SIERRA VIDEO

Ponderosa™ 3G Series Routing Switcher Family
with MediaNav Software

User's Manual

SIERRAVIDEO

PONDEROSA™ SERIES ROUTING SWITCHER

User's Manual

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1

Introduction

Before You Begin

There are several terms and acronyms that you should become familiar with before reading this manual. They are shown below.

Term/Acronym	Definition
Crosspoint	The electronic switch that assigns one of the inputs on the matrix crosspoint modules to an output.
Destination	The output of a routing switcher connected to a device that receives signals from the output of the switcher.
Output	Connects the signal to the destination device.
Source	The signal that is connected to the input of the routing switcher.
Input	Connected to the source that provides the signal to the switcher.
Matrix	An array of the switch modules that connects an input to an output.
Protocol	The command structure used to affect a switch or multiple switches on the routing switcher or to control other functions.
Routing Switcher	Consists of one or more crosspoint modules that switch together, or sometimes independently, to connect the desired signals through the switcher.
Serial Port	The 9-pin RS232 connector that allow you to control the switcher using a standard personal computer or other external device. Sends control protocol commands in ASCII.

Regulatory Warnings & Safety Information

The information in the following section provides important warnings and safety guidelines for both the operator and service personnel. Specific warnings and cautions may be found throughout this manual. Please read and follow the important safety precautions noting especially those instructions relating to risk of fire, electrical shock and injury to persons.

Any instructions in this manual that require opening the equipment cover or enclosure are intended for use by qualified service personnel only. To reduce the risk of electrical shock, do not perform any servicing other than what is contained in the operating instructions unless you are qualified.

⚠ *Warnings*

- Heed all warnings on the unit and in the operating instructions.
- Disconnect AC power before installing or removing device or servicing unit.
- Do not use this product in or near water.
- This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting inputs or outputs.
- Route power cords and other cables so that they are not likely to be damaged, or create a hazard.
- Dangerous voltages exist at several points in this product. To avoid personal injury, do not touch unsafe connections and components when the power is on.
- To avoid fire hazard, use only the specified type, correct voltage, and current rating of fuse. Always refer fuse replacement to qualified service personnel.
- Have qualified personnel perform safety checks after any completed service.
- To reduce risk of electrical shock, be certain to plug each power supply cord into a separate branch circuit employing a separate service ground.
- If equipped with redundant power, this unit has two power cords. To reduce the risk of electrical shock, disconnect both power cords before servicing.
- Operate only with covers and enclosure panels in place – Do Not operate this product when covers or enclosure panels are removed.
- This is an FCC class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take necessary measures.

⚠ *Cautions*

- Use the proper AC voltage to supply power to the switcher. When installing equipment, do not attach the power cord to building surfaces.
- To prevent damage to equipment when replacing fuses, locate and correct the trouble that caused the fuse to blow before applying power.
- Use only the recommended interconnect cables to connect the switcher to other frames.
- Follow static precautions at all times when handling the equipment.
- Power this product only as described in the installation section of this manual.

⚠ *Cautions (continued)*

- Leave the side, top, and bottom of the frame clear for air convection cooling and to allow room for cabling. Slots and openings in the frame are provided for ventilation and should not be blocked.
- Only an authorized Sierra Video technician should service the switchers. Any user who makes changes or modifications to the unit without the expressed approval of Sierra Video will void the warranty.
- If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (TMRA).
- Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Use a shielded data cable connection between the parallel data ports and peripherals of this equipment.
- Other connections between peripherals of this equipment may be made with low voltage non-shielded computer data cables.
- Network connections may consist of non-shielded CAT 5 cable.
- Do not cover chassis ventilation slots or block enclosure openings.

FCC Notice

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 the expense of the user.

The user may find the following publication prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems" (Stock number 004-000-00345-4).

Available exclusively from the Superintendent of Documents, Government Printing Office, Washington, DC 20402 (telephone 202 512-1800).

Warning

Changes or modifications not expressly approved by the party responsible for compliance to Part 15 of the FCC Rules could void the user's authority to operate the equipment.

CE Notice

INFORMATION FOR THE USER

This equipment has been tested and found to comply with the limits for Class A or Class 1 digital device, pursuant to EN 550022 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 the expense of the user.

The user may find the following publication prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems" (Stock number 004-000-00345-4).
Available exclusively from the Superintendent of Documents, Government
Printing Office, Washington, DC 20402 (telephone 202 512-1800).

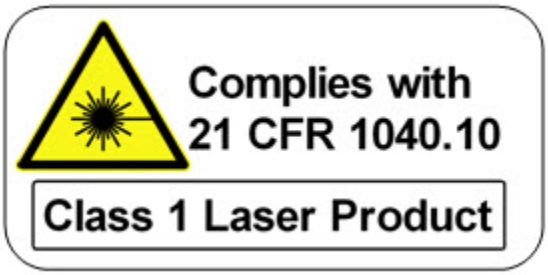
Warning

Changes or modifications not expressly approved by the party responsible for compliance to EN 55022 Rules could void the user's authority to operate the equipment.

ICAN Class A Digital Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet apparel numérique de la classe A respecte toutes les exigencies due Réglement sur le materiel brouiller du Canada.



Pulver Laboratories Inc. and Sierra Video Inc. hereby certify that the Ponderosa Series router is in compliance with VFG 523/1969, DIN 57871 / VDE 0871 / 09.84, and DIN 5785 Part 1 A2 / 10.90 (product standards) and is RFI suppressed.

The marketing and sale of this equipment in Germany has been reported to the German Postal service. They have also been given the right to retest this equipment to verify compliance with product regulations.

Compliance with applicable regulations depends on the use of shielded cables. The user is responsible for procuring the appropriate cables.

This equipment has been tested concerning compliance with the relevant RFI protection requirements both individually and on a system level (to simulate normal operation conditions). However, it is possible that these RFI requirements are not met under certain unfavorable conditions in other installations. The user is responsible for compliance of his particular installation.

Pulver Laboratories Inc.
Testing and Certification Laboratories
Sierra Video
Name of Manufacturer or Importer

Bescheinigung des Pulver Laboratories Inc. und Sierra Video hiermit wird bescheinigt, dass die Ponderosa Series router in Űbereinstimmung mit den Bestimmungen der VFG 523/1969, DIN 57871 / VDE 0871 / 09.84, und DIN 57875 Part 1 A2 / 10.90 (Amtsblattvertugung) funk-entstőrt ist.

Der deutschen Bundespost wurde das Inverkehrbringen dieses Geräts angezeigt und die Berechtigungen zur Űberprűfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Einhaltung mit betreffenden Bestimmungen kommt darauf an, dass geschirmte Ausfűhrungen gerbraucht warden. Fűr die Beschaffung richtiger Ausfűhrungen ist der Betreiber Verantwortlich.

Dieses Gerät wurde sowohl einzeln als auch in einer Anlage, die einen normalen Anwendungsfall nachbildet, auf die Einhaltung der Funk-entstőrbestimmungen unter Ungűnstigen Umständen bei anderen Gerätekombinationen nicht Eingehalten warden. Der Betreiber ist fűr die Einhaltung der funk-eutstőrungsbestimmungen seiner gesamten Anlage verantwortlich, in der dieses Gerät betrieben wird.

Pulver Laboratories Inc.
Testing and Certification Laboratories
Sierra Video
Name des Herstellers / Importeurs

Caution

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Attention

IL y a danger d'explosion s'il y a replacement incorrect de la batterie, remplacer uniquement avec une batterie du meme type ou d'un type equivalent recommande par le constructer. Mettre au rebut les batteries usages conformement aux instructions du fabricant.

Power Supply Cords

Use only power cord(s) supplied with the unit.

If power cord(s) were not supplied with the unit, select as follows:

- For units installed in the USA and Canada: select a flexible, three-conductor power cord that is UL listed and CSA certified, with individual conductor wire size of #18 AWG, and a maximum length of 4.5 meters. The power cord terminations should be NEMA Type 5-15P (three-prong earthing) at one end and IEC appliance inlet coupler at the other end. Any of the following types of power cords are acceptable; SV, SVE, SVO, SVT, SVTO, SVTOO, S, SE, SO, SOO, ST, STO, STOO, SJ, SJE, SJO, SJOO, SJT, SJTOO, SP-3, G, W.

- For units installed in all other countries; select only a flexible, three-conductor power cord, approved by the cognizant safety organization of your country. The power cord must be Type HAR (Harmonized), with individual conductor wire size of 0.75 mm². The power cord terminations should be a suitably rated earthing-type plug at one end and IEC appliance inlet coupler at the other end. Both of the power cord terminations must carry the certification label (mark) of the cognizant safety organization of your country.

- A non-shielded power cord may be used to connect AC power to every component and peripheral of the system.

- Connect an external 18 AWG wire from earth ground to the chassis of the system as designated by the earth ground symbol.

North American Power Supply Cords

This equipment is supplied with North American power cords with molded grounded plug (NEMA-15P) at one end and molded grounding connector (IEC 320-C13) at the other end. Conductors are CEE color coded, light blue(neutral), brown(line), and green/yellow(ground). Operation of the equipment at voltages exceeding 130VAC will require power supply cords that comply with NEMA configurations.

International Power Supply Cords

If shipped outside North America, this equipment is supplied with molded ground connector (IEC 320-C13) at one end and stripped connectors (50/5mm) at the other end. Connections are CEE color coded, light blue (neutral), brown(line), and green/yellow(ground). Other IEC 320-C13 type power cords can be used if they comply with safety regulations of the country in which they are installed.

EMC Regulatory Notices

Federal Communications Commission (FCC) Part 15 Information: This device complies with Part 15 of the FCC standard rules. Operation is subject to the following conditions:

This device may not cause harmful interference

This device must accept any interference received including interference that may cause undesirable operations.

Delivery Damage Inspection

Carefully inspect the frame and exterior components to be sure that there has been no shipping damage. Make sure all modules are seated correctly and have not detached during shipment.

Ponderosa™ Series Routing Switcher

Introduction

The Ponderosa HD/SDI video routing switcher from Sierra Video is top-of-the-line modular routing for those applications requiring worry-free performance and mission critical reliability. The advanced features and performance set it apart from the competition. These include:

- Modular configurations expandable by 8 input and/or 8 output increments
- Compact frame size – 4RU (6464 frame) or 8RU (128128 frame).
- Hot-swappable video I/O boards, CPU boards, and power supplies
- Optional redundant power supplies and control processors
- Full range of Sierra control hardware and software components, including remote control panels, IP, and RS-232/422 serial control. Supported by all major third party control systems.

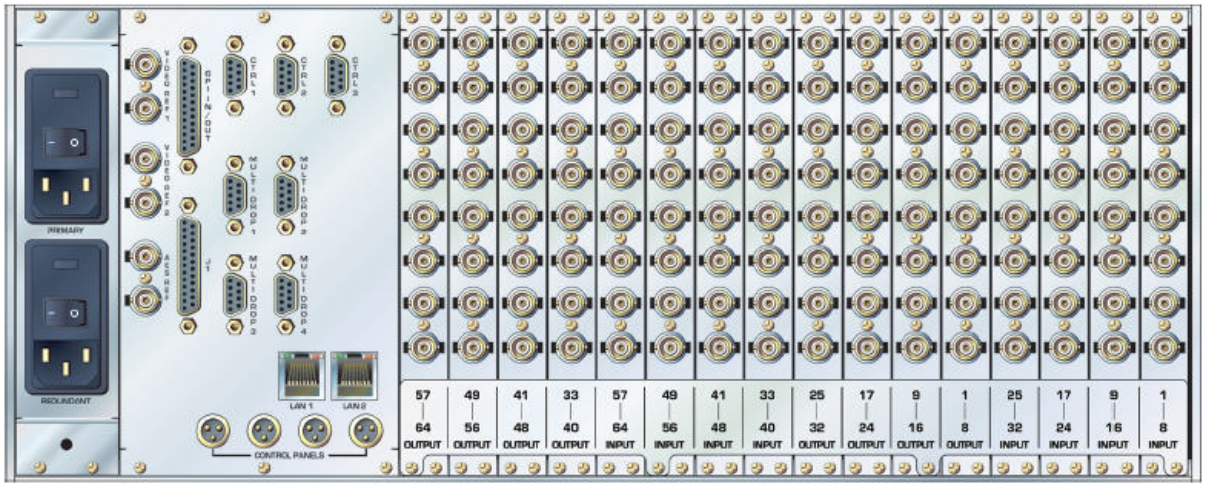
Front-door access to hot-swappable video I/O boards allows for field service or matrix reconfiguration. The power supplies are also hot-swappable, guarantee maximum in-service time and minimal interruptions. IP (Ethernet) control via TCP/IP socket connection and RS-232/422 serial control is standard in every model.

For applications requiring companion audio, the Ponderosa routing switcher is compatible with our time-tested line of audio routing switchers. Sierra Video' advanced SCP line of programmable control panels manage the routing system along with our "built in" MediaNav™ router control software featuring the most intuitive router interface in the industry.

Ponderosa 6464 Frame

Frame Front Panel

Frame Rear Panel

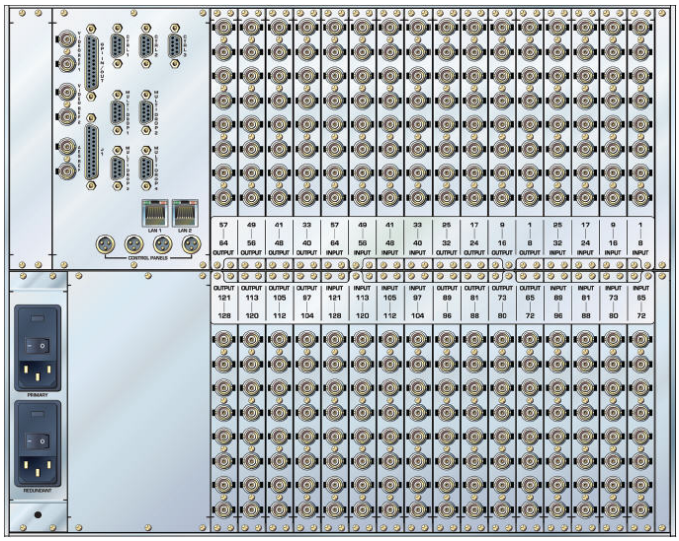


Note
The Sierra Video models shown here and in the subsequent sections are fully loaded matrices. In some cases, these frames may be configured with less outputs or inputs. Consult the rear panel serial number and model number to verify your order and product. **The system you receive is customized for the size & type requested at time of purchase from Sierra Video**

Ponderosa 128128 Frame

Frame Front Panel

Frame Rear Panel



Note
The Sierra Video models shown here and in the subsequent sections are fully loaded matrices. In some cases, these frames may be configured with less outputs or inputs. Consult the rear panel serial number and model number to verify your order and product. **The system you receive is customized for the size & type requested at time of purchase from Sierra Video**

Factors Affecting Quality of Results

There are many factors affecting the quality of results when signals are transmitted from a source to a destination.

- Signal cables — Use only the best quality cables to avoid interference, degraded signal quality and elevated noise levels.
- Sockets and connectors of the sources and destinations — Use only the highest quality, since "zero ohm" connection resistance is the target. Connectors should also match the required impedance (75 ohm in video) to minimize return loss.
- Amplifying circuitry — Must have quality performance when the desired end result is high linearity, low distortion, and low noise.
- Distance between sources and destinations — Plays a major role in the final result. For long distances (over 15 meters) between sources and destinations, special measures should be taken to avoid high frequency cable losses. These measures include using higher quality cables and/or adding line cable equalizing amplifiers.
- Interference from neighboring electrical appliances — These can have an adverse affect on signal quality. Balanced audio lines are less prone to interference, but unbalanced audio should be installed away from any main power lines, electric motors, transmitters, etc. even when the cables are shielded.

CAUTION!

Only an authorized Sierra Video technician can service the switchers. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void the warranty

Use the proper AC voltage to supply power to the switcher.

Use only the recommended interconnect cables to connect the switcher to other frames

Chapter

2

Installation

Introduction

Installation procedures are similar for all frames covered within this manual. Exceptions, if any, have been noted in each of the following paragraphs.

Rack Mounting

Carefully inspect the frame to ensure that there has been no shipping damage. Make sure all shipping material is removed from the router frame.

Each of the routing switchers described in this manual can be rack mounted in a standard 19" (RU) EIA rack assembly and includes rack "ears" at the ends of the front of the frames. None of the switcher models require spacing above or below the unit for ventilation. If ample space exists, a 1RU spacing gap is recommended.

To rack mount any of the routing switchers, simply place the unit's rack ears against the rack rails of the rack, and insert proper rack screws through each of the holes in the rack ears. Always rack mount the routing switcher prior to plugging the unit into a power receptacle or attaching any cables.

Important: Rear mounting brackets must be installed prior to installation of the router into a rack. The rear mounting brackets are contained in the accessory kit supplied with your router.

CAUTION!

The operating temperature range of the Ponderosa series router is 0 to 40 °C. Do not exceed the maximum (40 °C) or minimum (0 °C) operating temperature.

Rear mounting brackets must be installed prior to installation of the router into a rack. The rear mounting brackets are contained in the accessory kit supplied with your router.

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer’s maximum rated ambient temperature (TMRA).

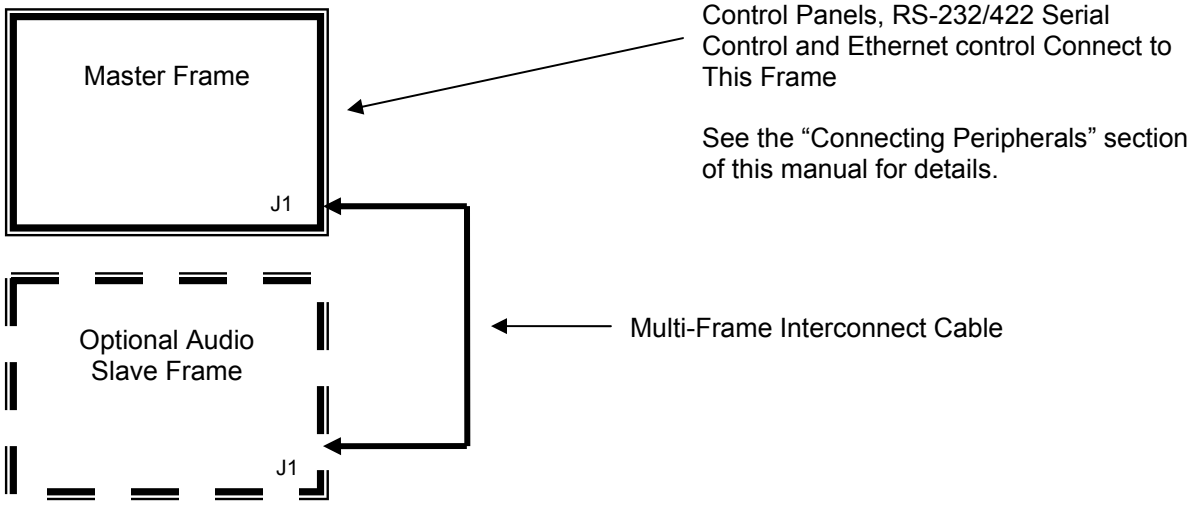
Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Multi-Frame Connection

The Ponderosa routing switcher can be connected to other SVS routers to work as one system (i.e. audio or other signal formats).

Depending on the other frames in the system, connections are either made using the “J1” (25 pin) or “Multi-drop” (9 pin) connector. A system drawing will be included in the shipment if a multi-frame system is ordered.

Control panels and serial control connect to the frame containing the master processor.



Connecting To Video Devices

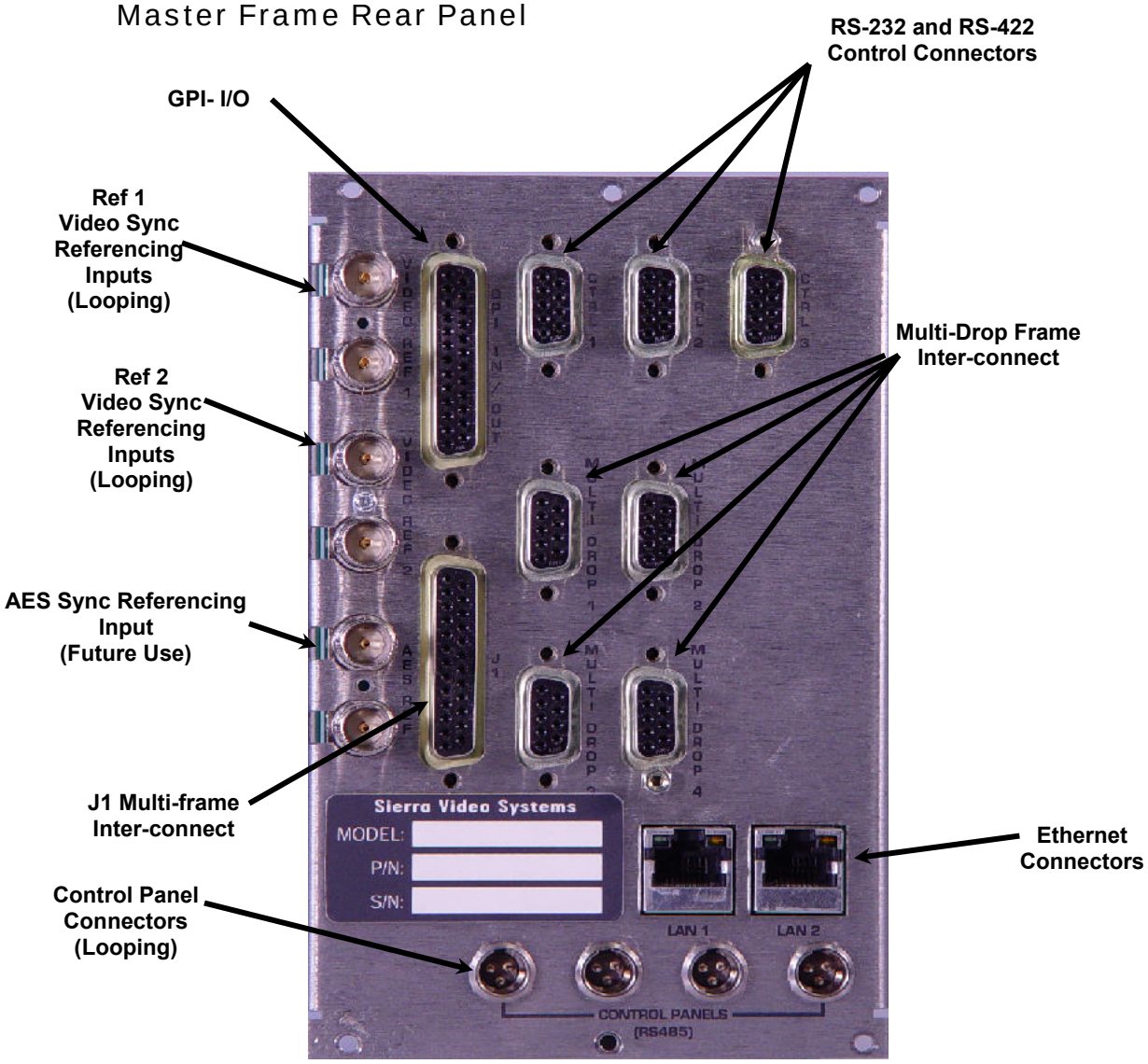
Video sources and output devices (such as monitors, or recorders) may be connected to the routing switchers through the 75 ohm BNC type connectors located on the back of the unit. Keep in mind that the output signal format will be that of the input signal format.

