



## Rainier Essentials

## ABOUT THIS MANUAL

This manual contains information on how to use Avitech Rainier Essentials.

The following conventions are used to distinguish elements of text throughout the manual.



*provides additional hints or information that requires special attention.*



*identifies warnings which must be strictly followed.*

Any name of a menu, command, icon or button displayed on the screen is shown in a bold typeset. For example: On the **Start** menu select **Settings**.

To assist us in making improvements to this user manual, we welcome any comments and constructive criticism. Email us at: [sales@avitechvideo.com](mailto:sales@avitechvideo.com).

## WARNING

Do not attempt to disassemble Rainier Essentials. Doing so may void the warranty. There are no serviceable parts inside. Please refer all servicing to qualified personnel.

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## Regulatory Information

Marking labels located on the exterior of the device indicate the regulations that the model complies with. Please check the marking labels on the device and refer to the corresponding statements in this chapter. Some notices apply to specific models only.

## Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense. Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Avitech is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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### English

This product follows the provisions of the European Directive 1999/5/EC.

### Dansk (Danish)

Dette produkt er i overensstemmelse med det europæiske direktiv 1999/5/EC.

### Nederlands (Dutch)

Dit product is in navolging van de bepalingen van Europees Directief 1999/5/EC.

### Suomi (Finnish)

Tämä tuote noudattaa EU-direktiivin 1999/5/EC määräyksiä.

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Dieses Produkt entspricht den Bestimmungen der Europäischen Richtlinie 1999/5/EC.

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### Svenska (Swedish)

Denna produkt har tillverkats i enlighet med EG-direktiv 1999/5/EC.

## Australia and New Zealand C-Tick Marking and Compliance Notice Statement of Compliance

This product complies with Australia and New Zealand's standards for radio interference.

# 1. Getting Started

Building on the popularity of Rainier series, Avitech's Rainier-4x/-4x1V/-8x1V/-12x1V/-16x1V multi-image processor has 4 auto-sensing HD-SDI/SD-SDI and NTSC/PAL video inputs as well as high quality DVI output with up to 1920x1200 resolution. The Rainier provides full flexibility of sizing and positioning of the windows. The processor also displays embedded audio meter, alarms, tally and aspect ratio marker.

Up to 8 Rainiers can be cascaded in a single display.

This chapter introduces the features and specifications as well as external components of Rainier Essentials. It also guides you through the process of setting up your Rainier Essentials.

## 1.1 Package Contents

After unpacking the shipping carton, the following items can be found:



Avitech Rainier Essentials



Utility Disc (software and user manual)



Standard Power Cord (USA customer only)



DVI-I to VGA Converter



14-inch RS-485 Cascading Cable (optional – when purchasing 2 or more Rainier)



16-inch DVI-I Cascading Cable (optional – when purchasing 2 or more Rainier)



**RJ-50 GPI Terminal Block**



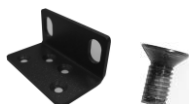
**DVI-I Male to Female Cable (optional) \***



**DVI-I Breakout Cable (optional)**



**YPbPr Breakout Cable (optional)**



**Ear with screw (already installed on Rainier upon order for assembly on to rack mount)**



**Blank Panel (already installed on Rainier upon order for assembly on to rack mount)**



**Middle support bracket with screw (already installed on Rainier 8x1V upon order for assembly on to rack mount)**



**Avitech Phoenix TACP (optional) \*\***

**Table 1-1 Package Contents**



\* When using DVI-I female connector on Rainier, connector may easily be damaged if DVI-I plug (male) has bended pins. With this optional DVI-I male to female cable permanently connected to Rainier, then frequent connection and disconnection will only occur to female end of this short cable, rather than to female connector of Rainier.

\*\* Avitech Phoenix TACP can be used with Rainier. Contact your authorized dealer or refer to Phoenix TACP User Manual for more details.

## 1.2 Product Features

Model	DVI/VGA/YPbPr Input	Video Input	Maximum Output Resolution
Rainier-4a	N/A	4 NTSC/PAL	1440×900
Rainier-4a1V	1	4 NTSC/PAL	1920×1200
Rainier-8a1V	1	8 NTSC/PAL	1920×1200
Rainier-12a1V	1	12 NTSC/PAL	1920×1200
Rainier-16a1V	1	16 NTSC/PAL	1920×1200
Rainier-4d	N/A	4 SD-SDI/ NTSC/PAL	1440×900
Rainier-4d1V	1	4 SD-SDI/ NTSC/PAL	1920×1200
Rainier-8d1V	1	8 SD-SDI/ NTSC/PAL	1920×1200
Rainier-12d1V	1	12 SD-SDI/ NTSC/PAL	1920×1200
Rainier-16d1V	1	16 SD-SDI/ NTSC/PAL	1920×1200
Rainier-4U	N/A	4 HD/SD-SDI/ NTSC/PAL	1920×1200
Rainier-4U1V	1	4 HD/SD-SDI/ NTSC/PAL	1920×1200
Rainier-8U1V	1	8 HD/SD-SDI/ NTSC/PAL	1920×1200
Rainier-12U1V	1	12 HD/SD-SDI/ NTSC/PAL	1920×1200
Rainier-16U1V	1	16 HD/SD-SDI/ NTSC/PAL	1920×1200

