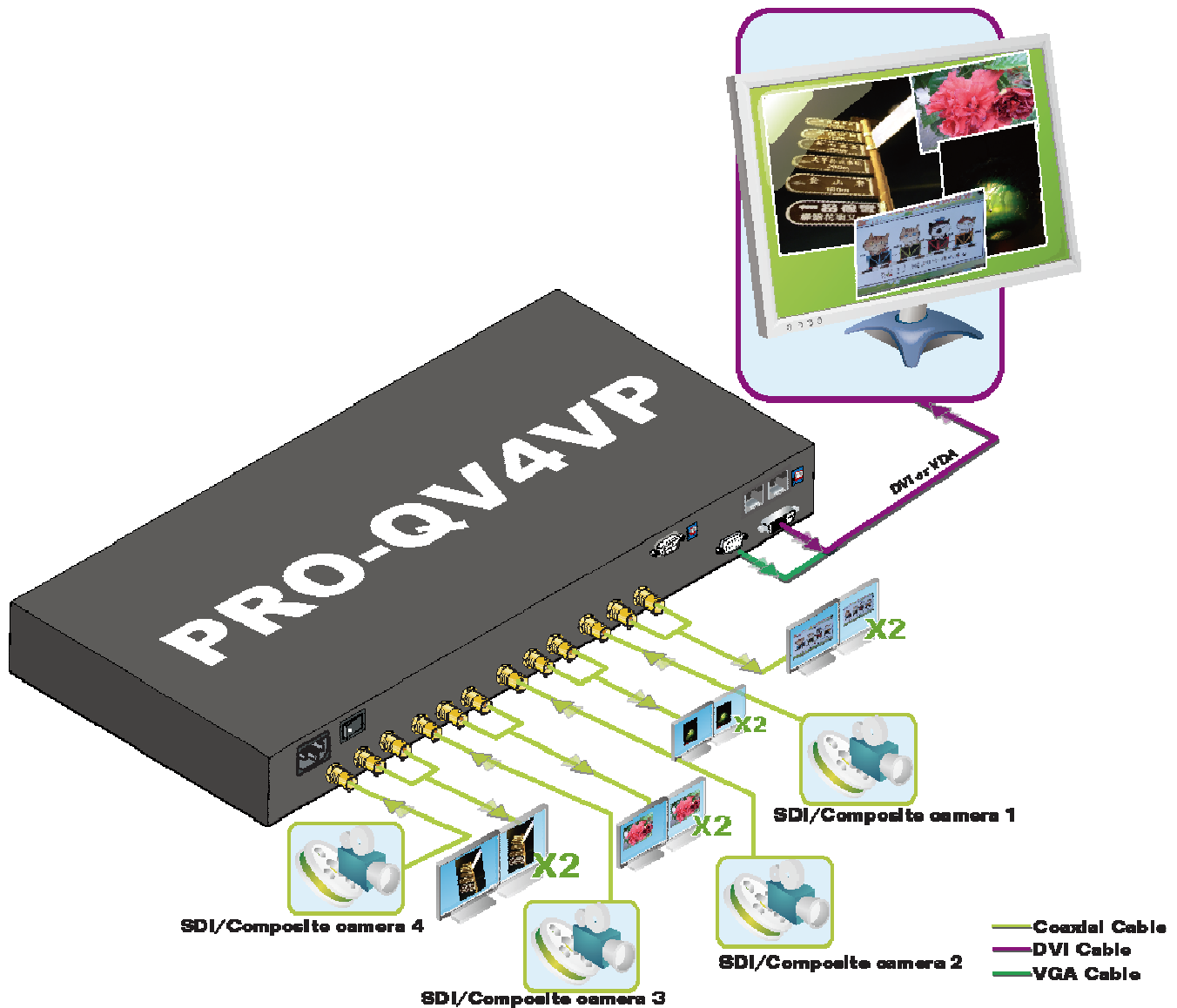
The unit uses convection to cool. A fan is not needed, so do not block the sides of this device or stack another device on the top or bottom of the PRO-QV4VP.

Connections

PESA recommends that you use the highest quality cables for both input and output connections.

1. Switch off the PRO-QV4VP and all devices that you want to connect.
2. Connect a monitor, projector or other display device supporting DVI / VGA inputs.
3. Connect a device equipped with SDI output including SD/HD/3G to the BNC input connector of PRO-QV4VP.

4. Connect a device that provides composite video output to the BNC input connector of the PRO-QV4VP.
5. Connect your computer with the PRO-QV4VP by a 9-pin RS-232 cable and then install the software.
6. Plug the power cord into AC power outlet.
7. Execute the control software and establish the connection between PC/Laptop and PRO-QV4VP.
8. For detailed software control operation, please refer to the software instruction section.