Inputs are set for 75 ohm termination. Unused outputs do not need to be terminated.

Connecting Peripherals

Control panels, sync inputs, and power are all connected to the rear of the “Master” frame. The peripherals area may vary depending on the model size and type.

Master Frame Rear Panel



Reference Sync

There are three “looped” sets of BNC connectors labeled "VIDEO REF 1"and “VIDEO REF 2”, and “AES REF”. These are "looping" inputs for sync referencing. Status of “VIDEO REF 1" or “VIDEO REF 2” is described in the Manage section of this manual, Connect either composite sync or video with sync to either set of BNCs. If desired, use the second BNC in the set to loop the signal to another device. If the loop is not used, terminate the second BNC with 75 ohms.

The set of sync connectors labeled “AES Ref” is for future use and are not connected.

If there are two references available the system will operate in redundant reference mode. (Reference 1 will be used if it is detected. Otherwise, reference 2 will be used if available.
If no sync is available, the routing switcher will switch at a random point rather than during the vertical interval of the reference signal.

The switching standard used will be based on the reference detected.

Video Reference	Supported video format
NTSC (59.94Hz)	SD-SDI at 59.94Hz frame rate per SMPTE 259M-C (270Mbps)
PAL (50 Hz)	SD-SDI at 50Hz frame rate per SMPTE 259M-C (270Mbps)
1080i@59.94Hz Tri-Level Sync	HD-SDI @1080i5994
1080i@50Hz Tri-Level Sync	HD-SDI @1080i50
720p@59.94Hz Tri-Level Sync	HD-SDI @ 720p5994
720p@50Hz Tri-Level Sync	HD-SDI @ 720p50
1080p@59.94Hz Tri-Level Sync	3G-SDI @1080p5994

Note:

Reference sync need only be connected to the “Master” frame. The “Master” frame is the frame where the processor is installed in a multi-frame system.

Input Equalizers

The Ponderosa series routers have the ability to adjust to the input’s cable length. The factory default settings for the input equalizers are “on”. However, they can be manually set (see the installation section of this manual)

In the 'ON' mode: The input equalizer is enabled and the routing switcher will automatically adjust to the cable length connected to the input.

In the 'OFF' mode: The input equalizer is bypassed, and the routing switcher will not do any cable equalization.

Output Reclocking

Ponderosa provides intelligent reclocking that analyzes the data rate of incoming signals. If the rates are within range of standard 270Mbps or 3Gbps data rates, Ponderosa will optimize the signal to its target rate. If the data rate of incoming signal is outside typical 270Mbps or 3Gbps data rates, like MPEG-2, Ponderosa will allow the signal to pass without interruption.

The factory default settings for the reclockers are automatic. However the reclockers can be manually set (see the installation section of this manual).

AC Power Connections

Ponderosa series routing switchers offer redundant power supplies but must be specified prior to order. The power supplies are universal AC inputs. Voltage selection is not necessary because the power supply senses the correct AC input automatically.

It is advised to connect each power supply to separate AC circuits.

The rear of the frame has two AC connectors labeled Primary and Redundant regardless of if redundant power supplies are installed. For non-redundant power systems only the AC connector “primary” is connected.

There are 4 “health monitoring” LEDs on each power supply. The LEDs indicate fan and power status.

Redundant Power Supplies

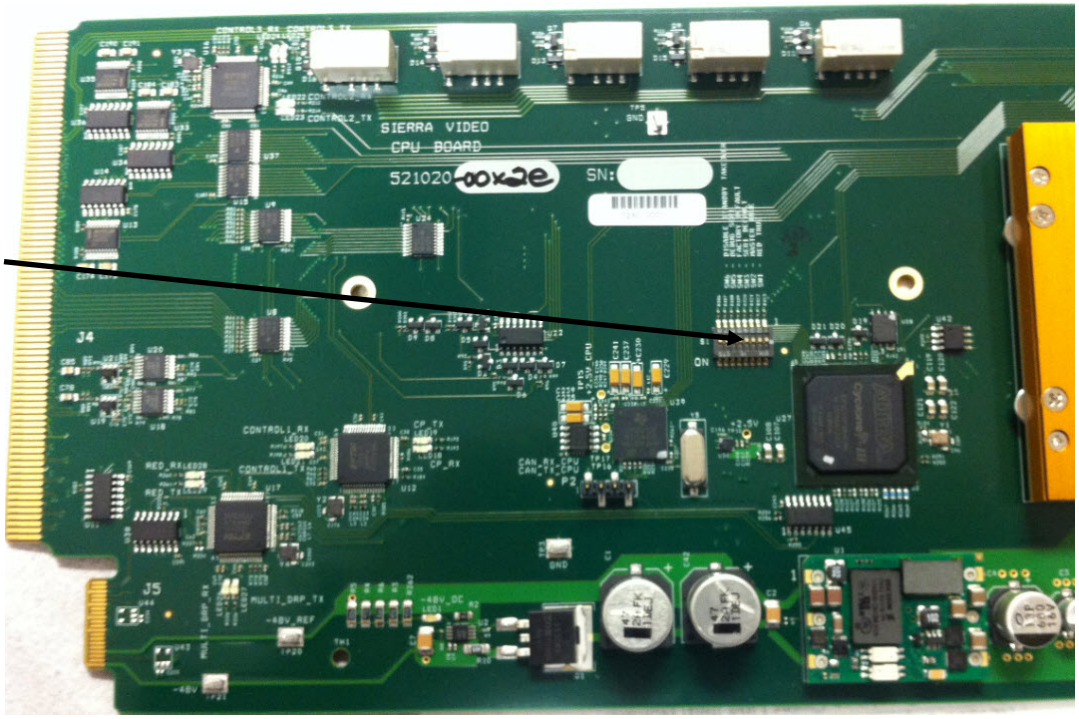
If redundant power supplies are ordered, the frame will contain two complete power supplies with health monitoring LEDs. If a power supply should fail the other power supply will automatically take over.

If a non-redundant power supply system is ordered, the redundant power supply slot will contain a power supply frame with only the fan and health monitoring LEDs. This is referred to as a “fan sled”. The “Module power” LED will not be lit on the fan sled. The redundant power AC connection need not be connected for units with non-redundant power supplies. The fan sled will operate from the primary power supply.

The “Fault” LED (red) turns on if there is a fan failure.

Control Processor DIP Switches

Your switcher has been configured at the factory for the settings you are most likely to need. However, if you want to configure the switcher differently, you can do so by setting the switches located on the processor board. DIP Switches and their action are given in the table that follows. DIP Switches are shown in their factory default settings.



Note:

Switch position down = ON.

DIP Switch Settings Cont.

DIP Switch	Action	
	S1	Default
1	**REDUNDANT CPU** On when in a redundant system	**OFF**
2	**MASTER CPU** Ignored when SW1 is off. Otherwise, on if this board is set to be the master	**OFF**
3	Not currently used. Should always be off	**OFF**
4	**FACTORY DEFAULT** On when reverting the card to factory defaults. This may cause the system to reboot. No changes to the network settings will be allowed when this switch is on. Other configuration settings will result in an error.	**OFF**
5	Not currently used. Should always be off	**OFF**
6	**DISABLE STANDBY TAKEOVER** For internal use only. Customers should always have this set to off. Used when debugging a redundant system	
7	**NETWORK ADDRESS** On when reverting the network configuration to defaults. This may cause the system to reboot. No changes to the network settings will be allowed when this switch is on.	**OFF**
8	Not currently used. Should always be off	**OFF**

CPU LEDs

There are 31 LEDS controlled by the Ponderosa Control Card. They are located as follows:

Three LEDs are located on the front edge of the CPU board. They are labeled from top to bottom
LED 6, LED 7, and LED 8.

Label	Name	Color	Function
LED 6	MASTER	Yellow	If in a redundant system (DIP SW1 on), LED is on if running as master. If not redundant, always on.
LED 7	POWER	Green	Indicates power is okay.
LED 8	ERROR	Red	On if an error in the system is detected (See Note below)

Note:

The errors that will cause the Error LED to come on are dependent on the system configured.

1. There is no crosspoint board in the system.
2. A power supply is present but off.
3. A power supply is present and its fans are off.

Twenty-six LEDs are located near the front edge of the CPU board. They are labeled from top to bottom.

Label	Name	Color	Function
LED 1	-48V_OC	Red	On if -48V is over current
LED 2	N/A	N/A	Not currently used
LED 3	FAN_OC	Red	On if fan is over current
LED 4	SDIO_ACT	Green	Indicates read/write activity on SD Card
LED 5	HEARTBEAT	Green	Toggles approximately every second to indicate that the software is running
LED 9	FPGA_LOADED	Green	Turned on by FPGA when it is loaded
LED 10	DBG1	N/A	Not currently used
LED 11	DBG2	N/A	Not currently used
LED 12	DBG3	N/A	Not currently used
LED 13	DBG4	Red	Turned on if reference 1 is configured for use and not locked
LED 14	DBG5	Red	Turned on if reference 2 is configured for use and not locked
LED 15	DBG6	Red	Turned on if power supply 1 is present and either a) Off, or b) Fans are off
LED 16	DBG7	Red	Turned on if power supply 2 is present and either a) Off, or b) Fans are off
LED 17	SDIO_OC	Red	On if SD card is over current
LED 18	CP_RX	Green	Indicates control panel port receive activity
LED 19	CP_TX	Green	Indicates control panel port transmit activity
LED 20	TERM_RX	Green	Indicates CTRL1 receive activity
LED 21	TERM_TX	Green	Indicates CTRL1 transmit activity
LED 22	HOST_RX	Green	Indicates CTRL2 receive activity
LED 23	HOST_TX	Green	Indicates CTRL2 transmit activity
LED 24	RTR_EXP_RX	Green	Indicates CTRL3 receive activity
LED 25	RTR_EXP_TX	Green	Indicates CTRL3 transmit activity
LED 26	MULTI_DRP_RX	Green	Indicates Multidrop port receive activity
LED 27	MULTI_DRP_TX	Green	Indicates Multidrop port transmit activity
LED 28	RED_RX	Green	Indicates Redundant receive activity
LED 29	RED_TX	Green	Indicates Redundant transmit activity

Ethernet LEDs

There are two functional LEDs on the Ethernet Connector defined as follows:

Color	Function
Green	On when a link has been established
Yellow	Blinking when activity is detected

GPI

The 25 pin D connector on the rear of the Master CPU frame provides relay contacts under software control that can be used to indicate a failure of router frame power supplies and fans.

The female 25 pin D connector on the rear of the CPU frame provides access to 5 relay contact sets (GPI-out 0-4). These contact sets are used to indicate failures in the router frames.

The female 25 pin D connector also provides for “GPI inputs” where an external contact closure can cause an “event”. GPI inputs need to be grounded to initiate event.

The GPOs are defined to behave as follows:

Name	Function
GPO-0	Open when power supply 1 is on; closed otherwise
GPO-1	Open when power supply 2 is on; closed otherwise
GPO-2	Open when the fans for power supply 1 are functioning; closed otherwise
GPO-3	Open when the fans for power supply 2 are functioning; closed otherwise
GPO-4	Open when Error LED is on; closed otherwise (See Note in Section 5.1)

GPI/O settings are described in the chart below;

Pin #	Connection	Alarm Description
1	GPI-4 out N/O	* Future Use
2	GPI-4 out Common	
3	N/C	Not Used
4	GPI-2 out N/O	Failure- Fan Power Supply # 1
5	GPI-2 out Common	
6	N/C	Not Used
7	GPI-0 out N/O	Failure- Power Supply # 1
8	GPI-0 out Common	
9	GPI-4 in	* Future Use
10	GPI-3 in	* Future Use
11	GPI-2 in	* Future Use
12	GPI-1 in	* Future Use
13	GPI-0 in	Close All GPI- out Contacts
14	N/C	Not Used
15	GPI-3 out N/O	Failure- Fan Power Supply # 2
16	GPI-3 out Common	
17	N/C	Not Used
18	GPI-1 out N/O	Failure- Power Supply # 2
19	GPI-1 out Common	
20	N/C	Not Used
21	GND	Ground Connection for GPI in
22	GND	Ground Connection for GPI in
23	GND	Ground Connection for GPI in
24	GND	Ground Connection for GPI in
25	GND	Ground Connection for GPI in

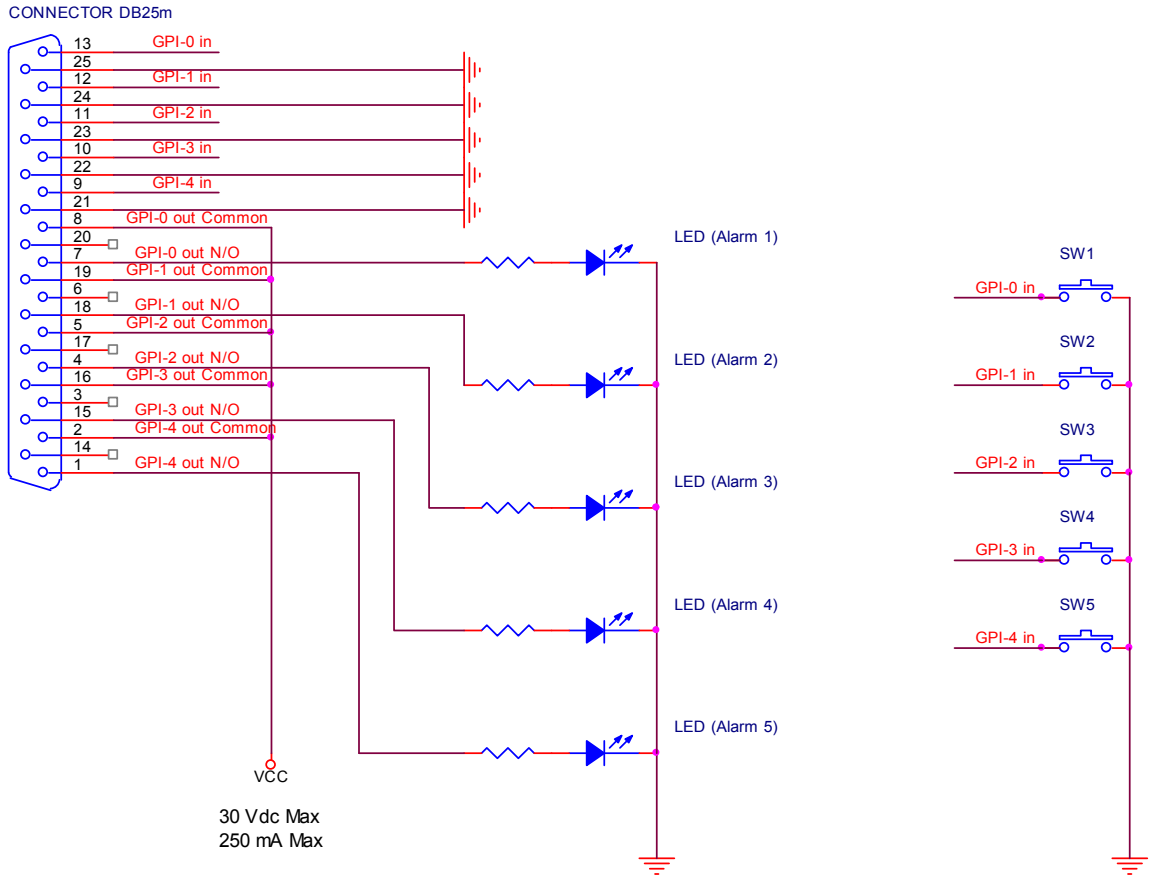
* Contact the SVS Factory for “Future Use” updates.

Note:

GPOs are open when all power to the frame off.

All relay contacts are floating relative to any ground in the router or CPU frame. No relay contact should be more than 150VRMS from CPU frame ground. Relay contact ratings are 0.5A @ 125VAC, 2A @ 30VDC.

Suggested GPI/O Circuitry



Chapter 3

User Interface

Launching and Logging In

The Ponderosa CPU is equipped with MediaNAV configuration and control software. The application is accessed on one of the supported web server platforms using any web browser over a LAN or WiFi connection. In the URL web address field on the browser, enter the IP address of the Routing Switcher, then log in (the default IP address is 192.168.1.200 and admin default password is “password”) as follows:

Clicking the **Support** button presents contact information for Sierra Video including web address, phone numbers, email address, and shipping address.

GUI Layout

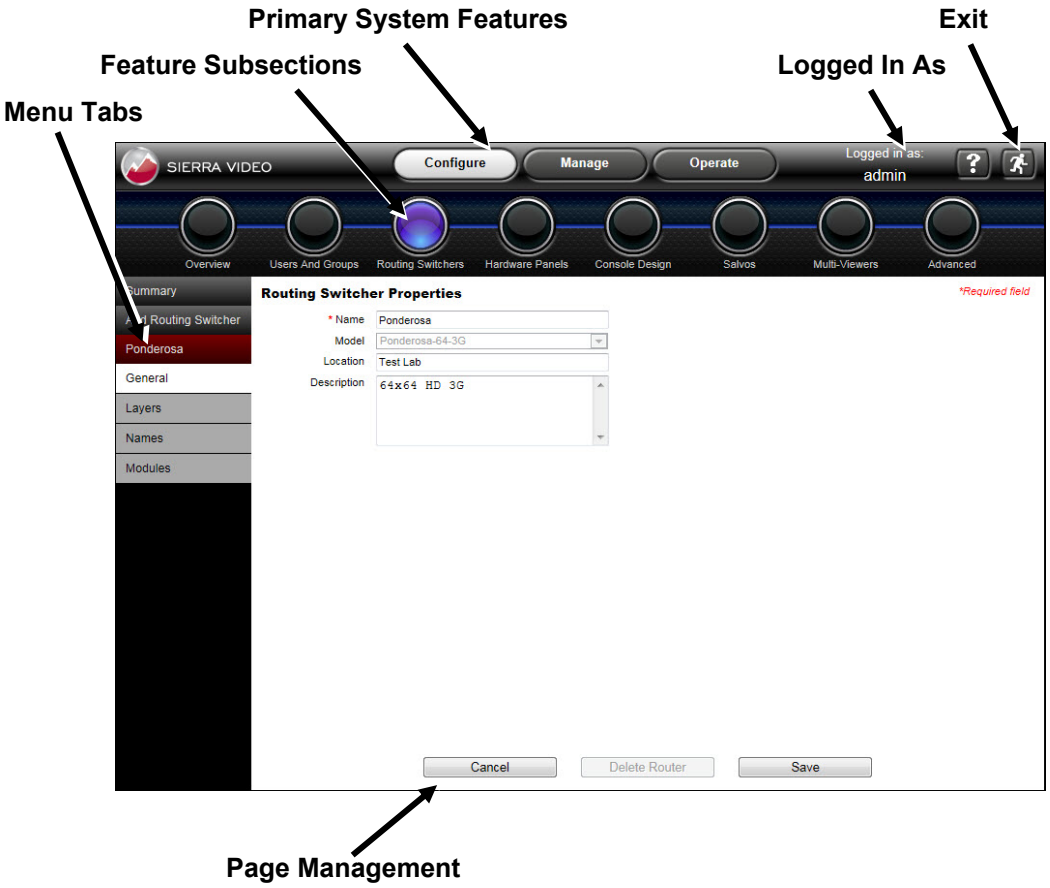
The GUI for the MediaNAV application is comprised of three separate sections for primary system features; **Configure, Manage, and Operate.** Detailed information on these sections is included in the later chapters of this manual. The three primary system feature buttons are located at the top of the page in the title bar. The subsections to the primary system features are accessed by a row of round buttons immediately below the primary section buttons.

A set of menus and sub menus that are relevant to the selected system feature and subsection is accessed by the tabs located on the left side of the page.

- **Dark grey** indicates a top menu
- **Red** indicates a selected top menu
- **Light grey** indicates a sub menu
- **White** indicates a selected sub menu

The current user **Login** is displayed at the right side of the title bar, to the left of the **Exit** icon.

Page management buttons are located at the bottom of the page for functions such as **Save**, **Cancel**, **Refresh**, etc.