**Table 1-2** Rainier Series Video Comparison

- ✓ Automatic sensing of HD/SD-SDI and NTSC/PAL analog input
- ✓ Computer graphic input:  
single scalable DVI-I input for use with VGA/DVI/NTSC/PAL inputs  
resolution up to 1920×1200 (WUXGA)  
can be in any size/position
- ✓ Automatic detection of aspect ratio – 16:9 and 4:3
- ✓ Minimal processing delay of less than one frame except for full screen display
- ✓ Up to 26 internal configuration presets
- ✓ HD/SD-SDI chassis can de-embed one stereo audio pair for audio meter display (allows any mono or stereo audio to be monitored) and each audio source can be outputted via AES audio



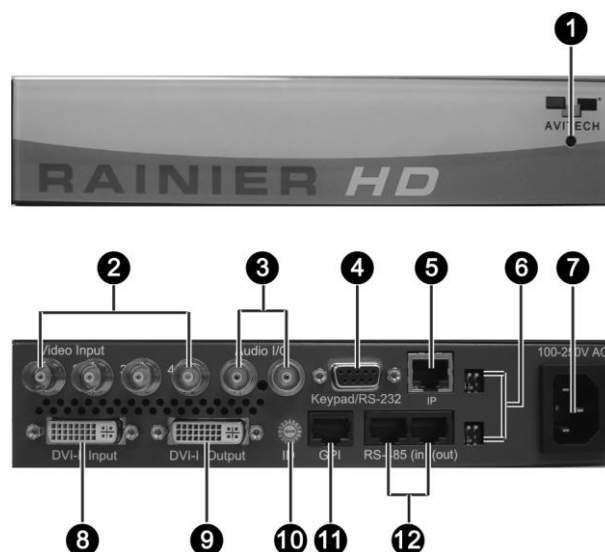
- ✓ *On-screen display (OSD) of labels, borders, and video alarms*
- ✓ *Standalone operation (single Rainier) with communication control via IP or RS-232 cable; or multiple operations (up to 8 Rainier – 7 DVI)*
- ✓ *Two Rainier can fit in a single rack unit (RU) space for a maximum of 8 video inputs and one multimedia input*
- ✓ *Compatibility with Phoenix-G (formerly Galaxy) software for configuration, monitor layout, and multiple-system control*
- ✓ *Avitech ASCII Protocol (AAP) support*
- ✓ *Compatible with optional Touch-screen Avitech Control Panel (TACP) via the ACP user interface*
- ✓ *RJ-50 GPI terminal block adapter for tally or loading presets*
- ✓ *Up to 26 presets/configurations can be saved and recalled from module's Flash EEPROM*
- ✓ *Not compatible with MCC 8004 or Titan 8000 modules*

## 1.3 Specifications

Input	
SDI/CVBS (BNC connector)	Automatic sensing <ul style="list-style-type: none"> <li>❖ <i>HD-SDI: 1080i59.94, 1080i60, 1080i50, 720p59.94, 720p60, 720p50</i></li> <li>❖ <i>SD-SDI: SD_525, SD_625</i></li> <li>❖ <i>NTSC/525i / PAL/625i</i></li> </ul>
	Number of inputs <ul style="list-style-type: none"> <li>❖ <i>Rainier 4a: 4 automatic detection PAL/NTSC</i></li> <li>❖ <i>Rainier 4a1V: 4 automatic detection PAL/NTSC</i></li> <li>❖ <i>Rainier 8a1V: 8 automatic detection PAL/NTSC</i></li> <li>❖ <i>Rainier 12a1V: 12 automatic detection PAL/NTSC</i></li> <li>❖ <i>Rainier 16a1V: 16 automatic detection PAL/NTSC</i></li> <li>❖ <i>Rainier 4d: 4 automatic detection SD-SDI/ PAL/NTSC</i></li> <li>❖ <i>Rainier 4d1V: 4 automatic detection SD-SDI/ PAL/NTSC</i></li> <li>❖ <i>Rainier 8d1V: 8 automatic detection SD-SDI/ PAL/NTSC</i></li> <li>❖ <i>Rainier 12d1V: 12 automatic detection SD-SDI/ PAL/NTSC</i></li> <li>❖ <i>Rainier 16d1V: 16 automatic detection SD-SDI/ PAL/NTSC</i></li> <li>❖ <i>Rainier 4U: 4 automatic detection HD/SD-SDI / PAL/NTSC</i></li> <li>❖ <i>Rainier 4U1V: 4 automatic detection HD/SD-SDI / PAL/NTSC</i></li> <li>❖ <i>Rainier 8U1V: 8 automatic detection HD/SD-SDI / PAL/NTSC</i></li> <li>❖ <i>Rainier 12U1V: 12 automatic detection HD/SD-SDI / PAL/NTSC</i></li> <li>❖ <i>Rainier 16U1V: 16 automatic detection HD/SD-SDI / PAL/NTSC</i></li> </ul>
DVI-I	Automatic sensing, input can be used as background or to cascade with another Rainier; supported input signal: <ul style="list-style-type: none"> <li>❖ <i>Up to 1920x1200 (WUXGA)</i></li> </ul>
	Number of input: 1
Audio	Display 2 channels of embedded audio per HD/SD-SDI audio
GPI (terminal block adapter)	8; configurable for tally or loading preset
Output	
DVI-I	Number of output: 1 <ul style="list-style-type: none"> <li>❖ <i>800x600 up to 1920x1200 (WUXGA)</i></li> </ul>
Others	
RS-232	Baud rate: up to 57600 bps
RJ-45	Network Type: 100Base-T
RS-485	Number of ports: 2
Housing	Metal
Power	Power consumption is less than 30W Power Supply: <ul style="list-style-type: none"> <li>❖ <i>100 ~ 250 V AC / 50/60 Hz (external)</i></li> </ul>
Dimensions/Weight	Dimensions: 209.6x271.8x44 mm (8.25x10.7x1.73 inch) – one-half RU (2 chassis can be mounted side-by-side in 1 RU) Weight: 1.996 kg (4.4 lb)
Environment/Safety	Temperature: <ul style="list-style-type: none"> <li>❖ <i>Operating: 0 °C (32 °F) to 40 °C (104 °F)</i></li> <li>❖ <i>Storage: –10 °C (14 °F) to 50 °C (122 °F)</i></li> </ul> Humidity, 0% to 80% relative, non-condensing Safety, FCC/CE/C-Tick/Class A