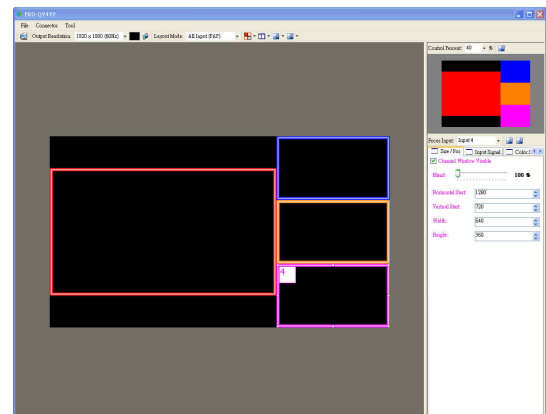
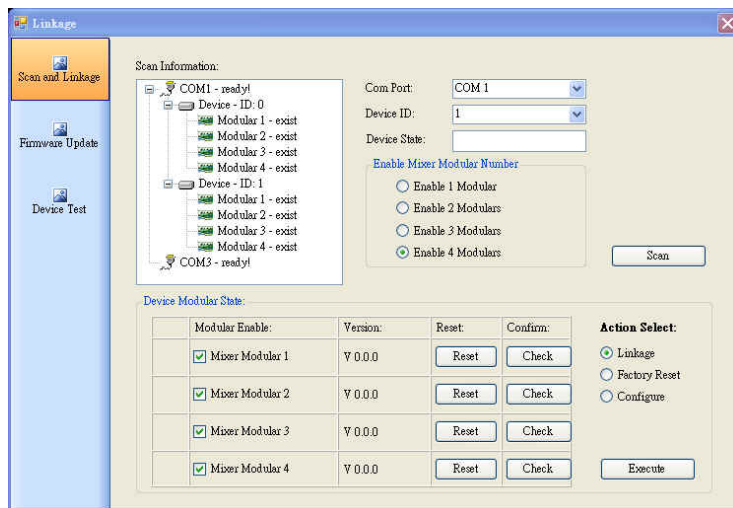


System Requirement and Precautions

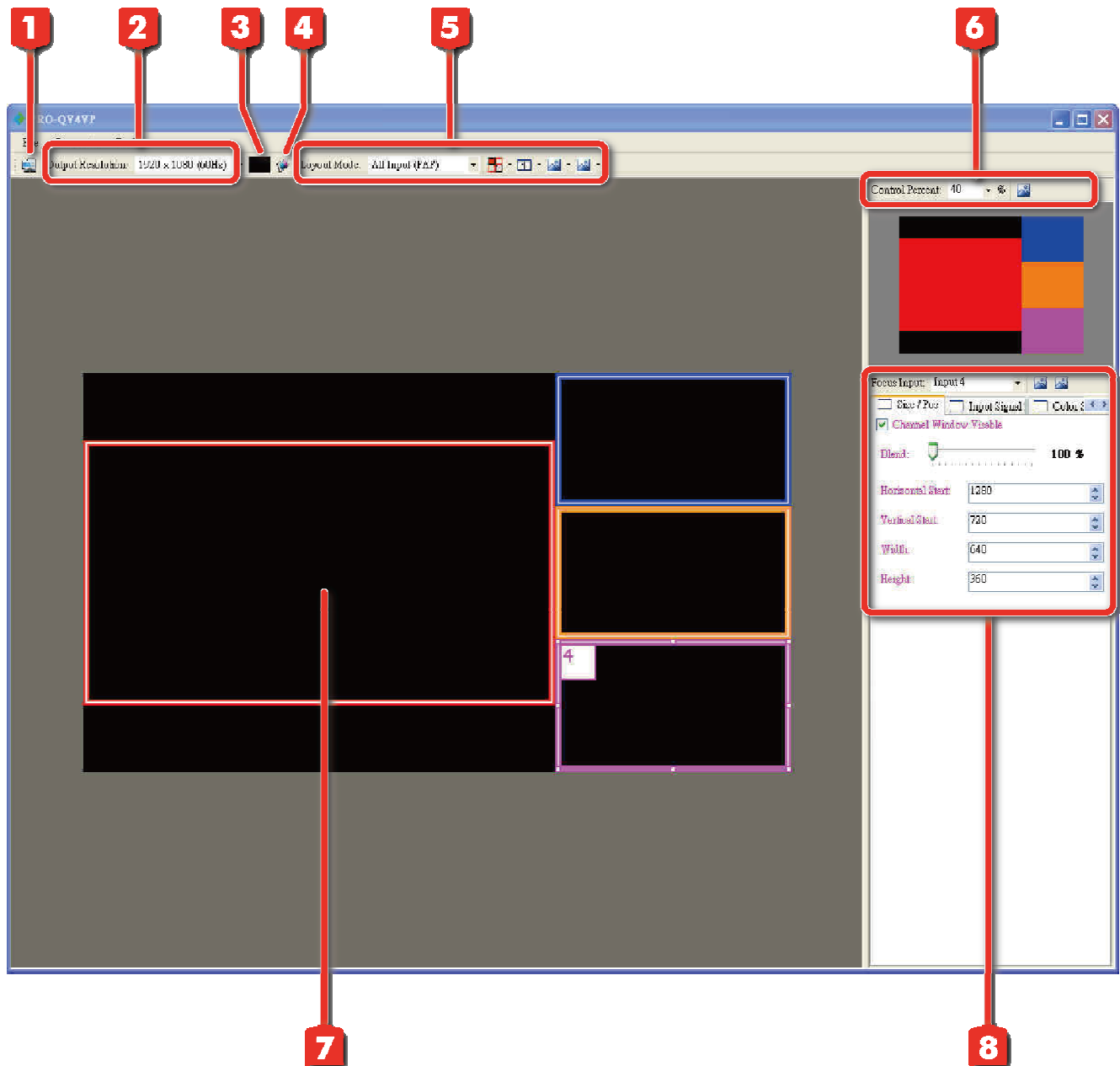
1. The PRO-QV4VP provides a software control program, Quartet, which runs under Microsoft Windows 98, 2000, XP, Vista through the interface of RS-232 serial control.
2. Before you click on the software application icon make sure you have secured the connection between your computer COM port and the PRO-QV4VP, and that the PRO-QV4VP is switched on as indicated by the green LED