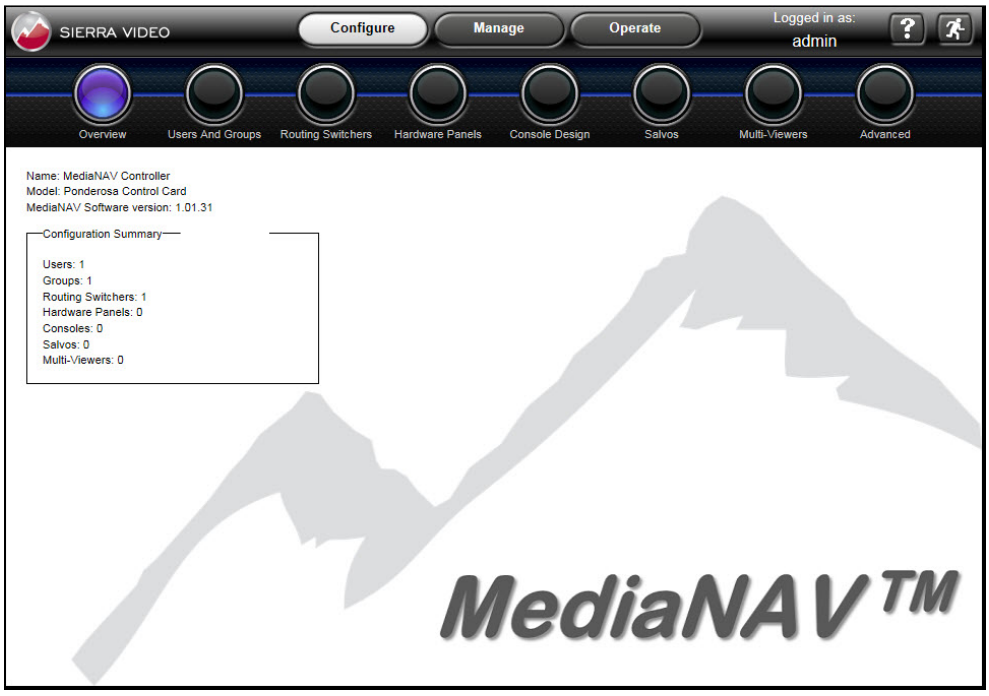
Chapter 4

Configure

Overview

This page provides basic information about the current configuration including the name of the controller, model of the controller, MediaNAV application version, and a summary listing the numbers of Users, Groups, Routing Switchers, Hardware Panels, Consoles, Salvos and Multi-Viewers in the current configuration.

The MediaNav application will come preconfigured from the factory in accordance with the routing switcher's configuration as ordered. The following sections refer to the general operation of the MediaNav application.



Users and Groups

This subsection of the **Configure** feature allows the user to create, edit, and archive users and groups. The tabs in the left pane present pages for configuration of Users, Groups and Archives.

Users

Selecting the **Users** tab in the pane at the left side of the window provides a **Users List** of all added and activated users. Links are provided for the following functions:

- Add a New User
- Edit User
- Duplicate User
- Deactivate and Archive

Add a New User

This page allows the addition of a new user with input of user profile information such as Login and password credentials, and personal contact information. The only required profile information is Login and Password.

Assign Consoles

To allow the user being added to have access to existing control consoles using the **Operate** feature, select any or all consoles in the Available consoles box under **Assign Consoles** and click the arrow button pointing to the **Allowed access** box. The consoles listed in the **Allowed** access box will be visible to the new user under the **Operate** button in the title bar at the top of the window.

Groups

Select any or all groups listed in the Available groups box and move them to the **Member of** box to enable privileges for access to system features that are assigned to the selected groups.

System Features (right half of page)

If the Configure checkbox is not checked, then:

- When this user logs in, the **Configure** button in the title bar at the top of the window will not appear.
- All of the checkboxes below **Configure** will be disabled (grayed out) and not checked.

If the Configure checkbox is checked, then:

- When this user logs in, the **Configure** button at the top of the window will appear and the user will have access to the **Configure>Overview** page.
- All of the checkboxes below **Configure** will be enabled so that the user configuring privileges will be able to check/uncheck each of these independently.

If the Manage checkbox is not checked, then:

- When this user logs in, the **Manage** button at the top of the window will not appear.
- All of the checkboxes below **Manage** will be disabled (grayed out) and not checked.

If the Manage checkbox is checked, then:

- When this user logs in, the **Manage** button will at the top of the window appear and the user will have access to the **Manage->Overview** page.
- All of the checkboxes below **Manage** will be enabled so that the user will be able to check/uncheck each of these independently.

Operate Checkbox

If the **Operate** checkbox is not checked, then:

- When this user logs in, the **Operate** button at the top of the window will not appear.

If the **Operate** checkbox is checked, then:

- When this user logs in, the **Operate** button at the top of the window will appear and the user will have access to any assigned GUI consoles.

Save and Cancel

These two buttons are located at the bottom of the page. Selecting **Save** will save all the current profile and system feature selections and return to the **User List** page. Selecting **Cancel** will abandon all changes since entering the user settings page and return to the **User List**.

Edit User

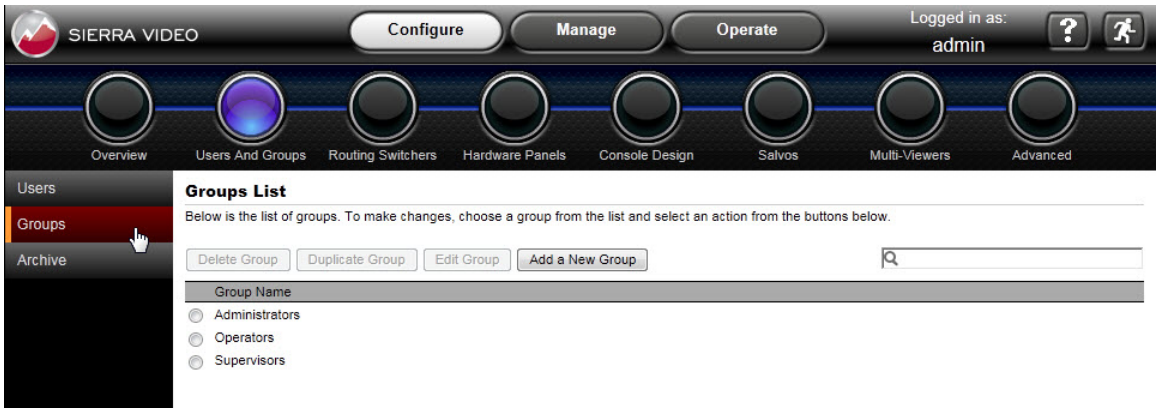
This link is active only if a user in the current **User List** is selected. The link recalls all of the selected user's profile and system feature privileges that were previously saved. Any of the settings can be changed and saved, returning to the **User List**. Clicking on **Cancel** will abandon the changes and return to the **User List**.

Deactivate & Archive

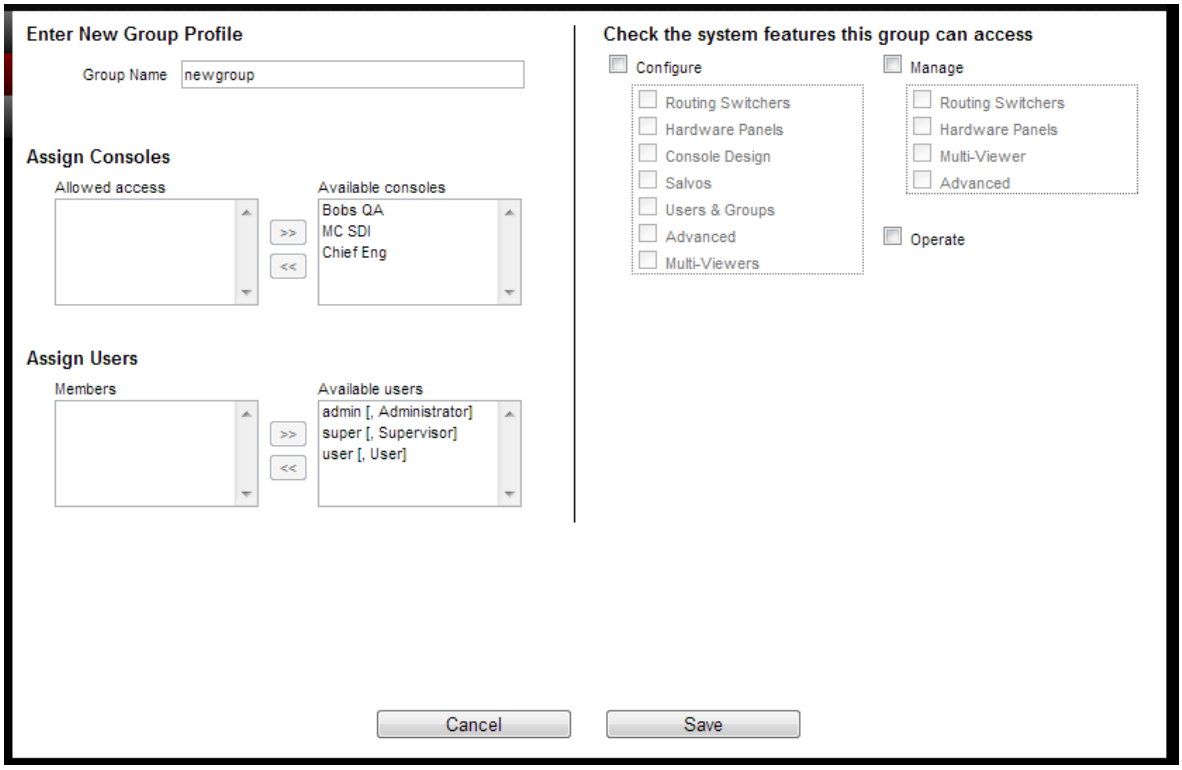
This link is active only if a user in the current **User List** is selected. This link removes the selected user from the **User List** and puts their profile information in the user archive, which is accessed using the **Archive** tab in the pane at the left side of the page.

Groups

Selecting the **Groups** tab at the left side of the page presents a list of current user groups in a **Groups List**. The links on this page are the same as those described for the Users tab, above, and the links have the same function, except for **Delete Group** instead of **Deactivate and Archive User**.



The **Edit Group** and **Add a New Group** buttons open pages that have similar information as the **Edit User** and **Add a New User** pages described above. The right half of the page provides settings for system features, all are the same as for the User pages, but apply to the group being added or edited. The left half of the page allows creation of the group name, and has assignment boxes similar to the User page. These are for assignment of Consoles to the group, and assignment of users to the group. The assignment of users to a group is interactive with the **Edit User** and **Add a New User** pages, such that changes in either the **Group Profile** or the **User Profile** will affect the assignment in the other.



Archive

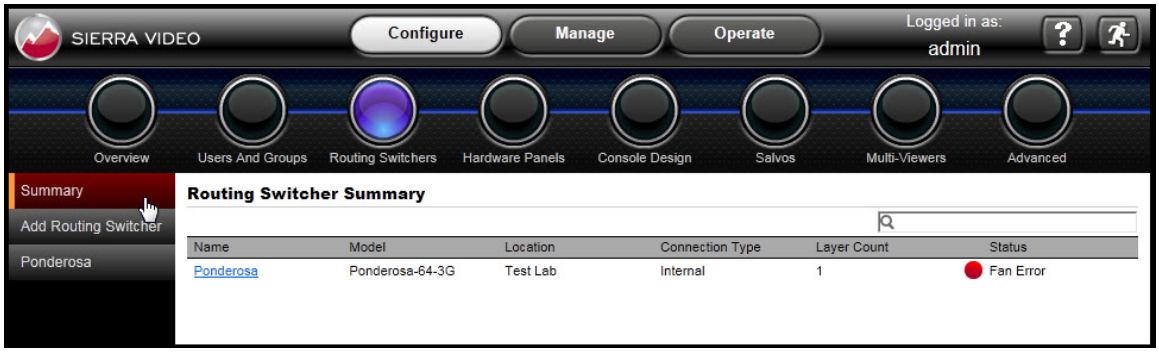
Selecting the **Archive Tab** will present a page that lists all users that have been deactivated and archived. To reactivate a user, select the user, and then click the **Activate** button near the top of the page.

Routing Switchers

The **Routing Switchers** subsection of the **Configure** system feature allows configuration of all current Sierra Video routing switchers. Third party routing switcher control is also supported (contact Sierra Video customer support for more information).

Summary

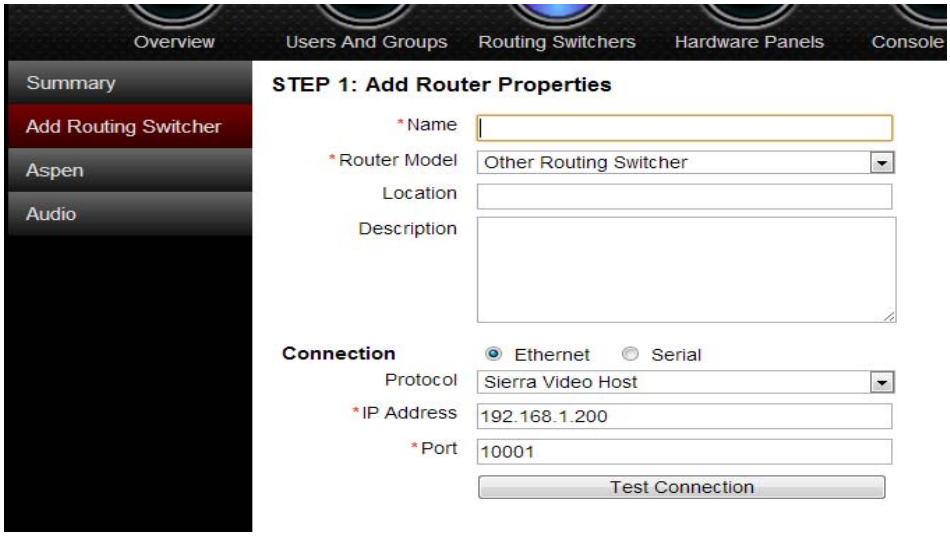
The **Summary** tab presents all configured routing switcher's summarized information including name, model, location, connection type, layer count and status.



Add Routing Switcher

This tab starts a wizard like process that allows the user to configure a new external routing switcher. The following procedure would be used to add an external routing switcher such as an audio routing switcher.
There are 3 configuration pages and one confirmation page that will be stepped through using the “next” button at the bottom of the pages. There is also a “back” button in case you need to go back to prior pages. Information on these pages is not lost when you step forwards or backwards

STEP 1: Add Routing Switcher Properties



-Give the routing switcher a name

-Select routing switcher model

-Router location (opt.)

-Router description (opt.)

- Define connection type

-Select protocol

-Set IP address of routing switcher

-Set Port of routing switcher

-Test the connection

-Click **Next**

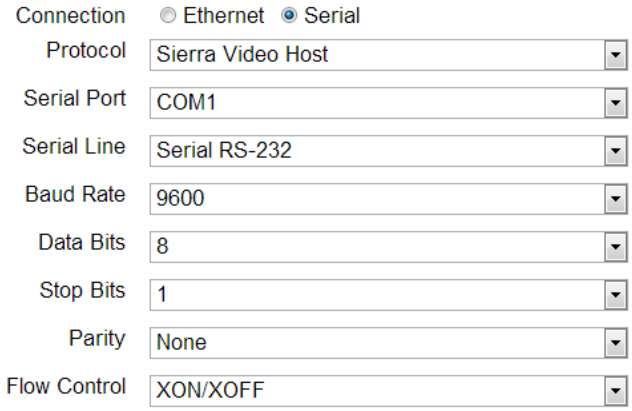
Connection:

The Connection portion of page will be ‘hidden’ if the selected routing switcher model is ‘**Virtual Routing Switcher**’

- For routing switchers with an Ethernet connection, click the **Ethernet** button for **Connection** type. Enter the desired Ethernet address and port number. There is a “Test Connection” button that can be used to verify communication at this point. If selected model is a Sierra Video routing switcher, the protocol will be ‘Sierra Video Host’ and cannot be changed.
- If the user selects the “Test Connections” button results will be as follows:

- Successful: ‘Connection test succeeded.’
- Failure: ‘Connection test failed. Check that settings are correct and routing switcher is connected.’

For routing switchers with a serial connection, click the **Serial** button for **Connection** type, and make the proper selections for the following parameters.



Note

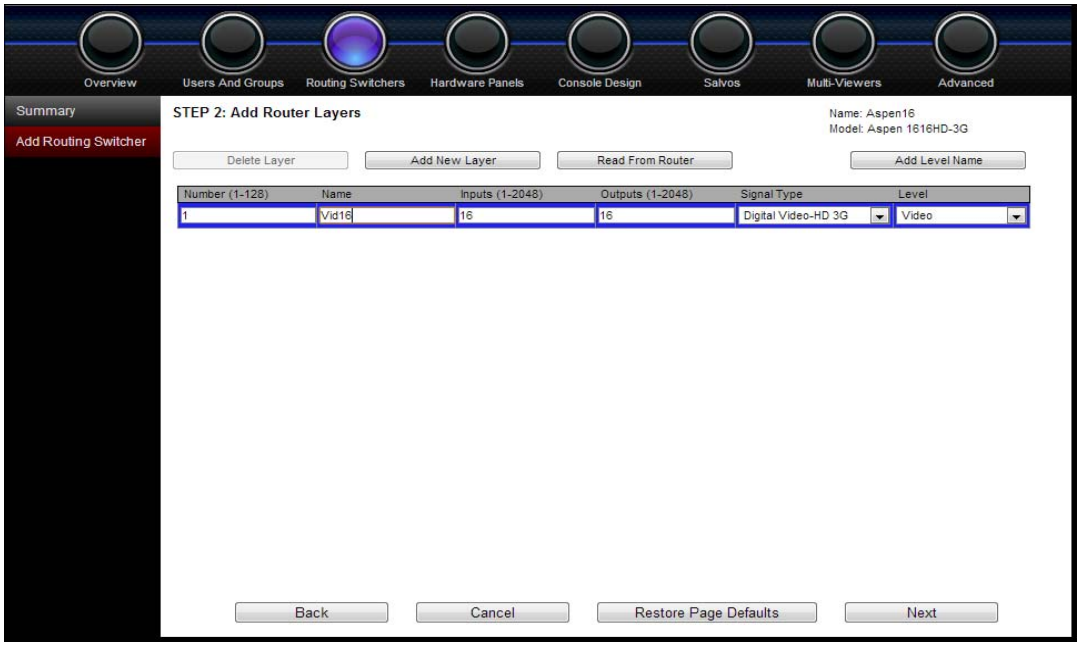
There is no “test connection” button for serial control.

- Protocol choices will be:
  - ‘Sierra Video Host’
  - Additional protocols available in future releases
- Serial Line choices will be:
  - RS-422
  - RS-232

Note:

*If “***Virtual Routing Switcher***” is the model selected, then the* **Test Connection** *button will not be shown.* ***The* Virtual Routing Switcher *selection is for demos or training only.***

STEP 2: Add Router Layers



The second step in configuring a new routing switcher adds one or more layers to the routing switcher. This step includes creation or selection of the following parameters:

- Layer Number
- Layer Name
- Quantity of Inputs
- Quantity of Outputs
- Signal Type,
- Level and Level Name

Multiple layers and levels can be created. Details about this step are as follows:

Limits:

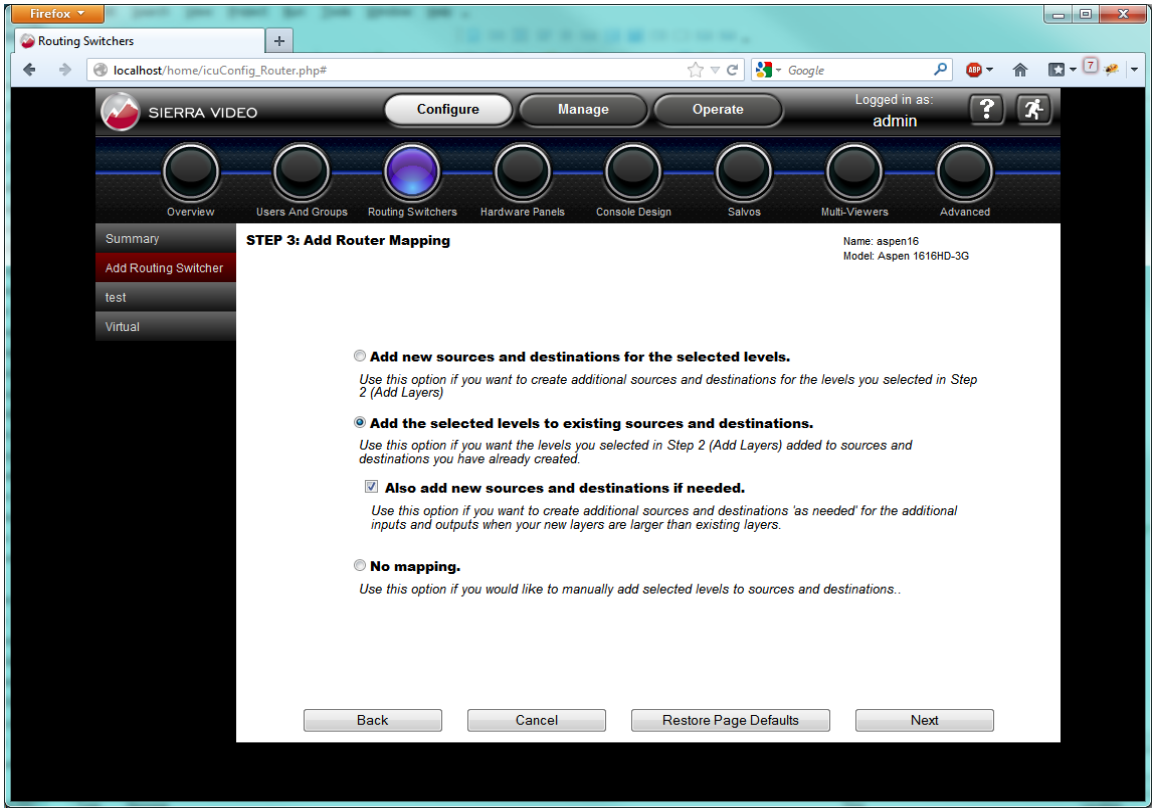
- Layer number values can range from 1 to 128.
- Layer name and level name limited to 20 characters.