**Table 1-2** Specifications

## 1.4 Connections to the Rainier



**Figure 1-1** Rainier Components



The HD label is not printed on the front panel of Rainier-4a/-4d and -4a1V/-4d1V.

Front Panel	
<b>1 Indicator</b>	Lights green when Rainier is powered on

**Table 1-3** Rainier Front Component Description

Rear Panel	
<b>2 SDI In</b>	BNC connectors for HD SD-SDI NTSC PAL video input sources
<b>3 Audio In/Out</b>	AES connectors for audio cascade
<b>4 Serial</b>	RS-232 connector for signal from computer, or optional Phoenix TACP (Touch-screen Control Panel), or keypad connector for signal from numerical Simplified Control Panel (SCP) keypad via optional keypad converter Y-cable
<b>5 Ethernet (IP)</b>	For setup via Avitech Phoenix-G utility through network connection
<b>6 Dip Switches</b>	Updates the firmware; as well as reset Rainier to factory-default setting
<b>7 Power (100-250V AC)</b>	Connects to the AC power cord
<b>8 DVI / VGA In</b>	DVI-I connector for DVI (YPbPr) VGA video input sources (cascade from other Rainier device or from other video source as background image)
<b>9 DVI Out</b>	DVI-I connector for output to monitor
<b>10 ID</b>	Rotary dial to assign unique addresses in systems with two or more chassis
<b>11 GP Input</b>	RJ-50 connector for general purpose input
<b>12 RS-485 In/Out</b>	For serial cascading input/output

**Table 1-4** Rainier Rear Component Description

## 2. Hardware Configuration

Perform the following steps to get your Titan 8000 series up and running:



The steps outlined next would depend on type of configuration you wish to set up.

Step 1. Connect up to 4 BNC cables to the 4 **Video Input 1/2/3/4** ports for HD/ SD-SDI/NTSC/PAL video inputs.



Figure 2-1 Connect Up to Four Video Sources

Step 2. Connect RS-232 cable to **RS-232** port for signal from computer.

And/or, connect Ethernet cable to **IP** port for using computer's Phoenix-G (formerly Galaxy) software to perform setup on the Rainier.



Figure 2-2 Connect RS-232 / Ethernet Signal from Computer

Step 3. Connect the DVI-I cable to the **DVI-I Input** port for video input to the Rainier. (Skip this step for the Rainier-4a/-4d/-4U models.)

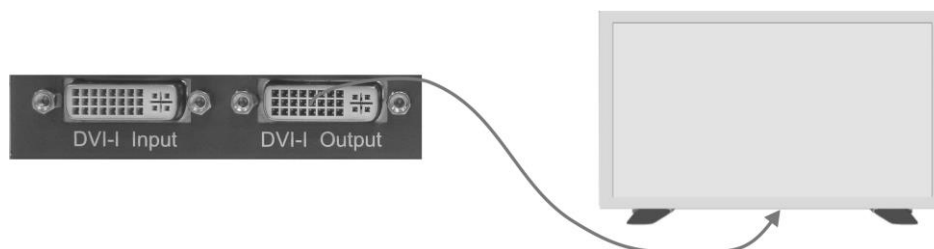


Figure 2-3 Connect DVI-I Cable to DVI-I Input Port



Make sure that resolution of input source (as background image) is the same as resolution of **DVI-I OUTPUT** port for video output to monitor.

Step 4. Connect the DVI-I cable to the **DVI-I Output** port for video output to the monitor.



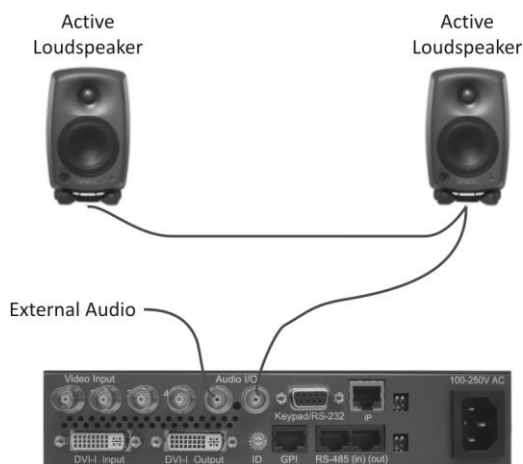
**Figure 2-4** Connect to Output Monitor

Step 5. Make sure to assign a unique address to your Rainier **ID** rotary dial when connecting to systems with two or more chassis.