Connection to PRO-QV4VP Hardware

1. Power up the PRO-QV4VP and you can see VFD on the front panel blink. Make sure the serial port mode is correct for your setting: RS-232 mode indicated by the  icon; RS-485 mode indicated by  or .
2. On startup, the software attempts to automatically link to the PRO-QV4VP using the last COM port settings. If the device responds correctly through RS-232, the software control application will start normally, otherwise the dialog box shown below is displayed. Click the “Scan” button to gather detailed information that will help you choose the correct COM Port and Device ID settings. After setting the correct COM Port and ID, you can select “Linkage” and click the “Execute” button. When the PRO-QV4VP is correctly connected, close the Linkage dialog box. When the serial connection is established, the main control console is displayed, as shown below in the image on the right.



Definitions of Menu Buttons and Icons



1 Fast Linkage

This button updates software GUI to current state of the PRO-QV4VP.

2 Output Resolution:

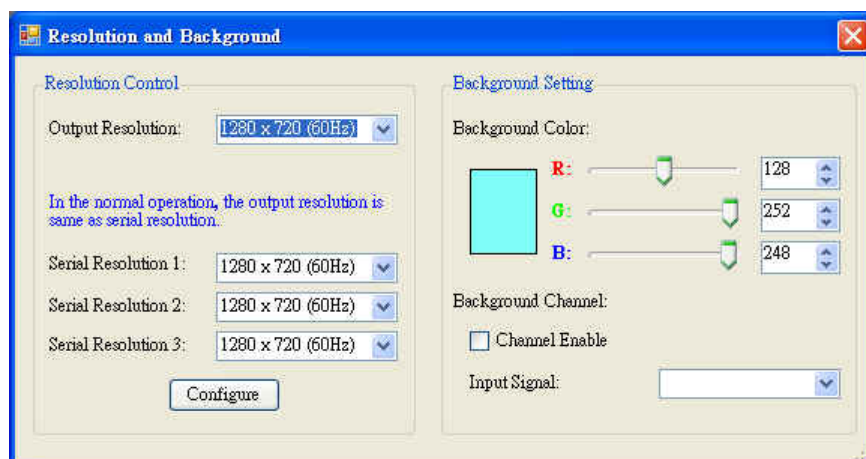
Supported Mode	Resolution	Supported Mode	Resolution
(HDTV) 720p	1280x720 @60Hz	VESA	1280x768 @60Hz
(HDTV) 1080p	1920x1080 @60Hz	VESA	1366x768 @60Hz
VESA	800x600 @60Hz	VESA	1400x1050 @60Hz
VESA	1024x768 @60Hz	VESA	1600x1200 @60Hz
VESA	1280x1024 @60Hz	VESA	1920x1200 @60Hz

3 Background Color

Clicking this button displays the color dialog for background color adjustment.

4 Background Setting

Clicking this button displays the dialog box for output resolution, background color and background channel selection. Using these controls, the PRO-QV4VP allows you to select the display background as either a solid color or one of the video input signals. Using a video source as the display background essentially allows the processor to function as a 5 channel video mixer. Background video is always displayed as full screen.



5 Display / Layout Mode

Set signal channel full screen or all channel. Notice that input sources will not be changed, only positions and sizes will be affected.

6 Layout Control Size

Set layout control size by percent.