Behaviors:

- The table will be populated with a single layer row.
- **Delete Layer** is disabled when there is only one level in the table.
- **Read from Router**
- This button does not appear for a virtual routing switcher or if the connection is serial.
- If the read succeeds, the Layer name displayed will be the “Level Name” in Sierra Host protocol. The protocol limits this name to 6 characters. The routing switcher may have a longer level name BUT the protocol will truncate it to 6 characters.
- **Add Level Name**

- Click on this button to add a Level Name. A Level Name must be added in order to select a level, unless one already exists in the configuration.

Step 3: Add Router Mapping



Default selections for STEP 3:

1. If sources and destinations already exist, the second radio button, “Add the selected levels to existing sources and destinations.” will be selected. Otherwise the first radio button will be selected to create new sources and destinations.

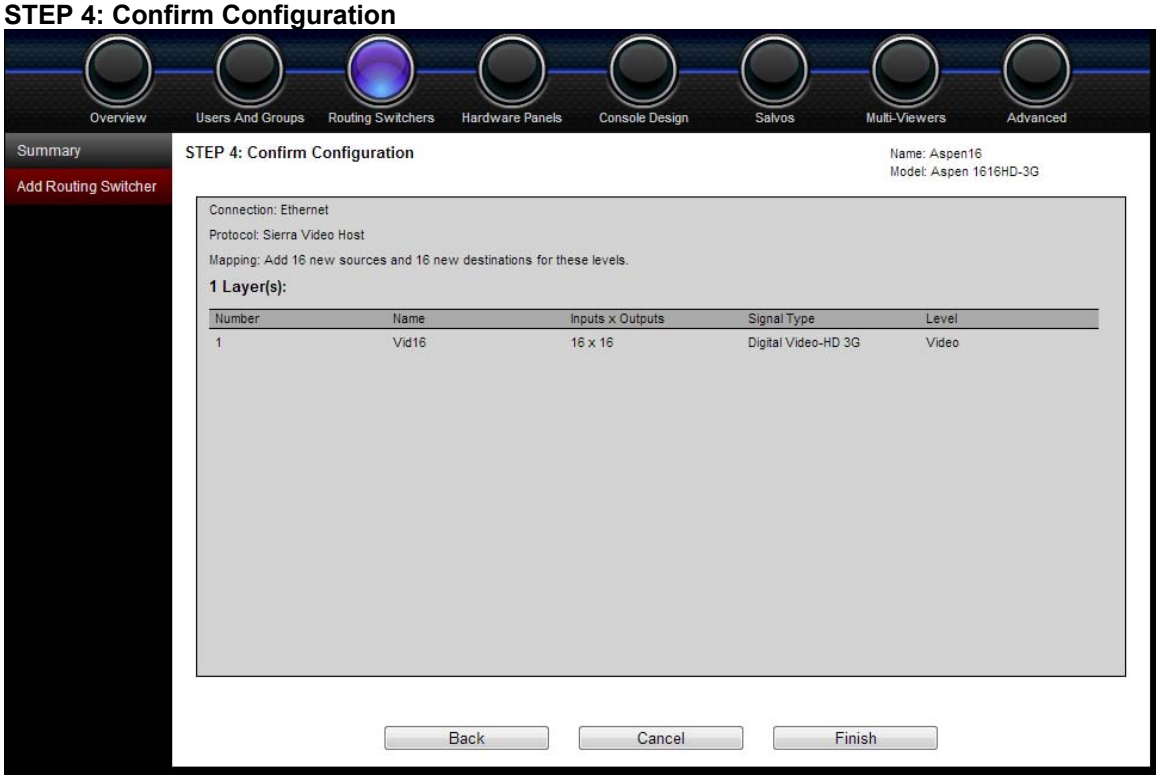
2. When “Add the selected levels to existing sources and destinations.” is selected, “Also add new sources and destinations if needed.” will be checked by default. These selections allow these levels to use previously configured sources and destinations, and if the new level has more sources or destinations than already exist, those are added.

Selecting the proper mapping:

- **Add new sources and destinations for the selected levels**.
  - The Source Name format will be “Src n” where “n” equals the highest Source Number of the current sources, plus one. Numbers continue incrementing by one up to the maximum number of Inputs defined for the new layers. If no sources already exist, the first source will be named “Src 1.”
  - The Destination Name format will be “Dst n” where n equals the highest Destination Number of the current destinations, plus one. Numbers continue incrementing by one up to the maximum number of Outputs defined for the new layers. If no destinations already exist, the first destination will be named “Dst 1.”

- **Add the selected levels to existing sources and destinations.**
    - This selection will add to the existing sources so that the Source Names in the new levels are the same as the existing Source Names up to the maximum number of existing sources. If the number of new sources exceeds the number of existing sources and they must be included in the new levels, the box for "**Also Add new sources and destinations if needed**." must be checked.
    - This selection will add to the existing destinations so that the Destination Names in the new levels are the same as the existing Destination Names up to the maximum number of existing destinations. If the number of new destinations exceeds the number of existing destinations and they must be included in the new levels, the box for "**Also Add new sources and destinations if needed**." must be checked.
    - Some errors can occur in the following cases:
        - A level is already in use on a source or destination.
        - There are not enough preexisting source or destination values to add the maximums to.
- **No Mapping:** This selection will not do any mapping. Manual mapping can be done using menus to be described in following sections of this manual.

STEP 4: Confirm Configuration



STEP 4 is the final step allowing review of the selections made in the previous steps. To make changes to the settings, simply click the **Back** button to the proper page and make the changes before clicking the **Finish** button. If all of the selections are correct, clicking the **Finish** button will save the settings for the new routing switcher. A results box will drop down indicating whether the configuration was saved successfully. If successful, a "Reboot" dialog will be displayed. If the user chooses "Reboot Later," the **Manage>Overview** page will show that a restart is needed as a reminder. If the **Cancel** button is clicked a warning dialog warns that the routing switcher configuration will be discarded.

Changing Routing Switcher Configurations

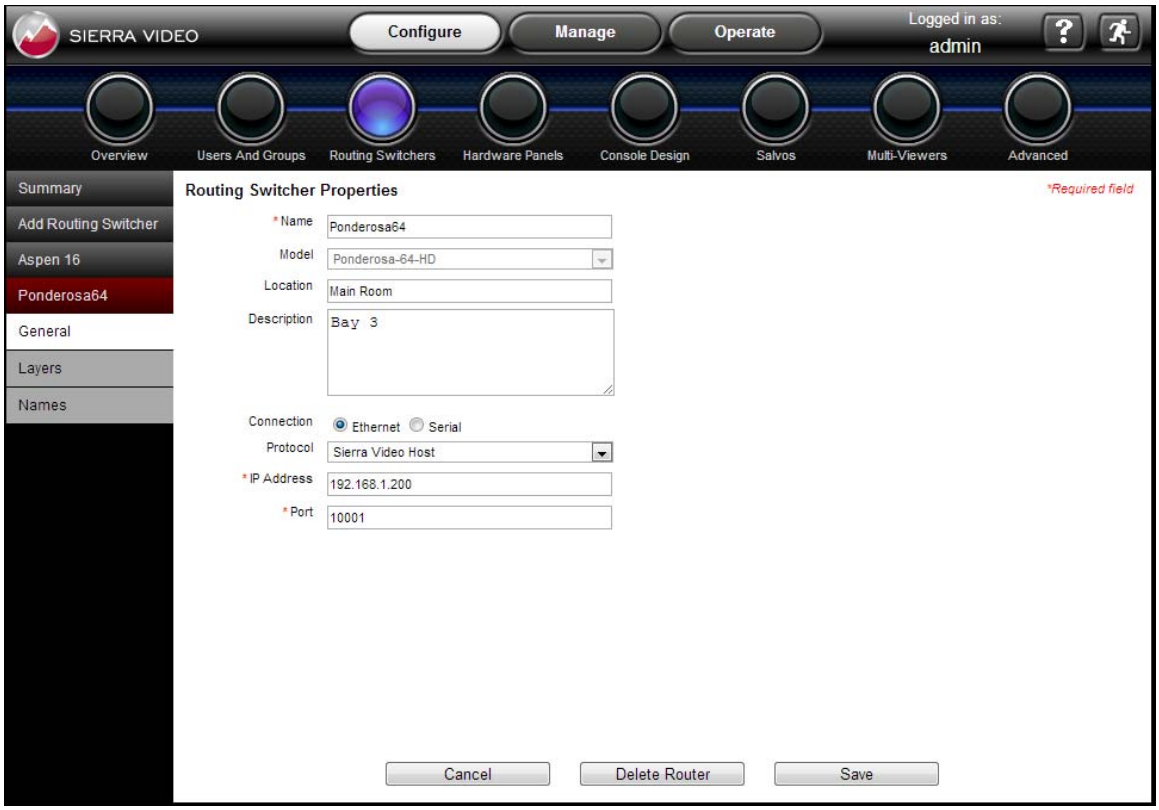
On the **Configure>Routing Switchers** page below the **Add Routing Switcher** tab on the left are tabs for all routing switchers that have been configured. Clicking on a routing switcher tab reveals sub-tabs that can be selected when making modifications to routing switcher configurations.

Note:

Internal routers cannot be deleted and their size cannot be changed.

General

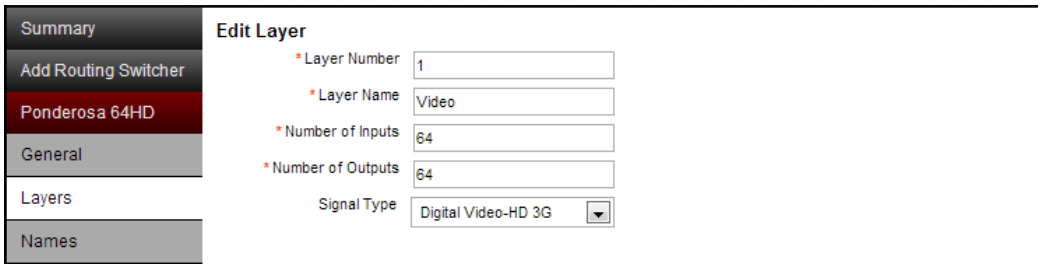
This tab reveals a page that lists various configuration parameters for the selected routing switcher in editable fields. Parameters can be added or changed for the routing switcher **Name**, **Model**, **Location**, **Description** and **Connection** settings. The routing switcher can also be deleted from the MediaNAV configuration.



Layers

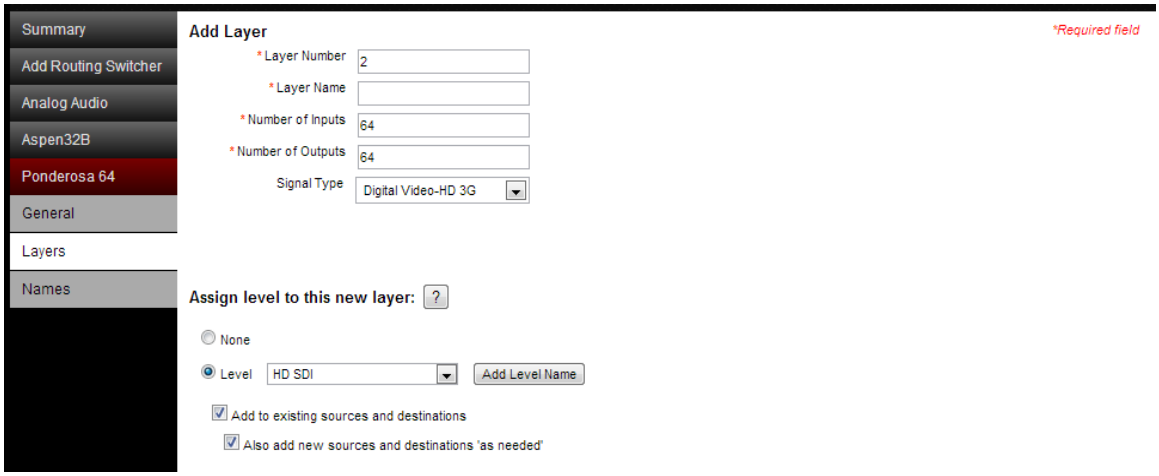
This tab reveals a page that lists various configuration parameters for the selected routing switcher. Clicking on **Edit Layer** opens a menu with Layer parameters in editable fields.

Click on Edit Layer –



This page allows modification of layer parameters, including Number, Name, Inputs, Outputs, and Signal Type.

Or, click on Add Layer –



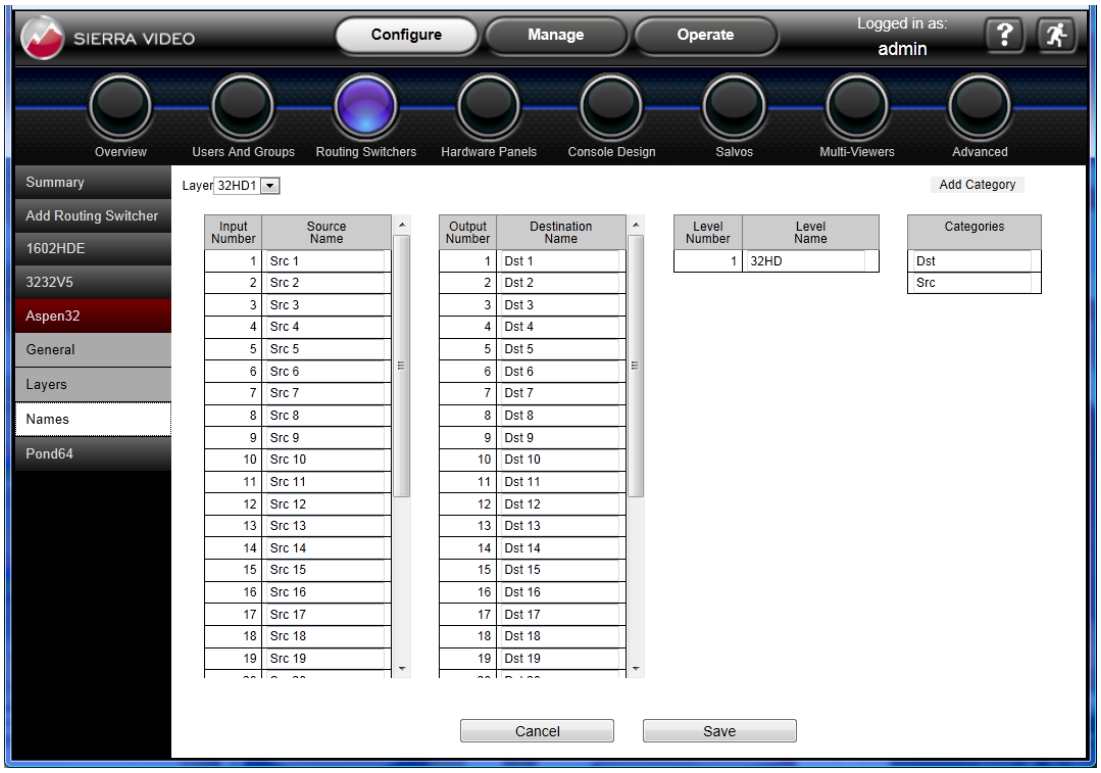
This page allows a new layer to be added to the selected routing switcher. A new level can be added as well.

Names

This tab allows the user to create or modify names for Sources and Destinations, Levels and Categories for the selected level. It's also possible to add more Categories to the configuration.

Warning:

Due to display limitations of remote control panels, it is recommended that I/O names do not exceed 8 characters (including spaces).
If you are using an SCP-20 remote control panel do not exceed 6 characters.

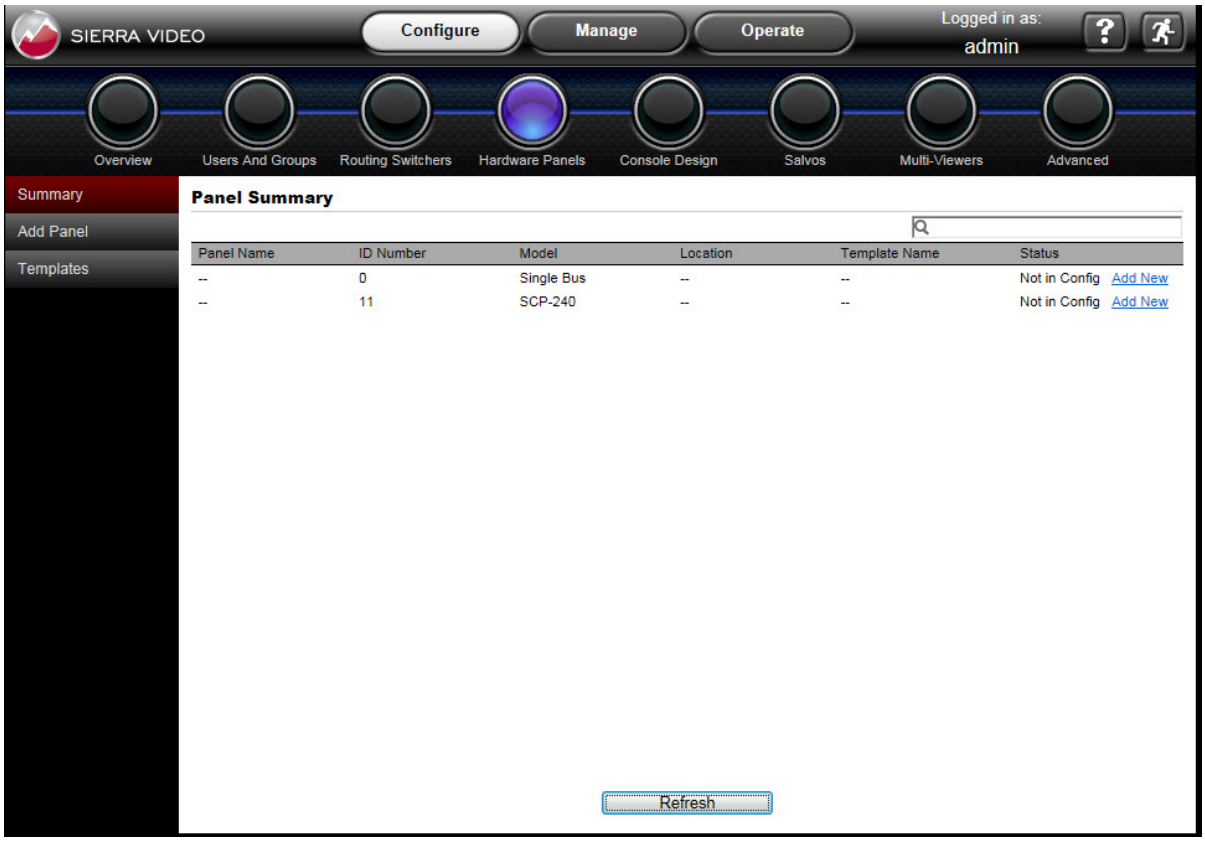


Hardware Panels

The **Hardware Panels** subsection allows most Sierra Video hardware control panels to be configured. In particular, the SCP panels which are highly programmable with a wide selection of functions that can be assigned to any push-button on the control surface. The non-programmable hardware control panels can be given a name, a location, allowed destinations, and allowed levels. In every case a graphical image of each panel is displayed, which is used for push-button selection for function assignment on the programmable control panels.

Summary

The **Summary** tab provides a list of panels connected and the **Status** of the panel connection. Information about each panel is displayed, including name, ID, model, location, and template name. If the panel is detected but not in the configuration then status will show a hyperlink “Add New” that can be clicked on to start the configuration process. Click on “Refresh” to force the system to check for panels connected to the system.



Clicking on “Add New” will take you to the “Add Panel” page.

Add Panel

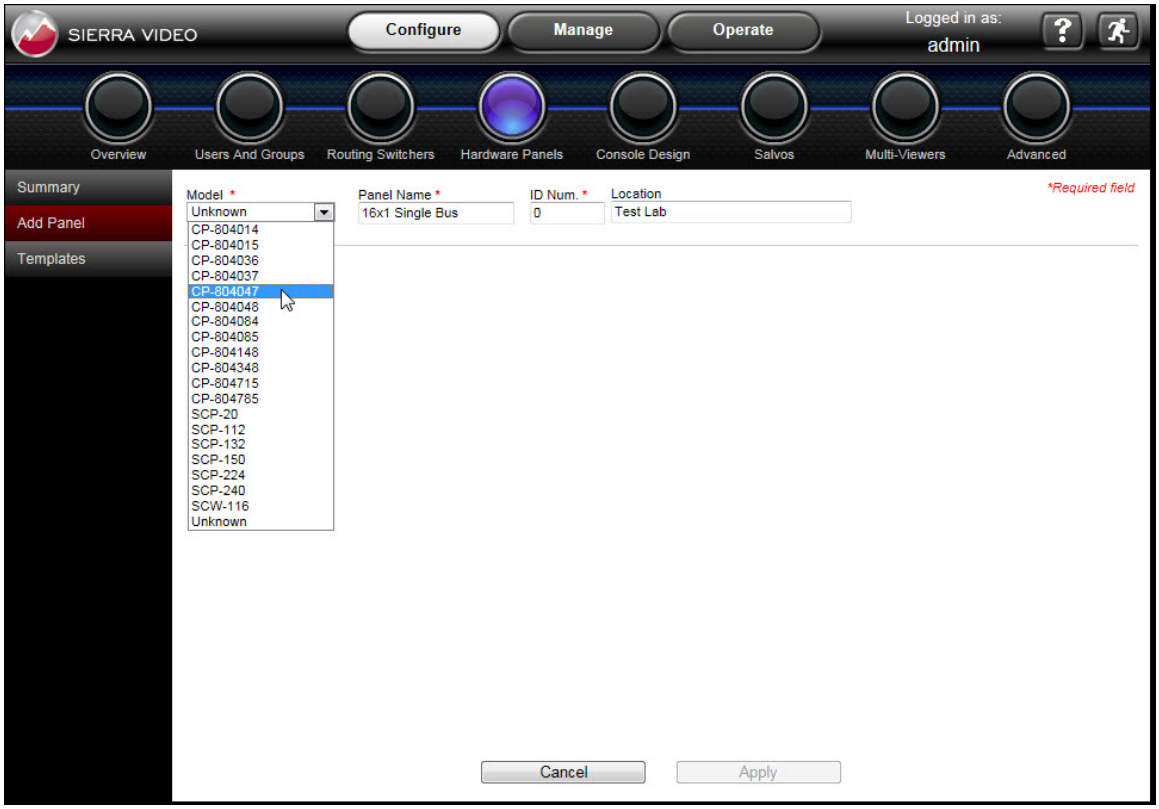
If you have clicked on “Add New” from the summary page, the panel type detected by the system will be displayed.