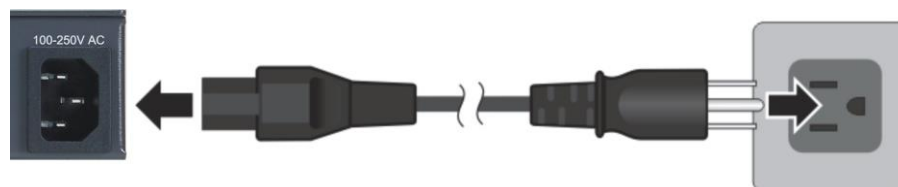
**Figure 2-5** Assign Unique Address to Rainier ID Rotary Dial

Step 6. Connect up to two audio cables to the two AES **Audio I/O** ports for audio cascade.



**Figure 2-6** Connect to the Two AES Audio I/O Ports

Step 7. Connect the AC power cord to the **100-250V AC** power jack.



**Figure 2-7** Connect the AC Power Cord

## 2.1 Cascading

Cascading is the technique of “daisy-chaining” 2 or more Rainier modules through a DVI display and a digital control backbone. This connection allows combined modules to operate as a single integrated system. Up to 8 different modules can be combined in this fashion to create extremely large and complex systems with ability to simultaneously monitor audio, video, and computer signals on same display. If a module should fail, then control and video information is passed through to allow continued operation of system.

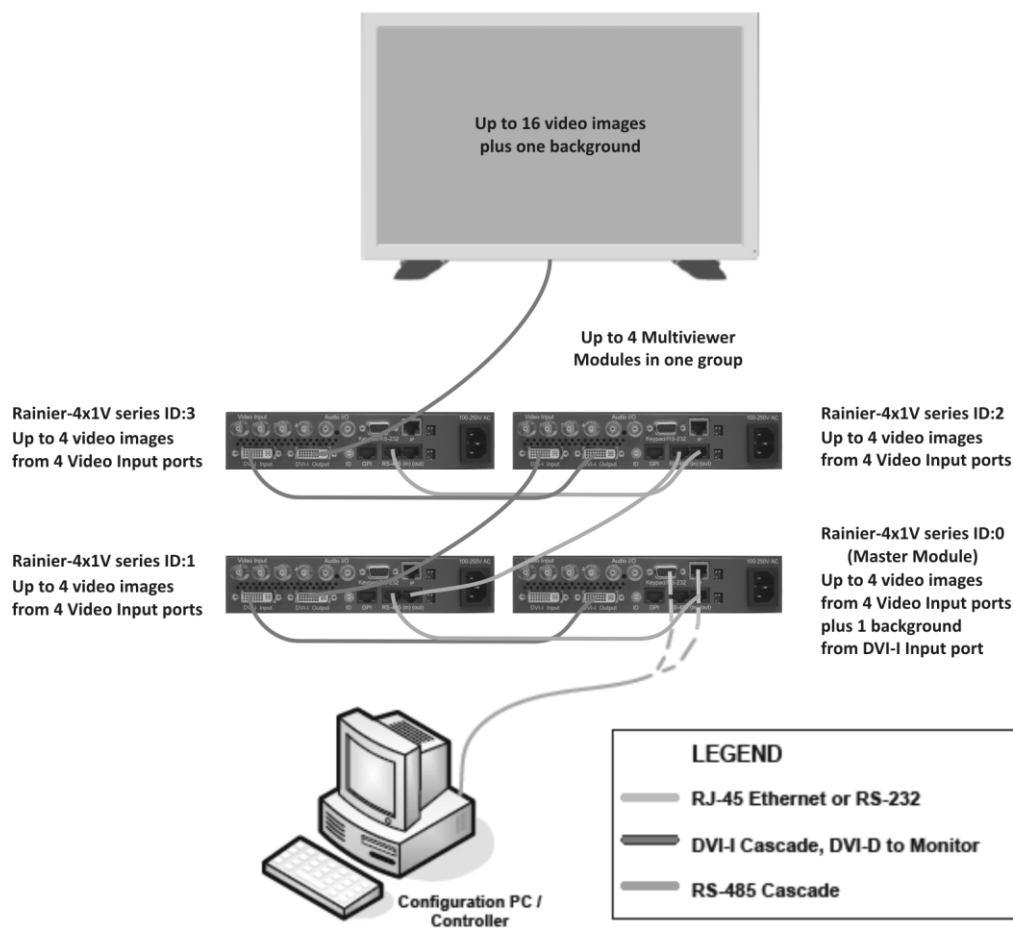


Figure 2-8 Cascading Rainier



Video cascading is not applicable for the Rainier-4a/-4d/-4U models.

The following characteristics define cascading:

- ✓ Up to 8 modules can be combined into one single Group



1. When cascading 2/3/4/5 modules, **Frame Store** must be selected for the first and last modules (Phoenix-G program under **Settings**→**Module Parameter**→**Frame Memory Status**).
2. When cascading up to 6 modules, set **Frame Store** for module 1, 5, and 6.
3. When cascading up to 7 modules, set **Frame Store** for module 1, 5, and 7.
4. When cascading up to 8 modules, set **Frame Store** for module 1, 5, and 8.