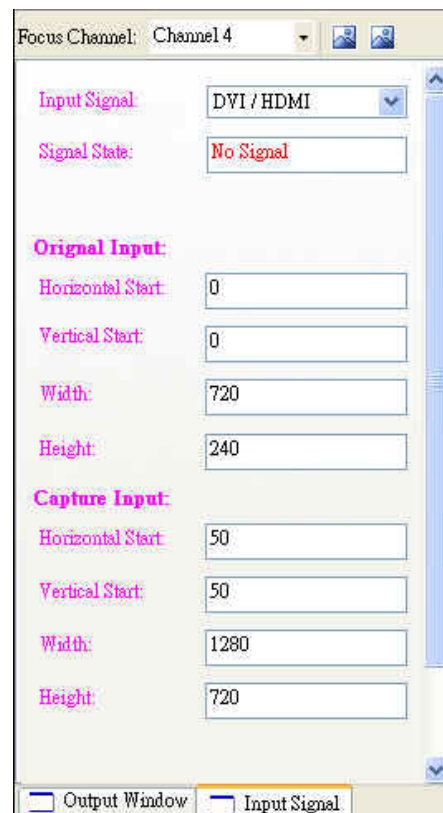
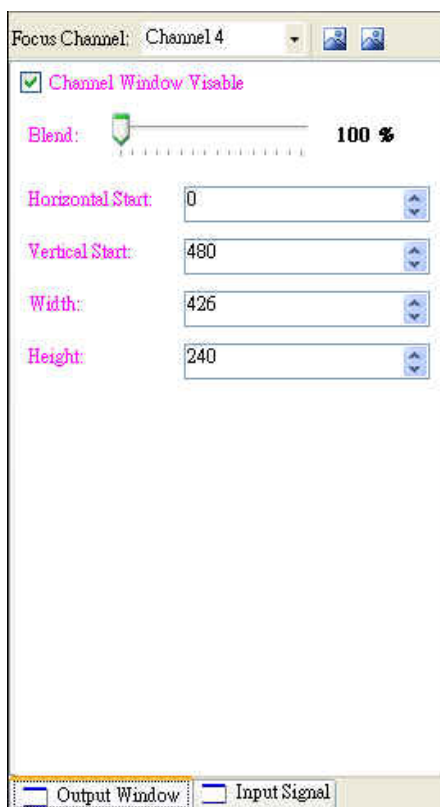
7 Layout Control

Set Channel size and position.

8 Channel Control Panel

Output Window Panel: Channel visible, blend, size, position.

Input Signal Panel: Input signal type selection, signal stable, input format.



TROUBLESHOOTING

Problem	Recommendations
No power	✓ Check that the AC power cord is properly attached to the PRO-QV4VP. ✓ In the event of a power outage, if the power cord is accidentally disconnected, or if a power surge occurs, leave the device turned off for a minute or two and then power it on again.
No/ Erratic video	✓ Make sure all cables are in good working condition and properly connected to the PRO-QV4VP and displays. ✓ Configure the output video resolution so that it doesn't exceed the native resolution of the display. (in this case, the message of "out of range" is usually showed on your screen) ✓ Make sure video sources are accurately selected to the correct channels.
Poor quality	✓ We suggest that you not use T-connectors to split your video source into to images displayed on two different screens; doing so will lower output video quality. Use a distribution amplifier instead of T-connectors. ✓ Make sure the video source is not compressed and maintains the highest native resolution.
Wrong color	✓ Use color balance or auto configuration.

APPENDIX – SUPPORTED RESOLUTION

[SDI-x (x = 1~4)] Socket

Supported Mode	Resolution
NTSC/480I/525I	720x240 @60Hz
PAL/576I/625I	720x288 @50Hz
(HD) 720p	1280x720 @23.98Hz
(HD) 720p	1280x720 @24Hz
(HD) 720p	1280x720 @25Hz
(HD) 720p	1280x720 @30Hz
(HD) 1080i	1920x540@50Hz
(HD) 1080i	1920x540 @59.94Hz
(HD) 1080i	1920x540 @60Hz
(HD) 1080p	1920x1080 @25Hz
(HD) 1080p	1920x1080 @29.97Hz
(HD) 1080p	1920x1080 @30Hz
(3G) 1080p	1920x1080 @50Hz
(3G) 1080p	1920x1080 @59.94Hz
(3G) 1080p	1920x1080 @60Hz

[DVI-I OUT] Socket

Supported Mode	Resolution
(HDTV) 720p	1280x720 @60Hz
(HDTV) 1080p	1920x1080 @60Hz
VESA	800x600 @60Hz
VESA	1024x768 @60Hz
VESA	1280x1024 @60Hz
VESA	1280x768 @60Hz
VESA	1400x1050 @60Hz
VESA	1400x1050 @50Hz
VESA	1600x1200 @60Hz
VESA	1920x1200 @60Hz



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