Note:

Panels that are not connected to the system may be “pre-configured” from this page. Details are at the end of this section.

Non-Programmable Panels

While the buttons on the non-programmable cannot be programmed for specific functions or I/Os, the panel can be given a name, a location, allowed destinations, and allowed levels.
The following example is for a single bus panel.



Note:

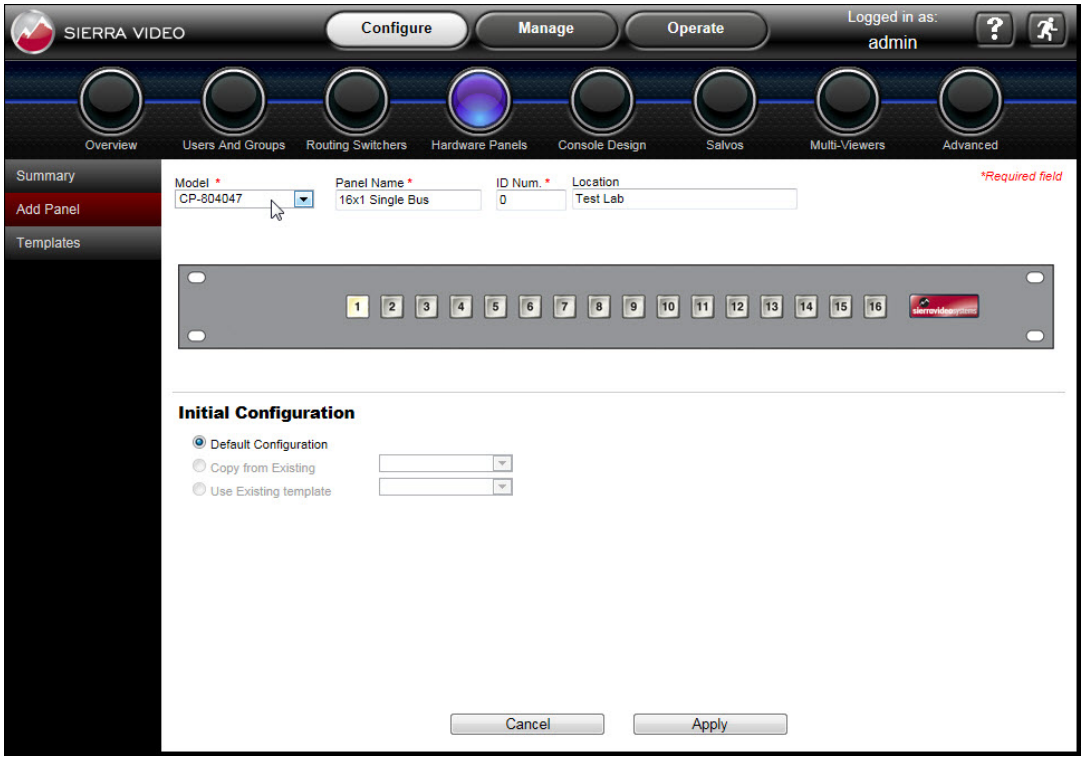
The Model Number can be found on the serial number tag on the rear of the panel.

- *Enter a panel name.*
- *The ID number is set via DIP switches on the panel and may not be changed via software.*
- *Enter a location (not required),*

Warning:

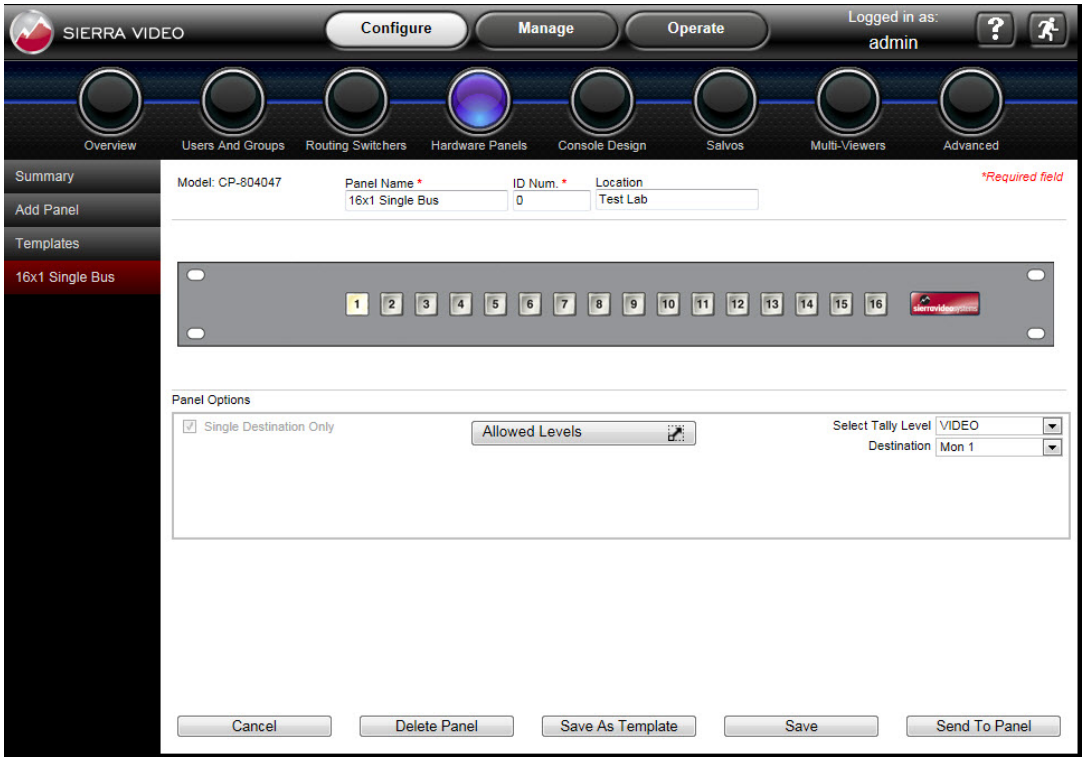
Each panel must have its own unique ID number. To change ID number, refer to the specific control panel’s manual.

Once a model is selected, an image of that model will display.



If the correct image displays, click on “Apply”.

This will take you to a page allowing you to configure the destination (destinations for XY panels), allowed levels, and tally level (which level the button lights will follow).



- Select the allowed level or levels.
- Select the tally level (only 1 level can be selected).
- Select the destination(s) you want this panel to control.

Actions

- **Cancel**- will return the page to the default or previously saved settings.
- **Delete Panel**- will remove the panel from the system.
- **Save as Template**- will save the settings as a template that can be used to configure similar panels in the system.
- **Save**- will save your settings for this panel.
- **Send to Panel**- will send these settings to the panel

Note:

Be sure to "Save" before "Send to Panel"

SCP-Programmable Panels

The SCP panels are highly programmable with a wide selection of functions that can be assigned to any push-button.

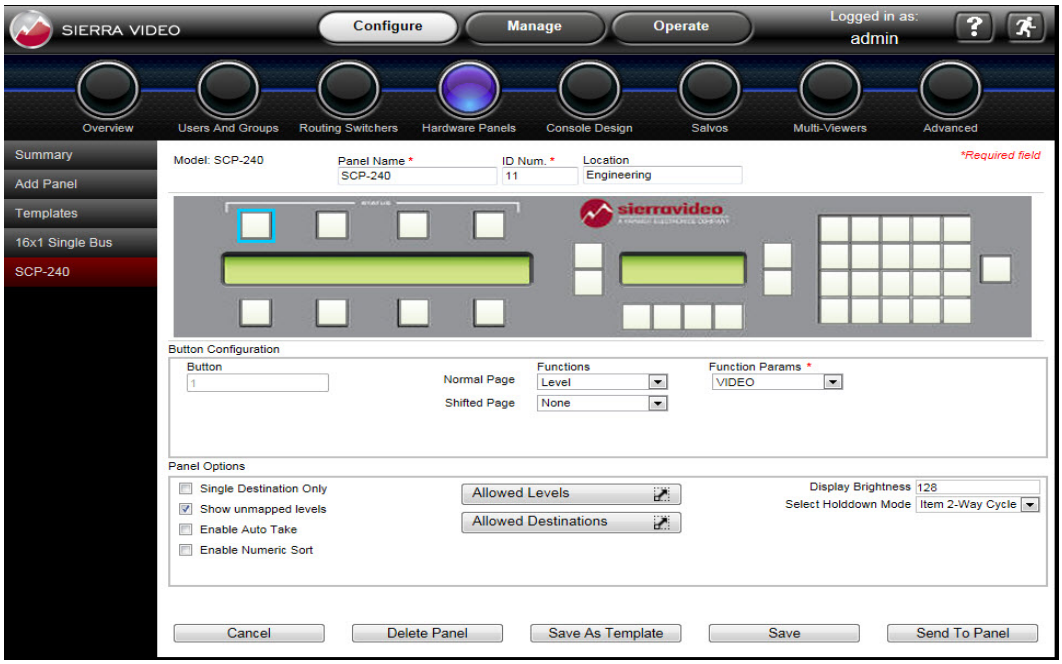
The following example is for an SCP-240 panel.

All SCP panels program in a similar nature with the exception of the SCP-112 which has a "Special Push" function. Details of this function are described at the end of this section.

After entering the panel's model, name and location (optional) as described in the previous section, an image of the panel will be displayed.

If this is the correct image, press “Apply”.

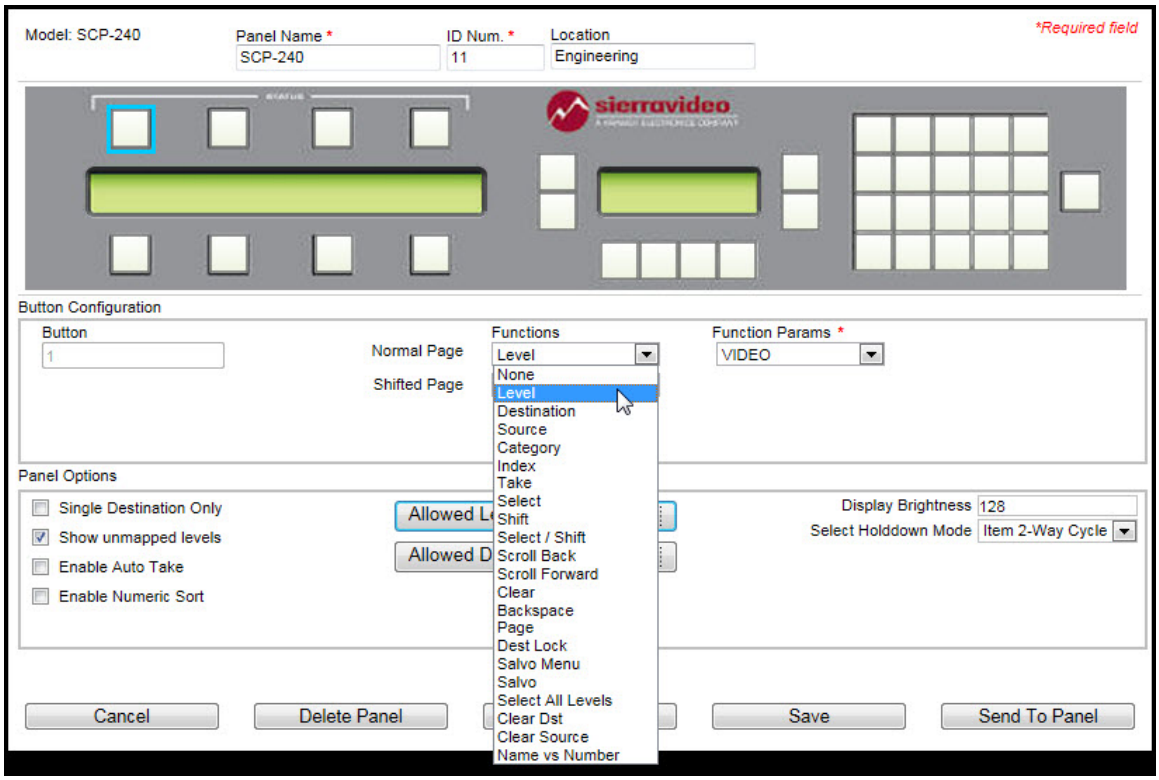
From this page the panel my now be programmed.



Button Configuration

- Click on the button to be programmed.
- Select whether the “function” will be on the normal or shift page.
- Select the function for the button.

Many functions require that a function parameter be selected i.e. when the function “Level” is selected, a specified level must be selected from the “Function Params” dropdown list.



Functions

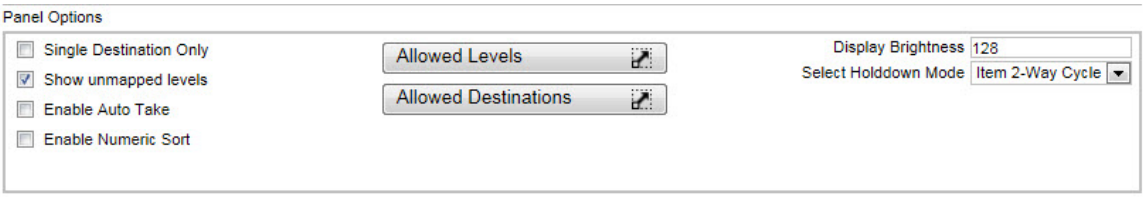
Following is a list of functions that can be applied to the panel buttons.

None- This removes any programming from the button.
Level- The button will turn on or off the level specified on the Function Params list.
Destination- Selecting “Destination” allows you to select a specific destination from the Function Params list.
Source- Selecting “Source” allows you to select a specific source from the Function Params list.
Category- Selecting “Category” allows you to select a specific category from the Functions Params list (provided a category was entered in the names page).
Index- If you are using a category naming method, categories are normally followed with an index (i.e. 1,2,3…..or A,B,C…..) enter an index number in the Function Params window.
Take- Initiates command
Select- Moves cursor
Shift- The shift function similar to a standard computer keyboard, allowing you to program another set of functions, names, or actions.
Select/Shift- “Select/Shift” is a dual mode function. Pressing once is the “Select” function (moves cursor). Holding down the button is the “Shift” function similar to a standard computer keyboard.
Scroll Back- Causes lists to display from higher number to lower.
Scroll Forward- Causes lists to display from lower number to higher.
Clear- Clears current entry.

Backspace- Causes cursor to move back one character space.

Page- Changes display to next page. If there are more levels than show in LCD display, Page will display next set of levels.
Dest Lock- Locks current destination from changing to another source.
Salvo Menu- The “Salvo Menu” function will display the list of Salvos in the LCD of the panel for selection.
Salvo- Selecting “Salvo” allows you to select a specific salvo from the Function Params list.
Select All Levels- Enables all levels Note; all levels are enabled as a default. This function restores all levels to enable if the previous switch was other than all levels.
Clear Dest- Clears destination entry and places the cursor in the destination field.
Clear Source- Clears source entry and places the cursor in the source field.
Name vs Number- Toggles between Alpha and Numeric sort.

Panel Options



Single Destination Only- Any control panel can be a single destination panel if desired. If the panel is to be a “Single Bus” (only controls 1 output), place a check in the “Single Destination Only” box. Placing a check in the “Single Bus” box will cause the panel to only access and switch the single selected output.

If there is no check in the box and only one output is selected for the panel to control, the panel can status the blocked outputs but only switch the selected output.

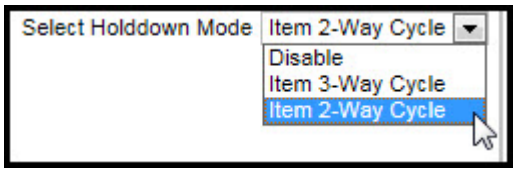
Show UnMapped Levels- Levels that are unmapped will be displayed in status. Unchecked will hide unmapped levels.

Enable Auto Take- If this box is checked, router will “Take” when source is selected. Unchecked will require a “Take” button to be pressed to initiate switch.

Enable Numeric Sort- If this box is checked, inputs and outputs will be sorted by number rather than by name. Sorting by name is alphabetic.

Display Brightness- Changes the brightness of the LCD display.

Select Holddown Mode- There are 3 choices of the “Holddown” mode.



When level button is held down for 3 seconds it will cycle through a series of enabled and disabled. In the 2-Way Cycle mode, holding down the level button toggles between all on to only the selected on. 3-Way Cycle Mode, holding down the level button toggles between selected on, all on, and selected off others on. Disable toggles the level on or off.

- Select the allowed level or levels.
- Select the destination(s) you want this panel to control.

Actions

- **Cancel**- will return the page to the default or previously saved settings.
- **Delete Panel**- will remove the panel from the system.
- **Save as Template**- will save the settings as a template that can be used to configure similar panels in the system.
- **Save**- will save your settings for this panel.
- **Send to Panel**- will send these settings to the panel

Note:

Be sure to "Save" before "Send to Panel"

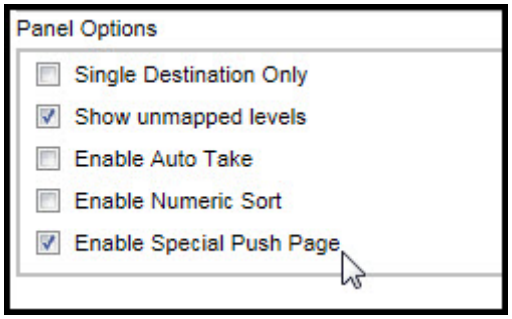
SCP-112 Panels

The SCP-112 control panel programs similar to the other SCP panels but with the added function "Special Push" option.

The SCP-112 has a "Special Push Page" that can be enabled to increase the functionality options (see the Panel Properties section). Factory default is "Special Push" enabled. The "Special Push" row is ideal for category names.

*If "Special Push" is enabled the action of the button becomes the first push command with the "First Push" row of buttons becoming the subsequent commands until "Take", "Select", or "Clear" is pushed.

These panels were designed to allow for maximum flexibility in the categorization of buttons. A button can have multiple functions depending how it is programmed and where the user is in the sequence of pushes. As an example, the first push on a button could write "VTR" on the display. The second push on the same button could add a "1" to "VTR" as a suffix so we would see "VTR1" on the display. The Second Push row would remain enabled until either the "Shift", "Clear", or the "Take" button were selected and would force the panel into a different set of actions.



Panel Options Supported by Each Panel

The following table lists Panel Options allowed for each panel configuration in MediaNAV.

Function	SCP-20	SCP-112	SCP-132	SCP-150	SCP-224	SCP-240	SCW-116	804xxx
Allowed Destinations	√	√	√	√	√	√	√	√
Allowed Levels	√	√	√	√	√	√	√	√
Display Brightness	√		√			√		
Numeric Sort	√	√	√		√	√		
Holddown Mode	√	√	√	√	√	√		
Show Unmapped Levels	√	√	√		√	√		
Single Dest Only	√	√	√	√	√	√		√
Auto Take	√	√	√	√	√	√		
Special Push*		√						
Tally Level**								√

***Special Push** is only available on the SCP-112. The factory default has Special Push enabled. With **Special Push** enabled, the first button press in the row selects the assigned Category. The next button presses will call the **Normal** function, until **Take**, **Select** or **Clear** is pushed.

****Tally Level** selects which level a Pushbutton panel's lamps will follow.

Button Function per Panel

The functions in the following table are selected under **Button Configuration**. This only applies to SCP programmable control panels.

Function	SCP-20, -112, -132, -224, -240	SCP-150	Function Params	Comments
None	√	√		
Level	√	√	Level number	
Destination	√	√	Destination number	
Source	√	√	Source number	
Category	√		List of configured categories	
Index	√		8 Character ASCII	Src/Dst name or number
Take	√	√		Applies to all shift lvls
Select*	√			Applies to all shift lvls
Shift*	√	√		Applies to all shift lvls
Select/Shift*	√			Applies to all shift lvls
Scroll Back	√			LED Display function
Scroll Forward	√			LED Display function
Clear	√			LED Display function
Backspace	√			LED Display function
Page	√			LED Display function
Dest Lock	√	√	List of created PINs	Global password (PIN) = 9999
Salvo Menu	√			LED Display function
Salvo	√	√	Salvo number	
Select All Levels	√	√		
Clear Dst	√			LED Display function
Clear Source	√			LED Display function
Name vs Number	√			LED Display function

*Select toggles between fields in the display with a press and release. Shift changes button functions to shifted modes with a press and hold.