- ✓ Cascade modules to increase the number of source signal windows that can be displayed on one monitor
- ✓ Each module may contribute 4 source windows and a clock or logo that are “placed over” a DVI background

- ✓ Whatever the number of cascaded modules, cascading does not add processing delay since the “DVI background” timing is “zero”

## 2.1.1 Cascading 2 or More Rainier



The steps outlined next would depend on the type of configuration you wish to set up.

- Step 1. The modules are differentiated by using a rotary **ID** switch on the rear panel. The Master (first) module in a Group should be set to **0**. The next module should be set to **1**, and so on, up to **15** (increase in increments of 1 for every module added to the Group). The modules will be seen and controlled as **ID:1**, **ID:2**, etc, in the Phoenix-G software.



Figure 2-9 Set Rotary ID in Cascaded Rainier

- Step 2. To display video overlay from each module, all units must be connected to each other via male-to-male short DVI cascading cable.
- Take a DVI cascading cable and connect to the **DVI-I Output** port on the Master (first) module (N), and the **DVI-I Input** port of the next module in the chain (N+1).
- Take another DVI cascading cable and connect to the **DVI-I Output** port on the second module (N+1), and the **DVI-I Input** port of the next module in the chain (N+1+1).
- Take another DVI cascading cable and connect to the **DVI-I Output** port on the third module (N+1+1), and the **DVI-I Input** port of the last module in the chain (N+1+1+1).

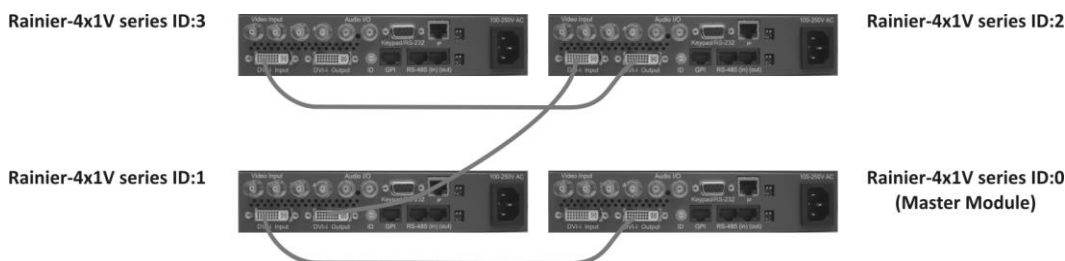


Figure 2-10 Connect Via DVI Cascading Cable



The analog part of the **DVI-I Input** port is bypassed (relays) in case the module has no power or is defective. A powered down or a defective unit in the chain will not compromise the whole system, other modules in the chain will not be inhibited to display properly.

Step 3. Module interface is cascaded through RJ-45 (RS-485) which is used to loop communication from one module to the next. The data stream carries control and configuration information. Take the RS-485 cascading cable and connect to the **RS-485 (out)** of the Master (first) module (N) and **RS-485 (in)** of the next module up (N+1)

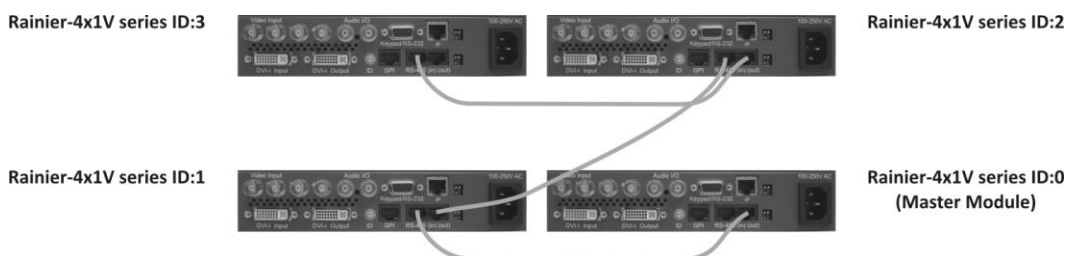


Figure 2-11 Connect Via RS-485 Cascading Cable



Control cascade (RS-485) is “passive,” and will pass-through modules that are not powered or defective. A powered down (middle module on the next figure) or a defective unit in the chain will not compromise the whole system, other modules in the chain will not be inhibited to display properly.