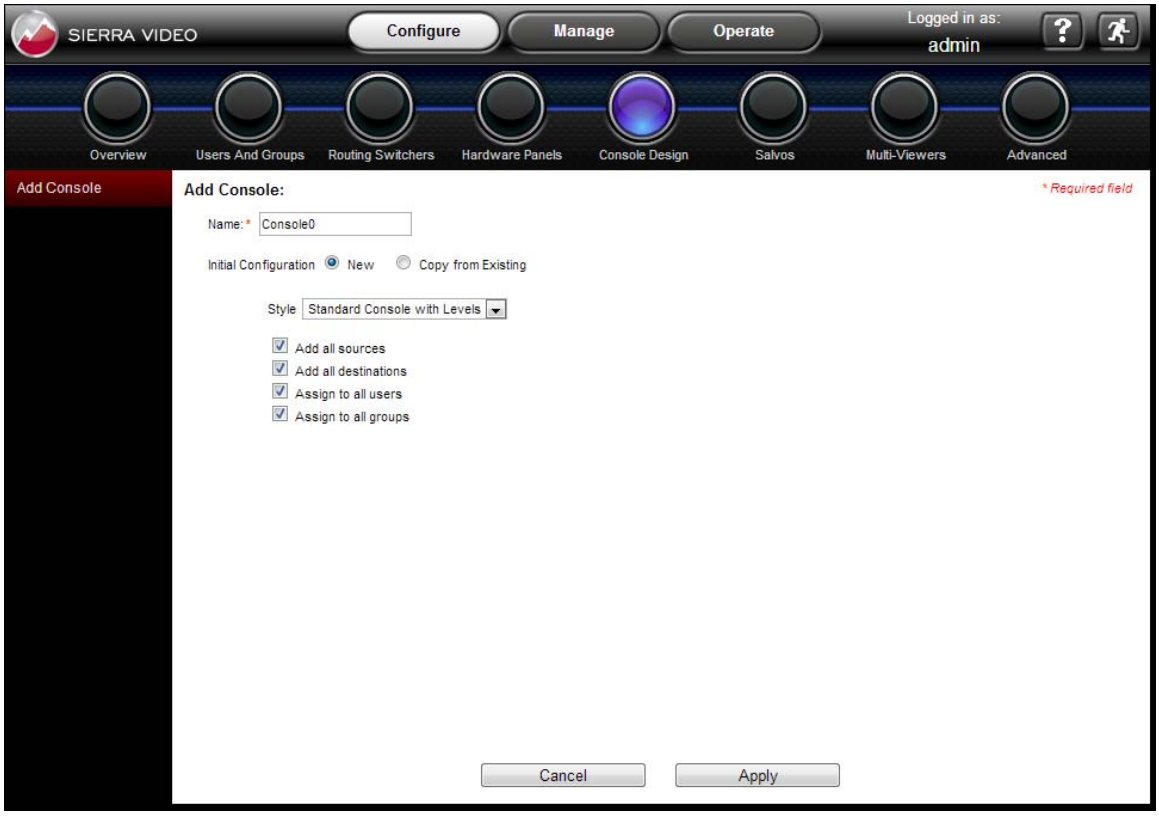
Console Design

The Console Design subsection of the MediaNAV interface provides tools for creating a variety of GUI control consoles that run on MediaNAV.

The initial page shown will be the add console page if no consoles exist. If consoles do exist it will show the general page of the first console shown in the tabs.

Add Console

The initial page accepts preliminary settings including the console name, allowing selection of a **New** configuration, or one that is a **Copy from Existing** console.



After selecting the remaining preliminary settings, click **Apply** to reveal the additional console configuration selections:

The various settings used to configure the GUI consoles are accessed with several tabs:

General

- Description
- Status Only
- Enable Auto-Take

Look and Layout

- Theme
  - Lake Blue
  - Quartz
  - Granite
- Labels and text for Sources, Destinations, Levels, and Other buttons
  - “Other” buttons are typically salvos and multi-viewer layout recalls.
- Levels
  - Breakaway settings
  - Show “All Levels” button
  - Show “Clear Levels” Button
  - Levels button text
  - Take button text

Source Buttons

- Add or delete source buttons in the console
- Create “Display Text” to be displayed on each source button

Destination Buttons

- Add or delete destination buttons in the console
- Create “Display Text” to be displayed on each destination button

Level Buttons

- Add or delete level buttons in the console
- Create “Display Text” to be displayed on each level button

Other Buttons

- Add “Lock dest”, salvo, blank, or layout-recall buttons to the “Other Buttons” area of the console
  - There must be salvos created and saved in the system available for selection.
- Create “Display Text” to be displayed on each button in the “Other Buttons” area of the console.

Users and Groups

- Add or delete Users and Groups allowed access to the console being configured.

Advanced

- Enable Source Based switching

Salvos

The **Salvos** subsection of the **Configure** system feature provides the tools required to create salvos and recalls of preset configurations on various devices such as multi-viewer layouts.

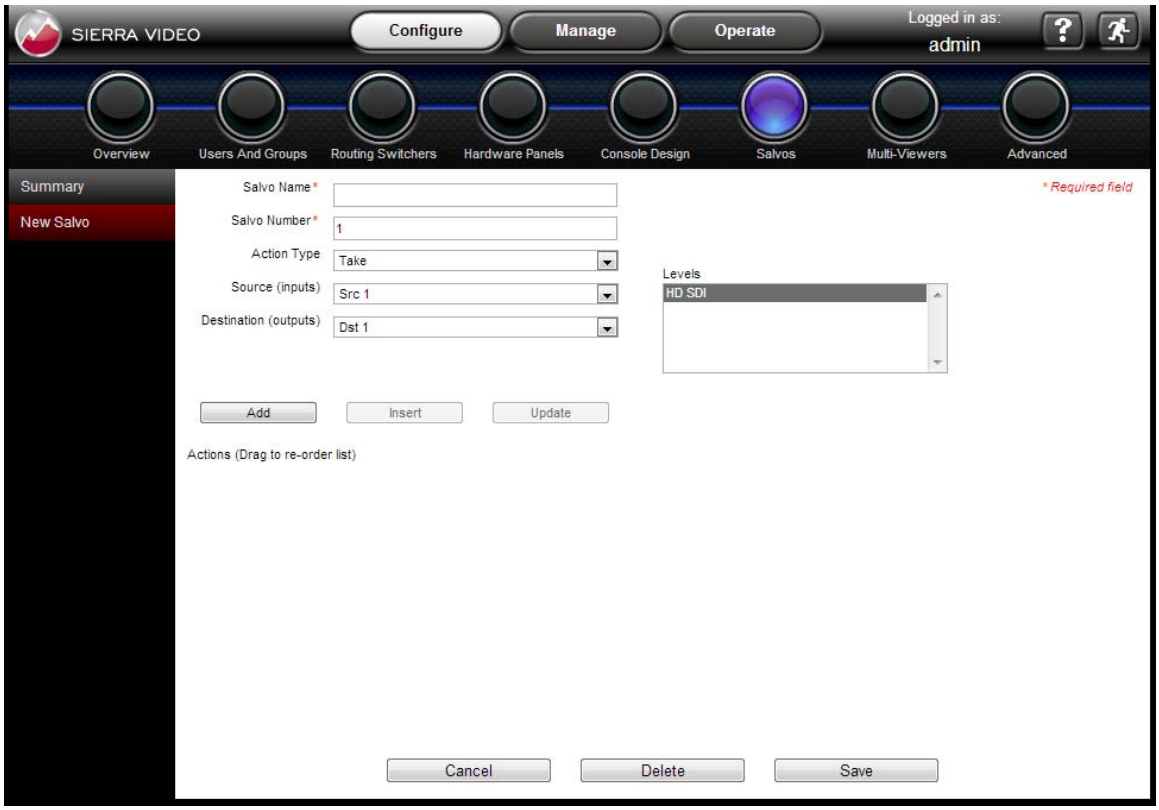
The **Summary tab** provides a list of salvos saved on the system.

The **New Salvo tab** reveals text fields and selections for building and saving salvos.

New Salvo

The parameters and settings for creating salvos are as follows:

- Salvo Name
- Salvo Number
- Action Type
  - Take
  - Take All Levels
  - Destination Lock
  - Destination Unlock
  - Recall
    - Recall presets such as mutli-viewer layouts
    - Multi-viewer to be preset
    - Multi-viewer layout to be recalled



Multi-Viewers

The **Multi-Viewers** subsection of the **Configure** system feature allows configuration of properties like Name, Model, Location and Ethernet Connection. The **Summary tab** provides a list of multi-viewers configured and saved on the system.

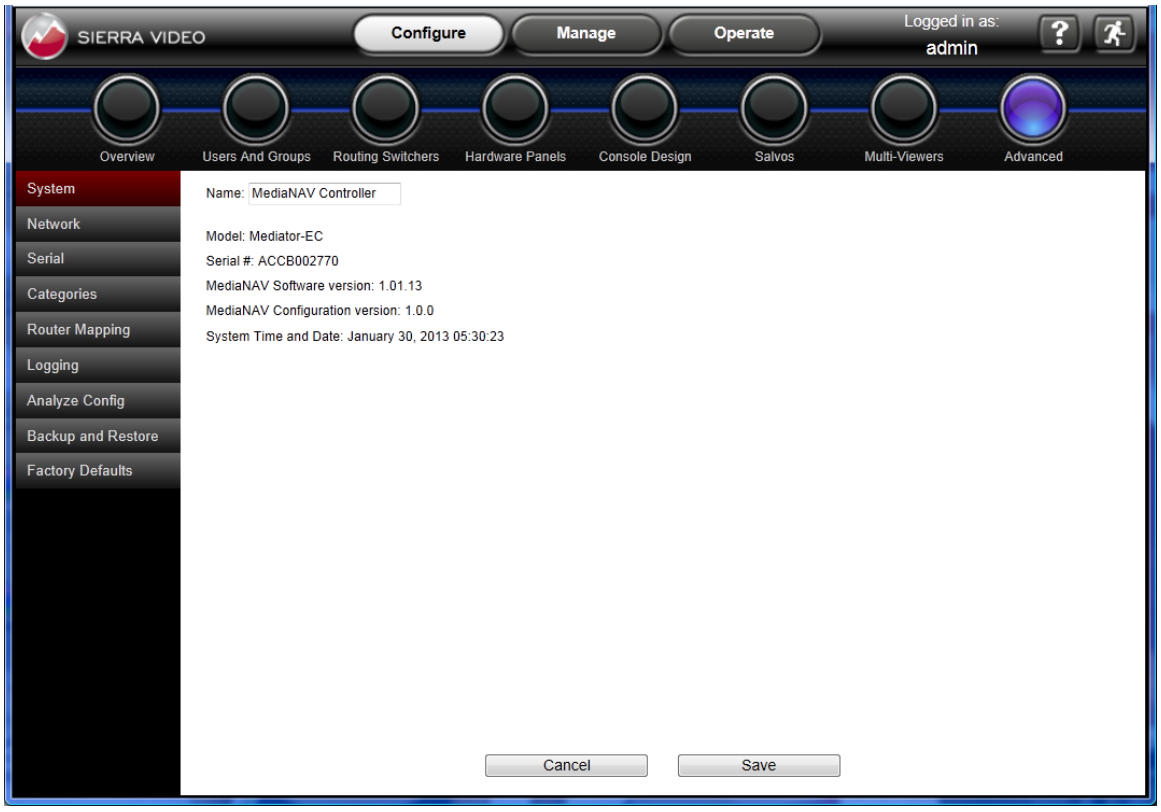
Add Multi-Viewer

Multi-viewers on an Ethernet network can be accessed and controlled from the MediaNAV GUI. The connection to a multi-viewer can be established on the **Add Multi-viewer** page.

When a connection to a multi-viewer is established, MediaNAV provides a link to the multi-viewer configuration webpage that resides on the multi-viewer. The multi-viewer configuration page will open on another tab of your browser.

Advanced

The **Advanced** subsection of the **Configure** system feature provides several tabs for configuring various system parameters including **Network** and **Serial** connections, **Categories**, **Router Mapping**, **Logging**, **Factory Defaults**, and the ability to analyze the system configuration.



System

This tab displays the MediaNAV Controller name, the model of the controller, the software release version, System time and date, and the controller serial number.

Network

Provides settings to disable the network connections, enable DHCP, or manually set the IP address of the connections.

Serial

This tab is for setup of CTRL 1, CTRL 2, or CTRL 3 for serial control of peripheral devices with serial interfaces. Note that the settings on this page can't be changed for ports that are being used by a routing switcher.

Categories

Categories can be created to filter sources, destinations, or more specific source or destination categories to assist in filtering of specific kinds of devices on inputs or outputs of a routing switcher.

Router Mapping

- Levels
  - Assign levels and create new levels
- Sources
  - Source mapping allowing assignment of sources to a layer and a level.
- Destinations
  - Destination mapping allowing assignment of destinations to a layer and a level.

Logging

The logging features of MediaNAV allow for several levels of detail, for several different perspectives which include devices, hardware panels, users, interfaces, and others. The levels of detail for each of these perspectives are as follows:

- Errors
- Warnings
- System Events
- Transactions
- Communications Events
- Debug

Each of these levels is cumulative, such that Warnings includes Errors, System Events includes Errors and Warnings, etcetera.

Backup and Restore tab

This valuable feature helps prevent the need to rebuild all configurations in the event of corruption or loss of data. It's also useful for creating various configurations for systems that may be used in different venues or for various applications, such as for staging and rentals. The Backup function allows the entire configuration to be saved in a file on any storage media available to the browsing computer. The Restore function, of course, loads the desired backup file to the current system configuration.

Analyze Config

This tab runs a useful diagnostic and provides a list of potential issues related to the current system configuration.

Factory Defaults

This tab provides access to a button that will reset the configuration of the system to factory defaults. Clicking on **Restore factory default configuration** will cancel any changes to the configuration and reboot the controller.

Warning!

Clicking **Restore factory default configuration** *will delete all devices, consoles, added users, added groups, and restore default IP and serial communication settings.*

Chapter 5

Manage

Introduction

The **Manage** system feature provides a more limited access to device configurations than are available in the **Configure** feature pages. The **Manage** features are used primarily for checking status of devices on the system and includes some basic control functions. It also provides the ability to update MediaNAV or control panel software. The subsections of the **Manage** system feature are **Overview**, **Routing Switchers**, **Hardware Panels**, **Multi-viewers**, and **Advanced**.

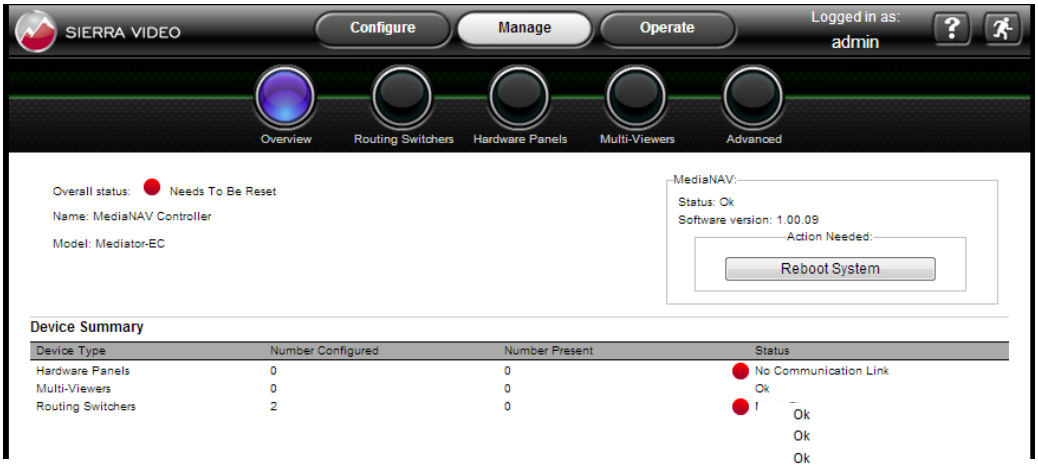
Overview

The **Overview** subsection of the **Manage** system feature primarily provides system status. This webpage includes a **Device Summary**, which lists all of the types of devices in the system. The **Number Configured**, **Number Present**, and the general **Status** of the devices are listed.

At times an action will be needed on the MediaNAV system. When this situation occurs, the **Action Needed** section will appear with the required action specified on a button in that section.

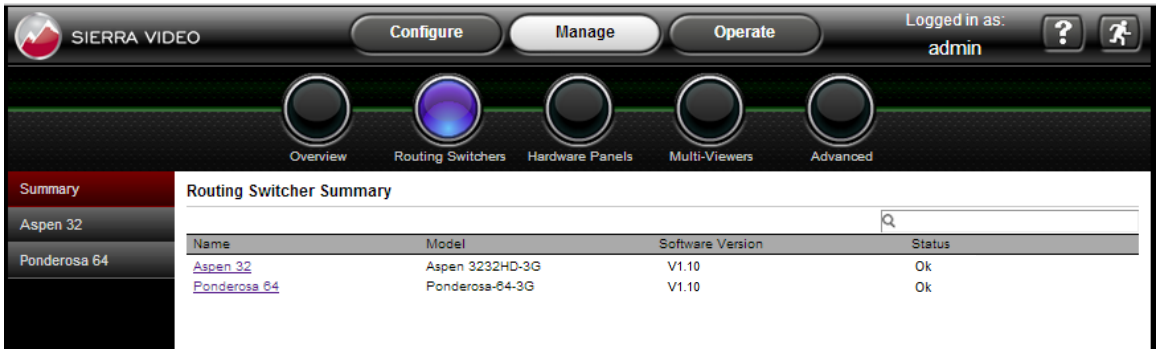
If the **Action Needed** button (labeled **Reboot System** in the example below) is pressed, an **Are you sure** message will appear. If the user answers yes, then the action will be taken.

Note that the **Action Needed** button will be grayed out if the user does not have **Manage->Advanced** permissions.



Routing Switchers

The **Routing Switchers** subsection of the **Manage** system feature provides a list of configured routing switchers, and displays their current status when the **Summary** tab is selected

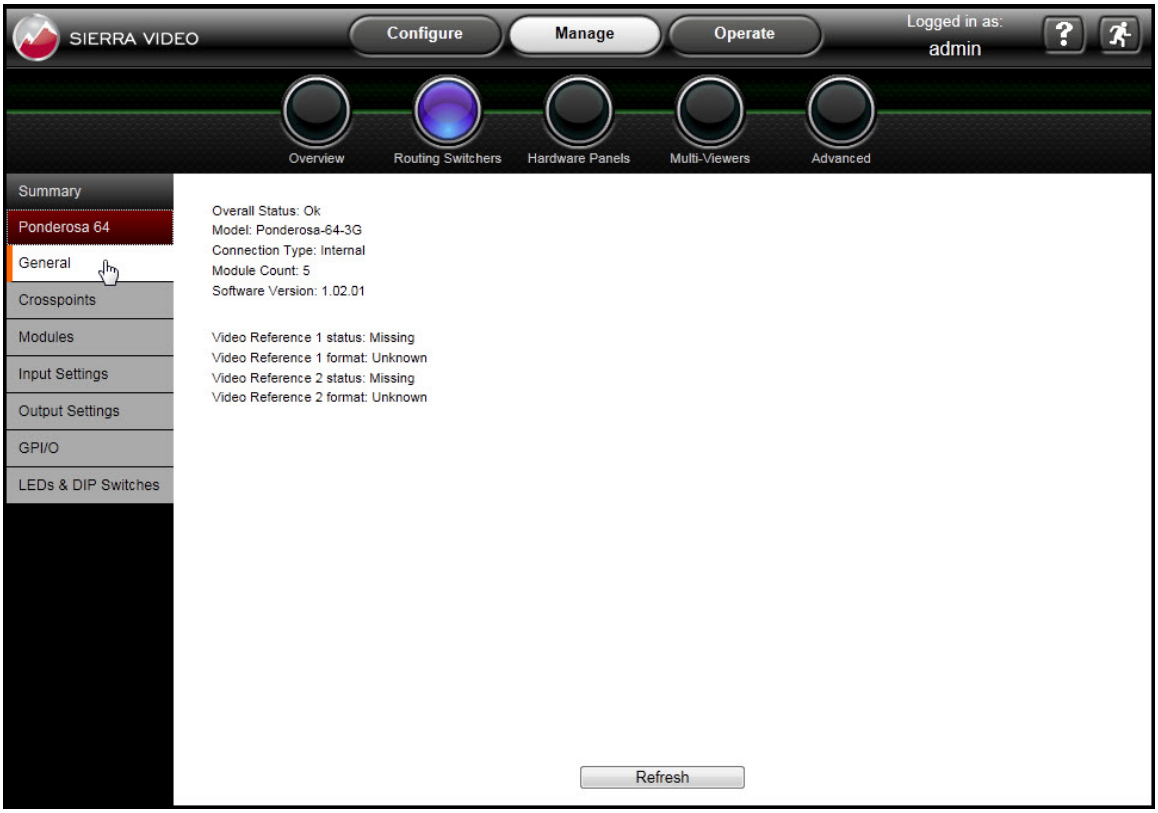


When a routing switcher tab is selected several sub-tabs are revealed, **General** and **Crosspoints**. The **General** tab provides a list of parameters related to the selected routing switcher, which includes **Overall Status**, **Model**, **Connection Type** and **Software Version**.

Select the Routing Switcher you want to manage from the left column.

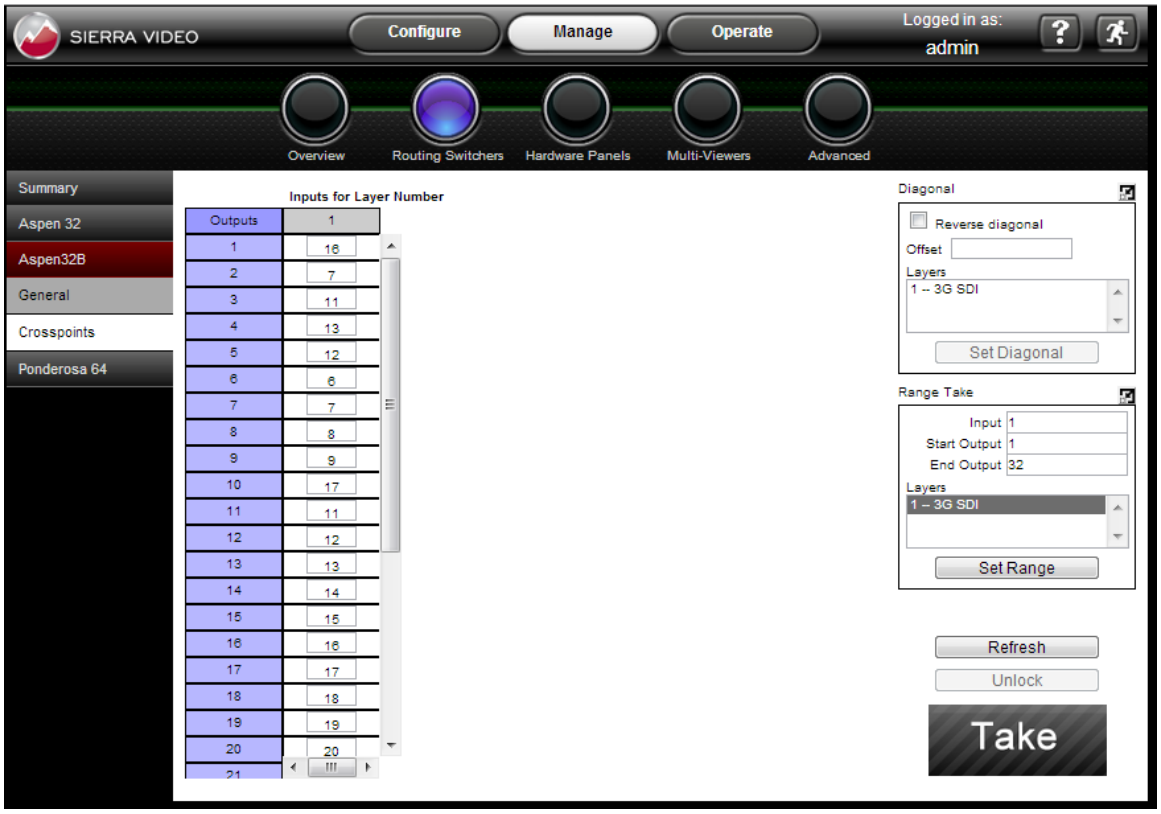
General

Selecting the router will take you to the “General” window. The General window displays the router status.



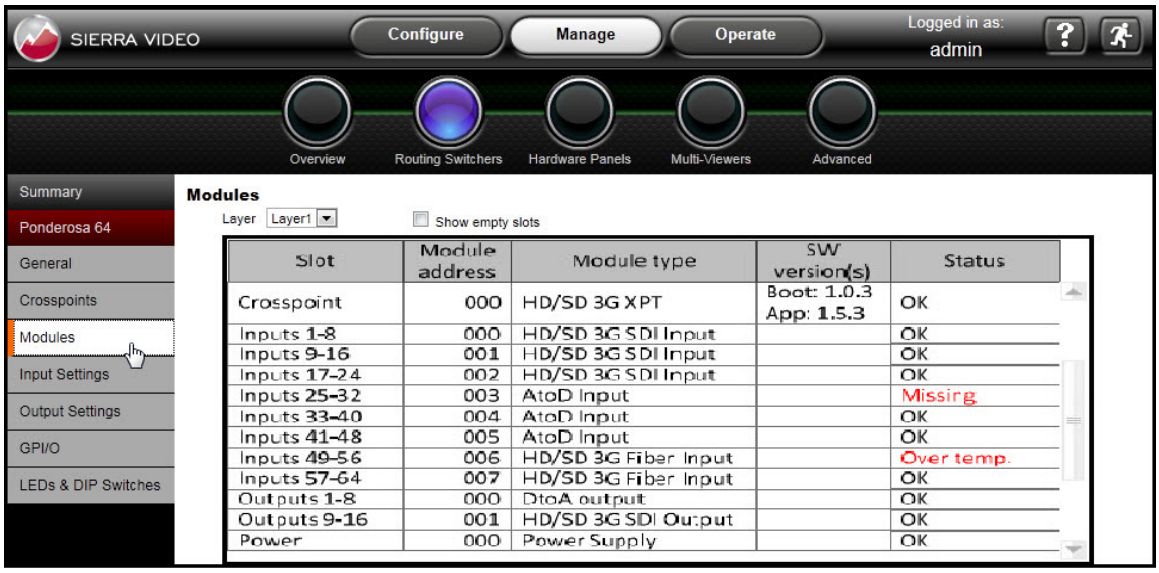
Crosspoints

When the **Crosspoints** sub-tab is selected, a set of crosspoint controls are revealed. These controls allow switching of individual inputs to outputs, taking a range of inputs to an output, diagonal takes of same input number to same output number, and reverse diagonal takes of highest input number to lowest output, second highest input to second lowest output, etc. The diagonal and reverse diagonal also allow an offset to be entered.



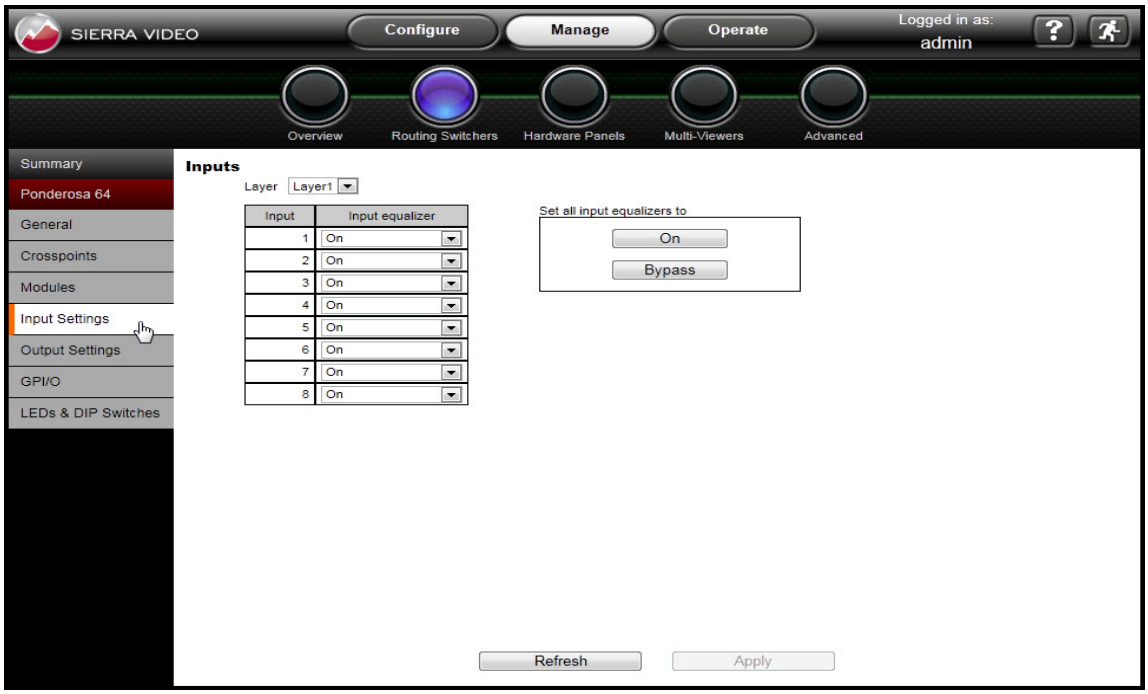
Modules

The “Modules” tab displays the type, software version, and status of the modules installed in the system.

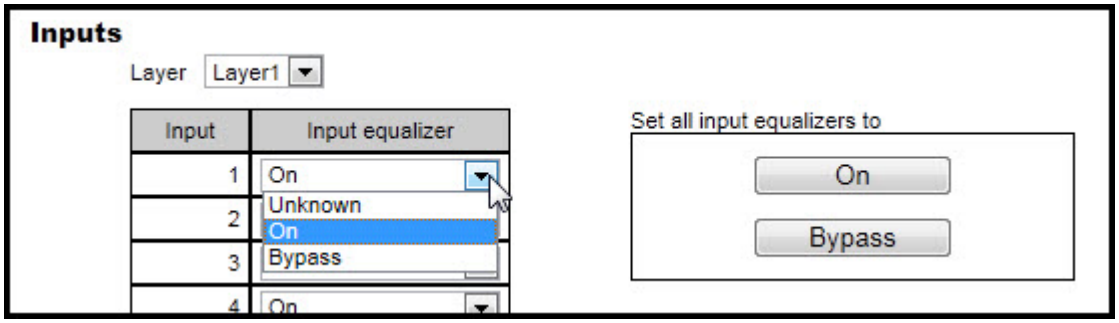


Input Settings

The input settings tab allows you to set the input equalizers.

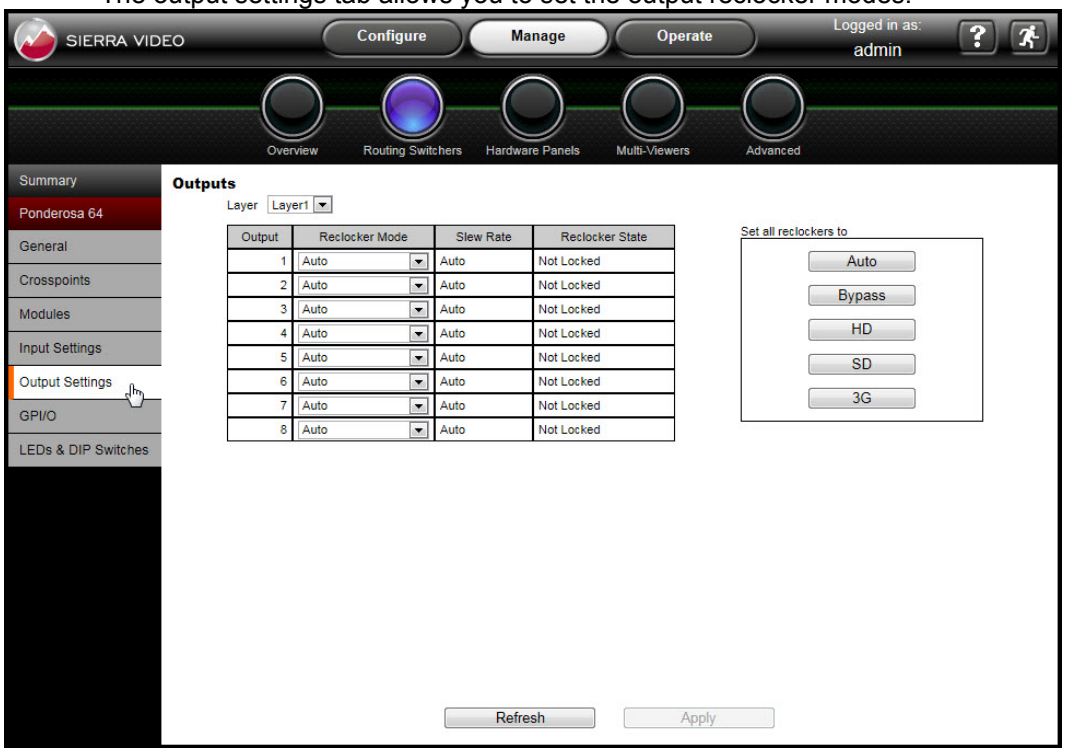


Select from the drop down list the equalizer settings desired.



Output Settings

The output settings tab allows you to set the output reclocker modes.

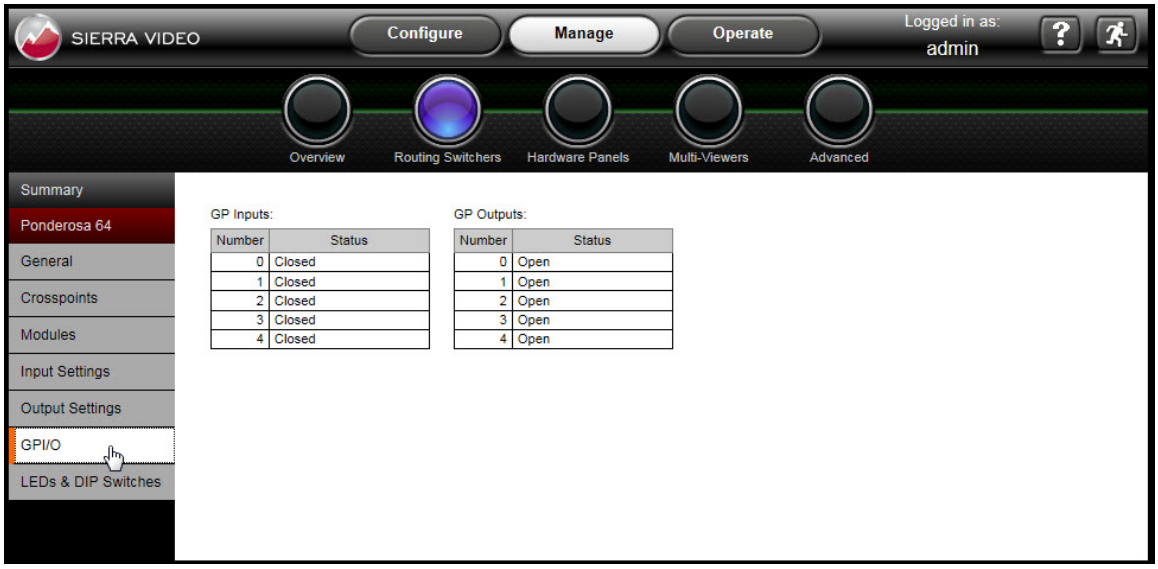


Note:

Slew rate: If the reclocker is set to "bypass", the user can set the Slew Rate to "SD" or "HD". Otherwise, the slew rate will always be "auto".
The reclocker state is read only. The states are "unknown", "bypass", "locked-SD", "locked-HD", "locked-3G" and "not locked". Note that when the reclocker is set to "SD" or "HD", the Ponderosa will always return a reclocker state of "unknown".

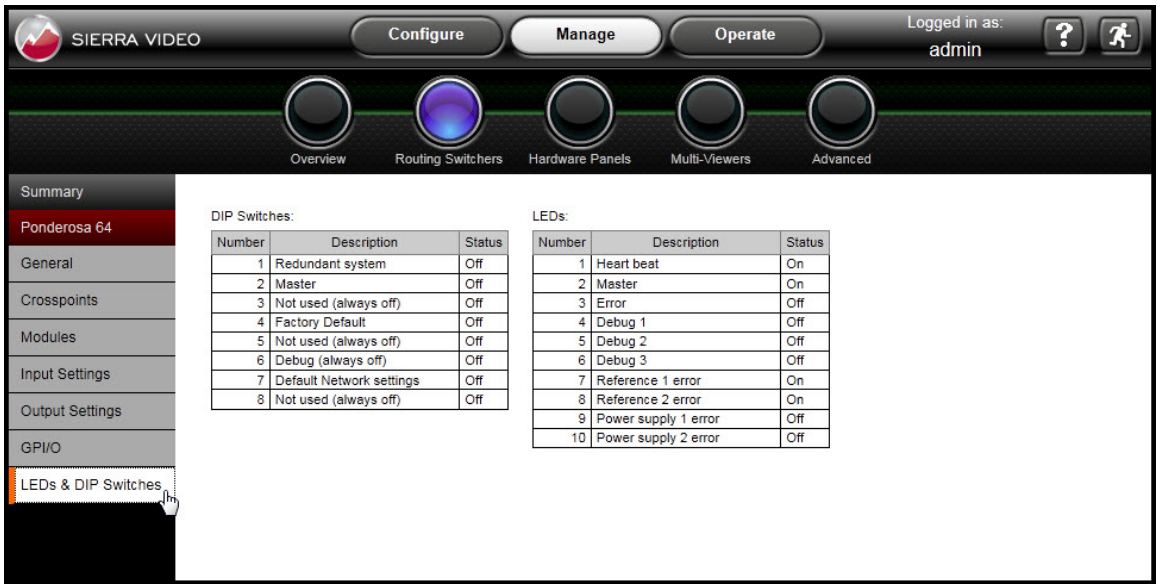
GPI/O

The GPI/O tab displays the current status of the general purpose inputs and outputs. This is a “read only” window.



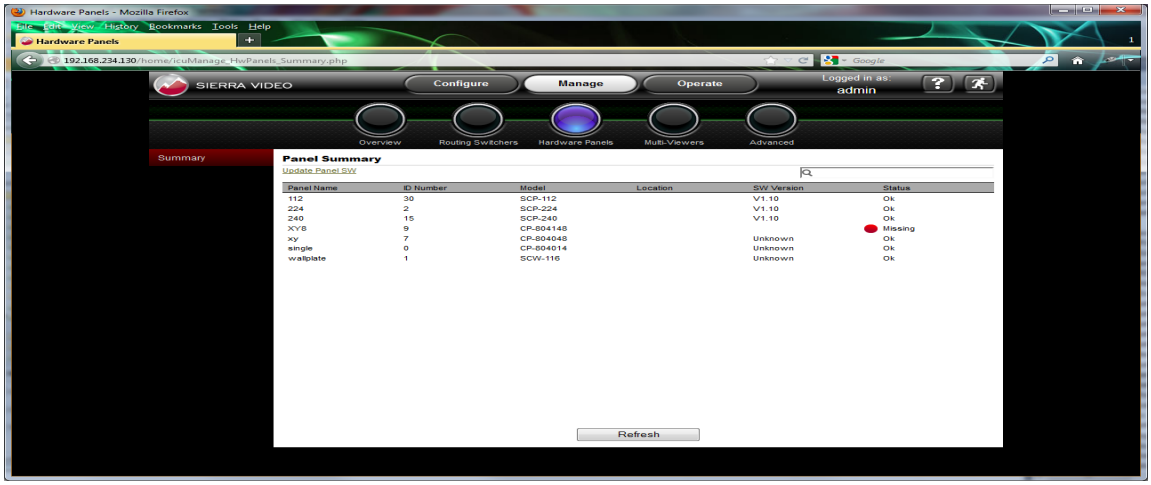
LEDs & DIP Switches

The LEDs and DIP Switches tab displays the status of the CPUs DIP switches and LEDs. This is a “read only” window.



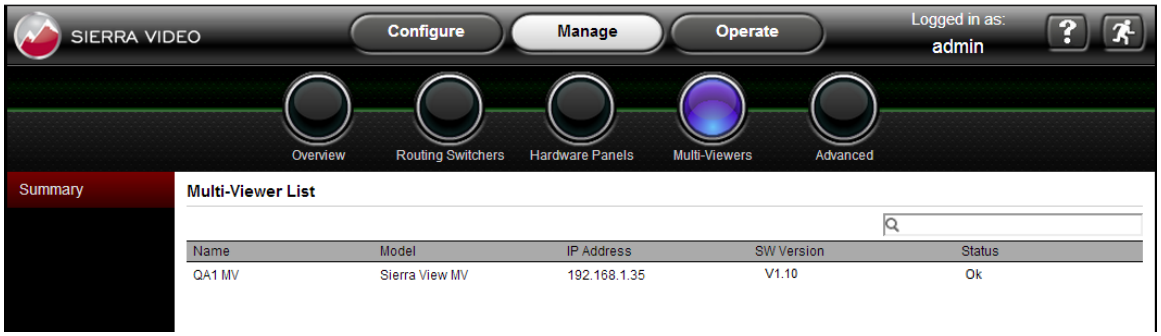
Hardware Panels

The **Hardware Panels** subsection of the **Manage** system feature has a single menu tab, **Summary**, revealing a page with the **Panel Summary**, which includes a link to update panel software, and a list of all of the panels configured on the MediaNAV control system. The parameters included for each panel are **Panel Name**, **ID Number**, **Model**, **Location**, **Software Version**, and **Status**.



Multi-Viewers

The **Multi-Viewers** subsection of the **Manage** system feature has a single menu tab, **Summary**, revealing a page with the **Multi-Viewer List**, which includes a list of all of the multi-viewers configured on the MediaNAV control system. The parameters included for each multi-viewer are **Name**, **Model**, **IP Address**, **Software Version**, and **Status**.



Advanced

The **Advanced** subsection of the **Manage** system feature contains management features that are more specific to the control system and software updates. The menu tabs on the left side of the page are **Network**, **Logging**, **Software Update**, and **System Control**.

Network

The Network tab includes parameters and status of the network and includes network host information: **Name**, **Mode**, **IP Address**, **Subnet mask**, **Gateway**, **Speed**, and **Status**.

Logging

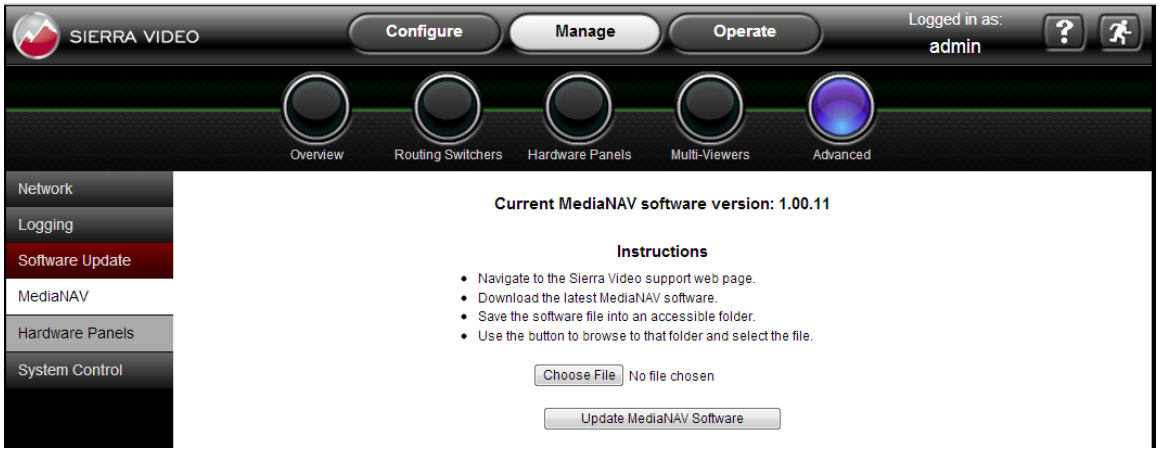
This tab includes just two buttons, one to download the logs, and another to delete the logs. Clicking **Download Logs** immediately downloads a ZIP folder of text files containing logged data.

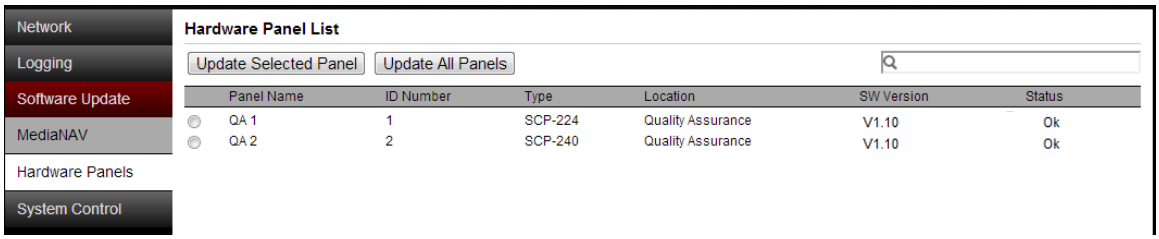
Warning!