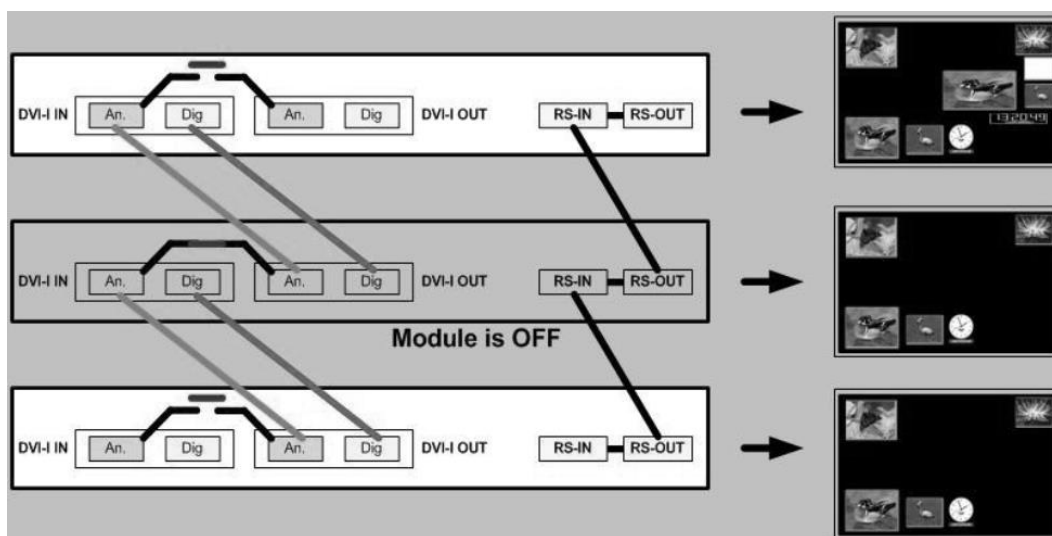
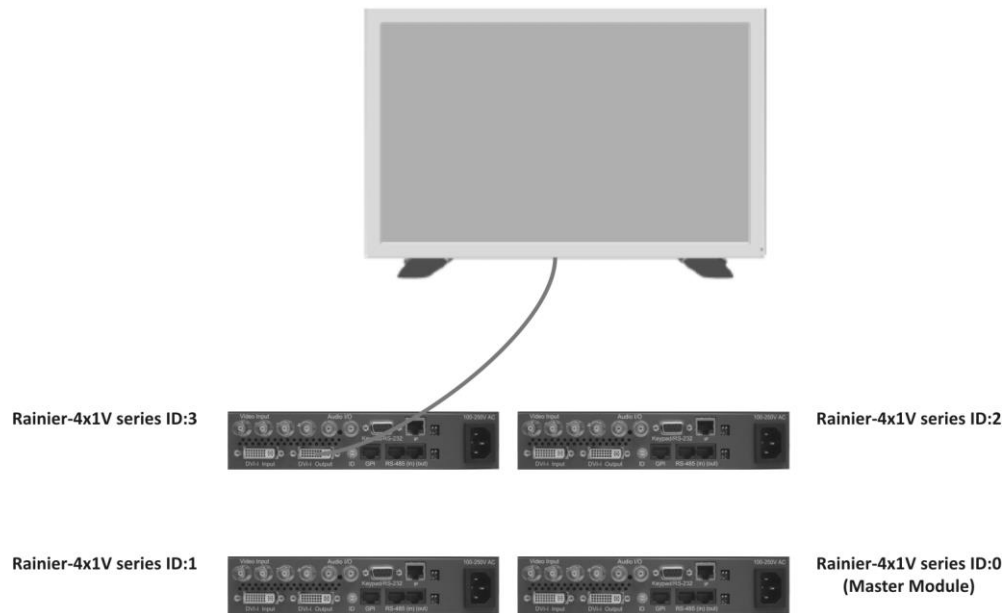


Figure 2-12 Defective Unit in the Chain will not Compromise the Whole System

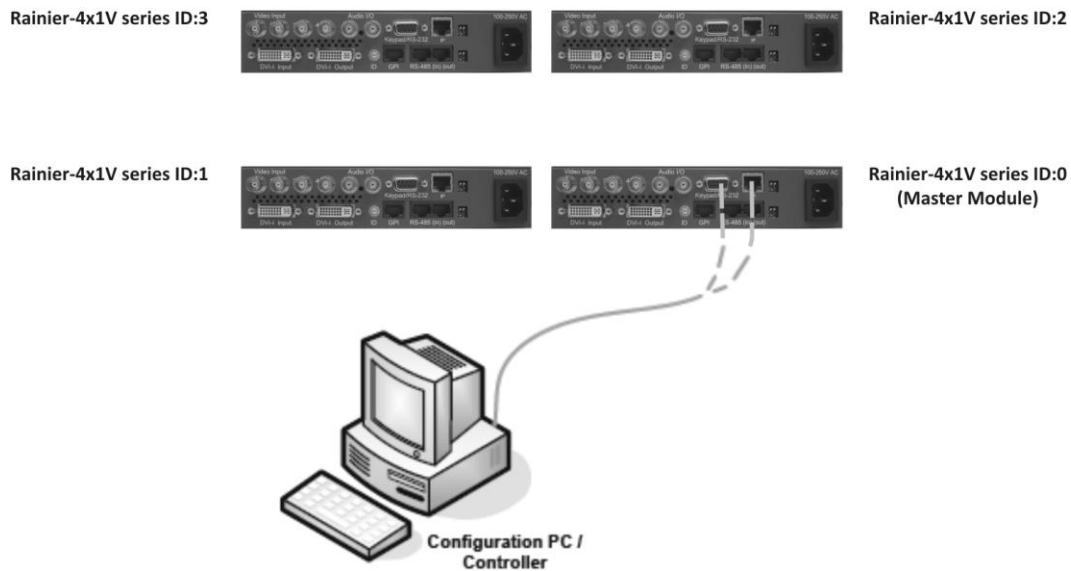


**Step 4.** The output from **DVI-I Output** port on the last module cascaded should go to the group output monitor via single-link DVI-D cable (you may need to use a DVI to VGA adapter for monitor with VGA input).



**Figure 2-13** Connect Last Module Cascaded to Output Monitor

**Step 5.** Connect a DB9 straight-through serial cable from the computer to the Master module's **RS-232** port.  
Or, connect a straight-through or a cross-over RJ-45 cable from the computer to the **IP** port on the Master module.



**Figure 2-14** Connect RS-232 or Ethernet Cable Between Computer and Rainier

**Step 6.** If the computer application uses multimedia input, connect the DVI cable to the computer's DVI port and the **DVI-I Input** port of the Master module.

Rainier-4x1V series ID:3



Rainier-4x1V series ID:2

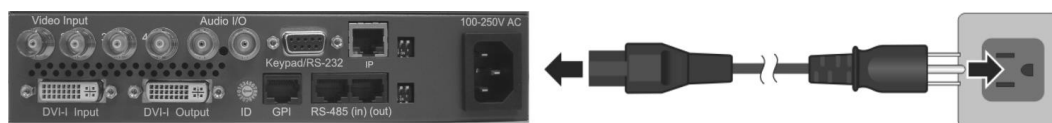


Rainier-4x1V series ID:1


Rainier-4x1V series ID:0  
(Master Module)

**Figure 2-15** Connect DVI/VGA Cable Between Computer and Rainier

**Step 7.** Connect AC power cord to **100~250V** power jack.


**Figure 2-16** Connect the AC Power Cord

## Appendix A Simplified Control Panel (SCP)

Aside from using the Phoenix-G software, you can use the optional numerical Simplified Control Panel keypad that allows you to quickly recall presets, without having to use a computer. This chapter familiarizes you with using the Simplified Control Panel to load up to 10 presets, saved in the flash memory of the Rainier module.



Figure A-1 Simplified Control Panel Keypad

### A.1 Preparing Rainier for Use With SCP Keypad

- Step 1. Create up to 10 presets with filenames **0 – 9** (up to 10 groups). Refer to *Phoenix-G Reference Guide* for details on saving presets.
- Step 2. On **Option** window, click **Set COM A**.
- Step 3. Select **Load File** on **Mode** drop-down menu. Then click **OK**.

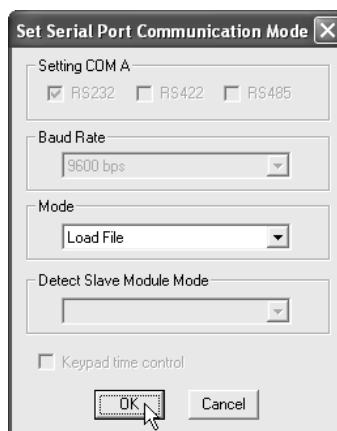


Figure A-2 Phoenix-G Software: Select “Load File”

- Step 4. You will be prompted to shutdown the Phoenix-G (formerly Galaxy) software and save to flash.
- Step 5. Turn off power from power strip to the Rainier. Then, plug in the SCP keypad to the rear panel's **Keypad/RS-232** port.



If you need to connect again using Phoenix-G (formerly Galaxy) software, you must first disconnect SCP keypad.

Step 6. Turn on power from power strip to the Rainier.

## A.2 Recalling Presets

Rainier's COM port must be set to the following parameters:

- ✓ RS-232
- ✓ 8-bit data
- ✓ 1-stop
- ✓ No parity
- ✓ 9600 bps baud rate



**Num Lock** must be ON when using the SCP keypad.

Step 1. Press **Enter** to login to Simple Control Panel mode (takes around 15 seconds to collect necessary information). Rainier will not respond to any other keys if it is not in SCP mode.

Step 2. Use Phoenix-G (formerly Galaxy) software's preset files saved in Rainier flash memory.

Step 3. When the next window appears, click **OK** to exit.

Preset filename format is: **X.GPY**

where **X** = 1 – 26, this refers to preset 1 to preset 26

where **Y** = 1 – n, this refers to group 1 to group n.

Step 3. Recall preset mode 1:

To recall next preset file, press "+" (plus) key.

To recall previous preset file, press "-" (minus) key.

Preset files within a group are loaded in a circular sequential order.

(e.g., 11→12→17→18 --- →11→12.....)

To switch to Display mode, press / (slash) → / (slash) → **Enter** (total of 3 keys).

Step 4. Recall preset mode 2:

To recall a specific preset file, press the 2 number keys. First number signifies display number, second number signifies preset number.

For example: pressing the "19" number keys would allow Rainier to recall display 1, preset 9 ("9.GP1" preset filename).



Available hot-keys and filename ranges from "00" = "0.GP0" to "99" = "9.GP9."

Step 5. Recall preset mode 3 (supports recall of preset files 0 to 26):

Example 1: pressing 1 (one) → . (point or period) → 1 (one) → **Enter** (total of 4 keys) would allow Rainier to recall "1.GP1" file.

Example 2: pressing 2 (two) → . (point or period) → 1 (one) → 7 (seven) → **Enter** (total of 5 keys) would allow Rainier to recall "17.GP2" file.

Example 3: pressing 3 (three) → . (point or period) → 2 (two) → 6 (six) → **Enter** (total of 5 keys) would allow Rainier to recall "26.GP3" file.

- Step 6. To save Rainier's preset configuration: press \* (star or asterisk) → / (slash) → **Enter** (total of 3 keys). During this process (approximately 5 seconds), make sure that your Rainier has a stable and uninterrupted power supply.
- Step 7. When DVI-I port has an analog VGA input signal, Rainier can do automatic image adjustment by pressing the following three keys: . (point or period) → \* (star or asterisk) → **Enter**.
- Step 8. When DVI-I port has an analog VGA input signal, Rainier can do automatic gain adjustment by pressing the following three keys: . (point or period) → / (slash) → **Enter**.
- Step 9. To logout from Simple Control Panel mode, unplug SCP keypad from rear panel's **Keypad/RS-232** port.

## Appendix B Resetting to the Factory-Default State (Clearing the Flash Memory)

### Method 1

Step 1. Turn off power from the power strip to the Rainier.

Step 2. Push the lower number 2 dip switch located on the Rainier rear panel downward to the **ON** position.



Figure B-1 Push the Lower Number 2 Dip Switch

Step 3. Restore power from the power strip to the Rainier.

Step 4. Push back the lower number 2 dip switch upward to the default position.

### Method 2

Step 1. Run the Phoenix-G (formerly Galaxy) software by double-clicking the “Phoenix-G-Vxxx.exe” file. Click **Others**.

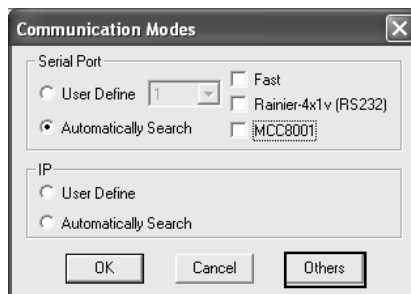


Figure B-2 Phoenix-G Software: Click “Others”

Step 2. Select **Others** and on the **Module Style** drop-down menu select **Rainier 4x1v (IP – RS232)**.

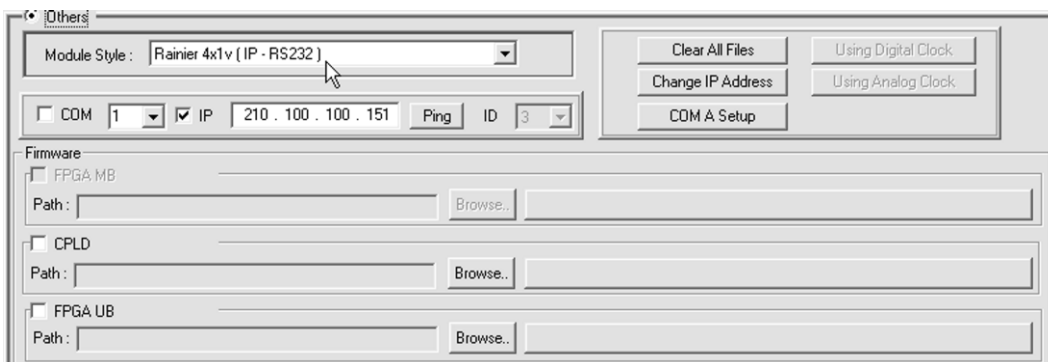


Figure B-3 Phoenix-G Software: Select the Module Style

Step 3. Click **Clear All Files**.

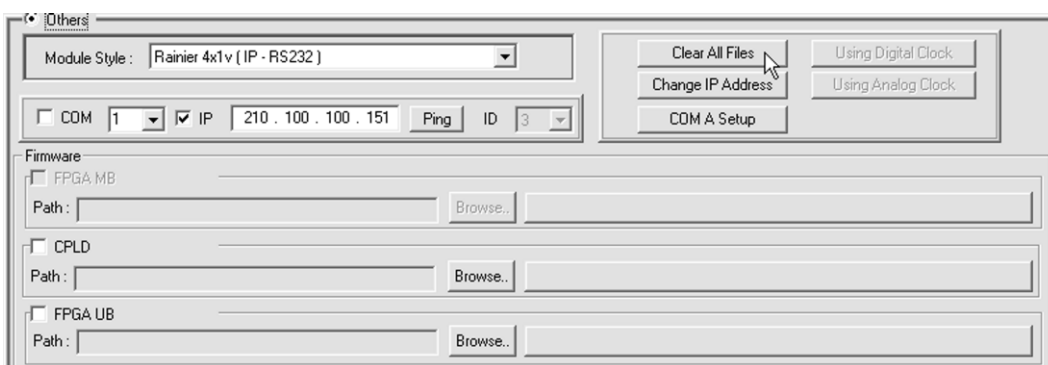


Figure B-4 Phoenix-G Software: Click “Clear All Files”

Step 4. Click **OK** to continue.

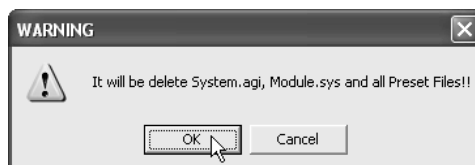


Figure B-5 Phoenix-G Software: Click “OK”

The progress of deleting the files will be shown onscreen.

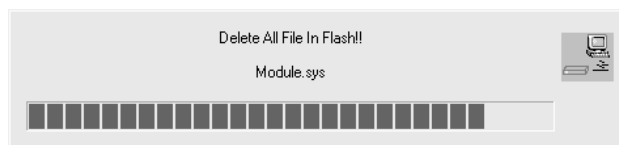
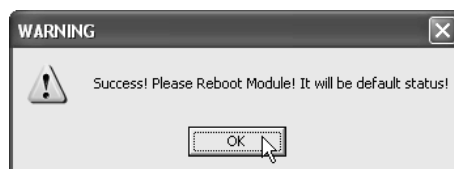


Figure B-6 Phoenix-G Software: Progress of Deleting Files

**Step 5.** *Reboot the module by turning off power from the power strip to the Rainier and then turning it back on to completely clear the flash memory and return it to the default state.*



**Figure B-7** Reboot Rainier