*Clicking **Delete Logs** immediately deletes all logs.*

Software Update

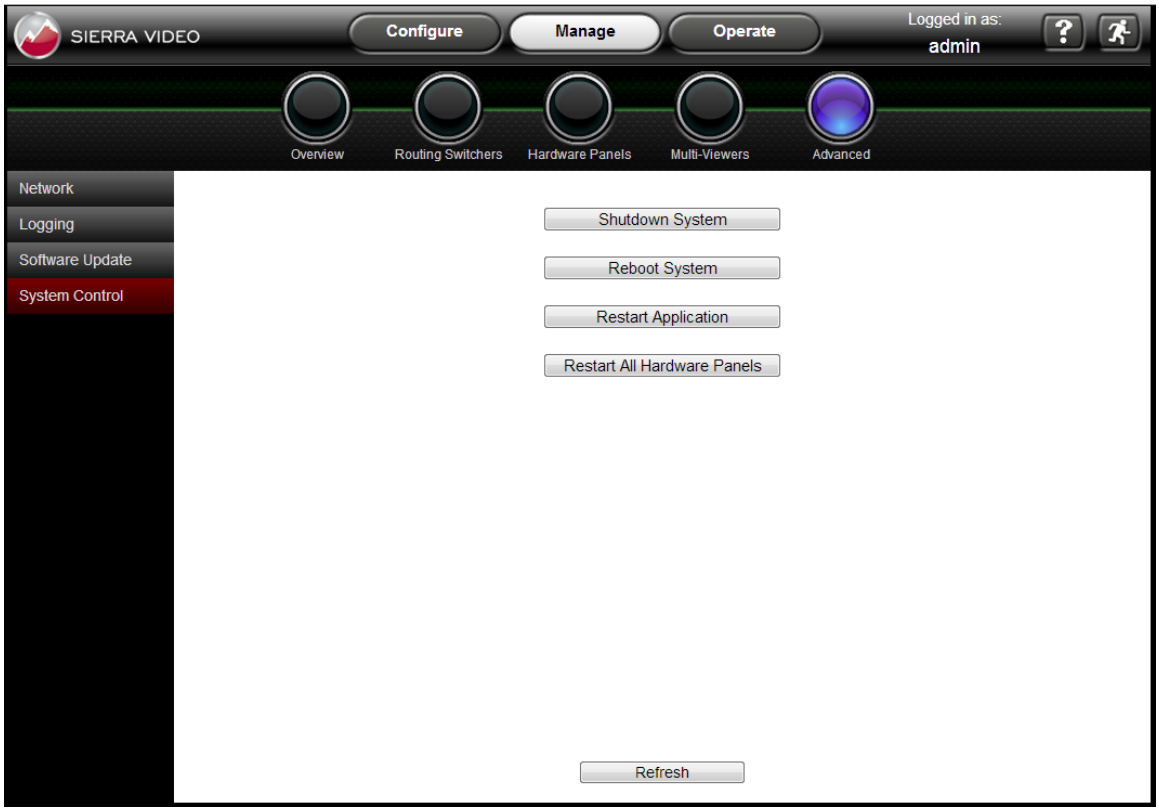
This tab reveals tabs for sub-menus, **MediaNAV** and **Hardware Panels**, which reveal menus that can be used to update the software for the MediaNAV controller and for the Sierra Video programmable SCP hardware control panels.





System Control

The **System Control** tab presents a page with controls for managing certain system functions. Clicking on the proper button allows the user to shutdown or reboot the system, restart the application or restart all hardware panels.



Chapter 6

Operate

Introduction

The **Operate** system feature accesses all of the MediaNAV GUI consoles that are allowed by the user's permissions. The GUI consoles can be configured to control routing switchers and recall presets such as multi-viewer layouts. The interface allows the user to switch any of the sources to any of the destinations. Any source can be connected to any or all destinations but each destination can only be connected to a single source. The web page GUI console empowers full control of the routing switcher.

There are currently three different styles, or "skins," that can be selected for console configurations, Lake Blue, Quartz, and Granite, as shown in the following examples:

Lake Blue

Quartz

Granite

GUI Console Operation

Source Based vs. Destination Based Switching

One source can be routed to multiple different destinations, but any destination can only route from a single source. Both a source and a destination can route multiple levels together, such as video plus two channels of stereo audio, each on its own level. There are two different modes of operation allowed that allow these routing schemes. One, called **source-based** switching, allows the user to first select a source and desired levels, and then select one or more destinations for that source and its enabled levels. The other mode, called **destination based** switching, allows the user to select the destination and the desired levels, and a source to be routed. The instructions for setting one or the other switching mode are included in the **Configure** chapter earlier in this manual.

Source based Switching

1. Select a source
2. Select level(s) to be switched
3. Select one or more destinations (In auto take mode, the switch will occur immediately)
4. If **Auto-Take** mode is not enabled the **Take** button will be red – press take to initiate the switch. All selected destinations will be switched to the selected source when take is pressed.

Destination based Switching

1. Select a destination
2. Select the level(s) to be switched
3. Select a source (In auto take mode, the switch will occur immediately.)
4. If **Auto-Take** mode is not enabled the **Take** button will be red – press **Take** to initiate the switch.

Level Buttons and Indicator Bulbs

The Level buttons are located on the top right side of the console. Only the levels that are enabled for each console are visible and selectable. The levels are color coded in small indicator “bulbs” allowing identification of which levels are present and selected on the Source and Destination buttons.

Destination-Based Console Indications

On a console configured for destination-based switching, if a source is not assigned to a level in the **Configure** pages the “bulb” will be clear, or if the level is not selected on the console for that

source (see Breakaway below), the “bulb” will be clear, allowing the button color behind to show through. For destinations on a destination-based console, if a destination is not assigned to a level in the **Configure** pages, the level bulb will be grey.

	Level not configured	Level not selected	Level configured and selected
Source	clear	clear	color of level
Destination	grey	N/A	color of level

Source-Based Console Indications

On a console configured for source-based switching, if a source is not assigned to a level in the **Configure** pages, the bulb will be grey. For destinations on a source-based console, if the destination is not assigned to a level in the **Configure** pages, or if a level on the selected source is not enabled, the bulb will be clear, allowing the button color behind to show through.

	Level not configured	Level not selected	Level configured and selected
Source	grey	N/A	color of level
Destination	clear	clear	color of level

The common rule for both cases is that unassigned or unselected level bulbs are grey for the sources when in source-based mode, and for the destinations when in destination-based mode.

Break-away Switching

Before making a selection that will result in a take of the selected source and destination(s), ensure that the Level buttons in the top right side of the console are properly enabled. Some consoles may not have any level buttons, as in the case of a single-destination console.

For example, if only a video switch is desired when there are also two audio levels, deselect the audio levels as shown below:

The **All Levels** button (if present) will enable all levels. The **Clear Levels** button (if present) will disable all levels.

Salvos and Preset Recalls

Salvos and Recalls are programmed as described in **Configure>Salvos** earlier in this manual. Salvos and Recalls are assigned to each console as described in **Configure>Console Design>Other Buttons** earlier in this manual.

To fire a Salvo, click on the desired salvo or recall button. The salvo or recall will fire when the button is pressed. Salvos in the MediaNAV GUI consoles operate like salvos on the Sierra Video SCP control panels, in an auto-take mode without the need to press the **Take** button.

Chapter

7

Operation

Introduction

The purpose of a routing switcher is to switch any of the inputs (source) to any of the outputs (destination). Any input can be connected to any or all outputs but each output can only be connected to a single input. Control remains the most important component of your new system.

Control System Overview

The Ponderosa Family's control system incorporates many powerful features, while retaining control compatibility with many leading third party control systems. The control system uses an intuitive interface for routing switcher control and configuration, salvo setup, multiple input/output configuration and name configuration. Up to 64 control panels can be linked at any one time, daisy-chained on a single RS-485 network. A variety of programmable control panel styles are available.

Connectors associated with the system are located on the rear of the routing switcher frames. Only one frame in a multi-frame system will have a master control module installed. The following pertains to the frame that contains the master control CPU processor.

Serial Control Ports

The system has three serial ports for Host protocol control. These three serial ports are used for local or networked PC computer control, and control panel network operation. The three serial ports are shipped with a factory default as described below;

Ctrl Port #	Protocol	Baud Rate	Data Bits	Parity	Stop Bits	Emulation
1	Host	115.2K	8	None	1	ANSI
2	Host	115.2K	8	None	1	ANSI
3	Host	115.2K	8	None	1	ANSI

Connections to the 9-pin can be made using a standard one- to-one cable. Pin functions are described below.

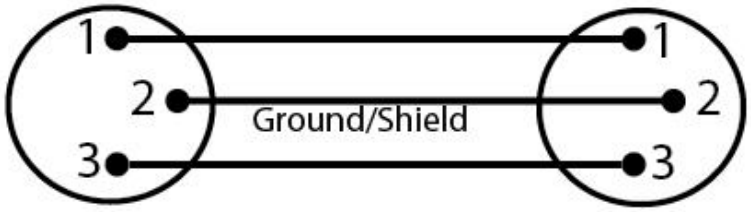
Host Port Installation		
Pin	**RS-232**	**RS-422**
1	Ground	Ground
2	Transmit	Transmit (-)
3	Receive	Receive (+)
4	Not used	Not used
5	Ground	Not used
6	Not used	Not used
7	Not used	Transmit (+)
8	Not used	Receive (-)
9	Ground	Ground

Control Panels (RS-485)

Ponderosa Family video routing switcher frames have four male 3-pin connectors labeled “Control Panels” on the rear. These connectors are “looped” together.

The maximum system cable length is 2,000 feet (310m) when the RS-485 network operates at the higher speed of 31.25K baud. The maximum system cable length is 5,000 feet (1,524m) when operated at 9600 baud. Consult your Control Panel Manual for more detailed information.

If you make your own interconnect cables, Pin 2 is Ground. Pin 1 and 3 connect pin for pin.



RS-485 Interconnect Cable

Chapter

8

Module Overview

Introduction

The Ponderosa routing switcher is based upon a modular architecture of an integrated frame, motherboard and backplane. Common input, output, and crosspoint modules are used. There are five basic modules:

- Input Module
- Crosspoint Module
- Output Module
- Processor Module
- Power Supply Module

All modules are front extractable and “hot-swappable”. The frame is force air cooled using internal cooling fans contained within the power supply module. Power supply modules are removable from the front of the frame.

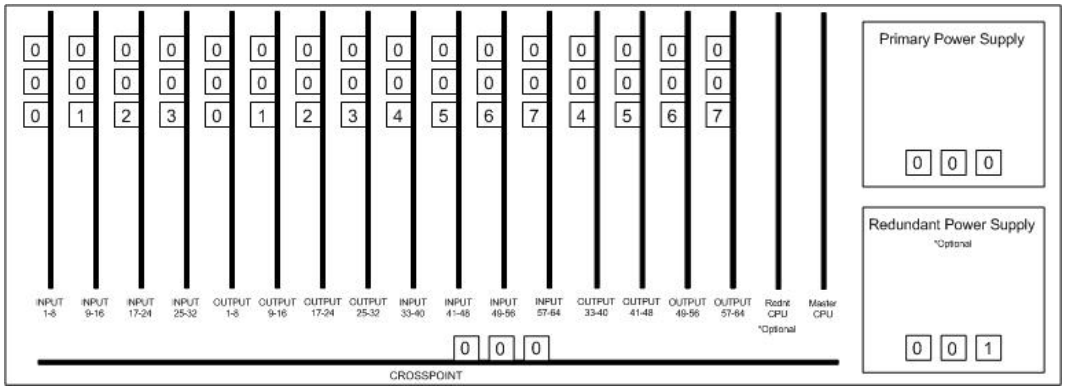
Note:

Although modules are “hot-swappable” it is advised that power be removed when removing or inserting modules when possible.

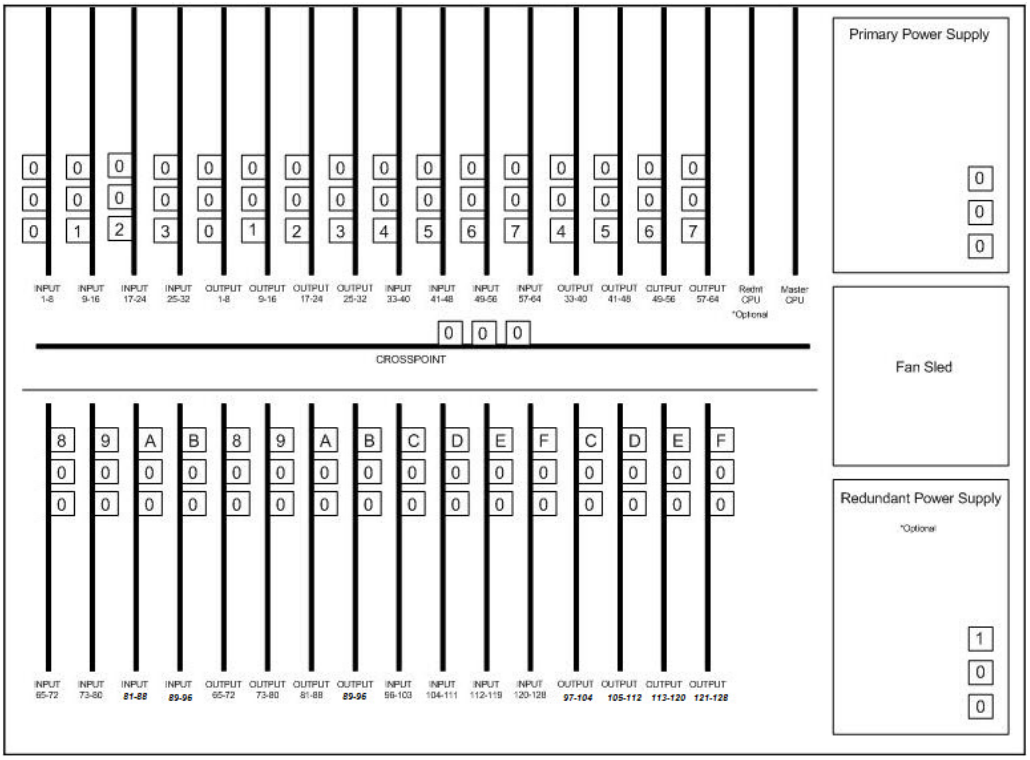
Module Layout

For the routing system to function properly, every module must have its address switches set to the values shown. Your system will be clearly labeled on your frame.

6464 Frame



128128 Frame

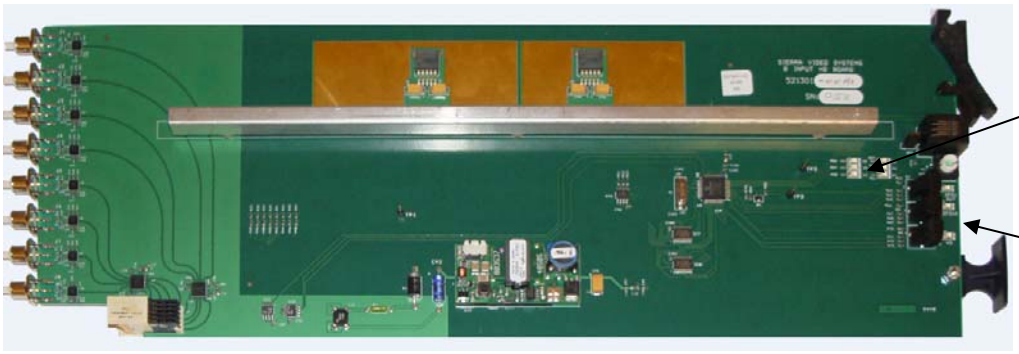


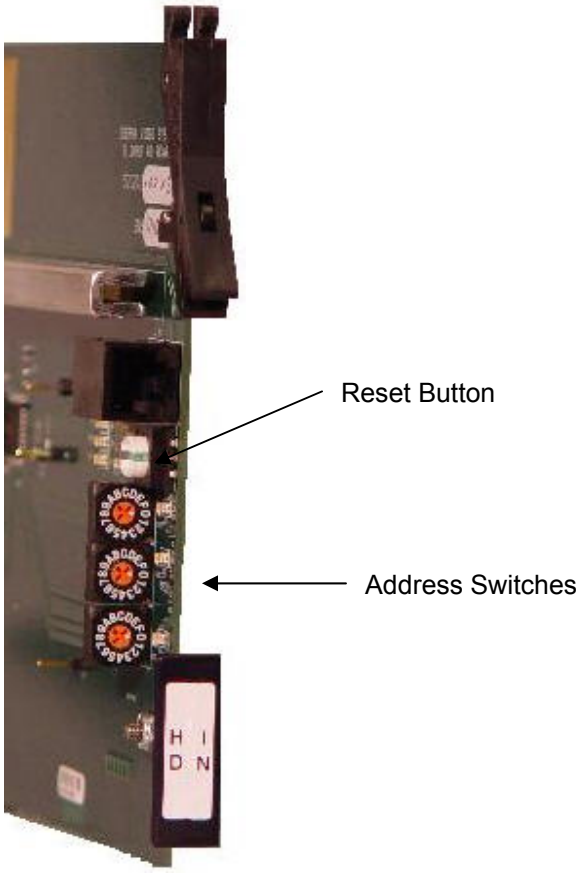
Note
The Sierra Video model shown here is a fully loaded matrix. In some cases, these frames may be configured with less outputs or inputs. Consult the rear panel serial number and model number to verify your order and product. The system you receive is customized for the size & type requested at time of purchase from Sierra Video

Input Module

Input modules are designed in groups of eight. This allows for expansion in groups of eight inputs. Each input module comes with a rear “backplane” panel consisting of eight BNC connectors.

The input module is installed from the front of the frame with the BNC panel installed directly behind the input module in the back of the frame.





Input Module LEDs

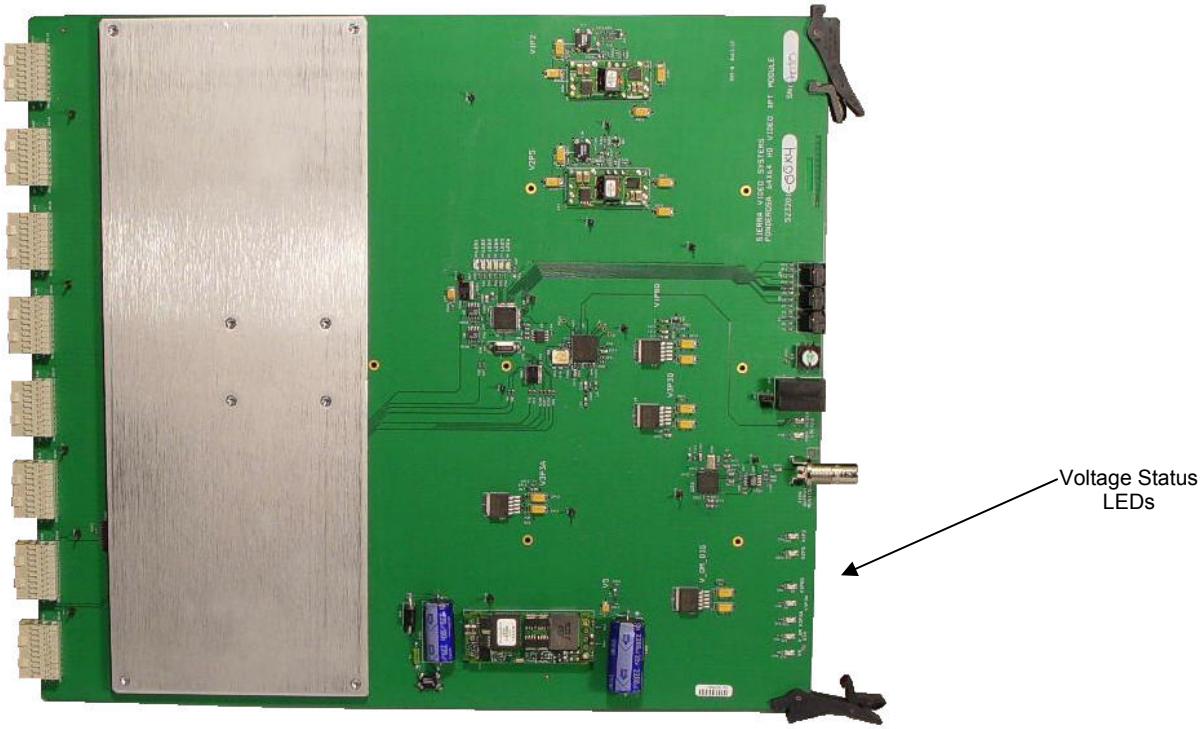
Each input module has 5 Green LEDs located on the front edge of the board. The LEDs indicate the status of the module's voltage. All 5 LEDs must be lit for the module to operate properly. The absence of any lighted LED indicates a failure of the module and the factory should be contacted.

Just behind the reset button there is a group of 6 LEDs used for de-bug purposes. The function of the LEDs are described below.

LED	Indication	Normal condition	Color
1	Transmit in progress	Flickers On/OFF when data is transferred	GREEN
2	Application has run	ON	GREEN
3	Boot program has run	ON	GREEN
4	Temperature out of range	OFF	RED
5	Voltage out of range	OFF	RED
6	Not used	OFF	RED

Crosspoint Module

The crosspoint module contains 1 crosspoint IC arranged to make a complete crosspoint array. These ICs are located under the large metal heat sink in the middle of the board. Surrounding the crosspoint array are IO buffers, the board control processor, and power supplies.



Crosspoint Module LEDs

There are 4 voltage status LEDs on the left side of the board. The LEDs indicate the status of the module's voltage. The LEDs on the right side of the board indicate CPU function and may vary with code versions. All LEDs must be lit for the module to operate properly. The absence of any lit voltage LED indicates a failure of the module and the factory should be contacted.

The factory should be contacted if any fault LEDs are lit.

Note:

The number of LEDs may vary in de-populated systems.

Output Module

Output modules are designed in groups of eight. This allows for expansion in groups of eight outputs. Each output module comes with a rear “backplane” panel consisting of eight BNC connectors.

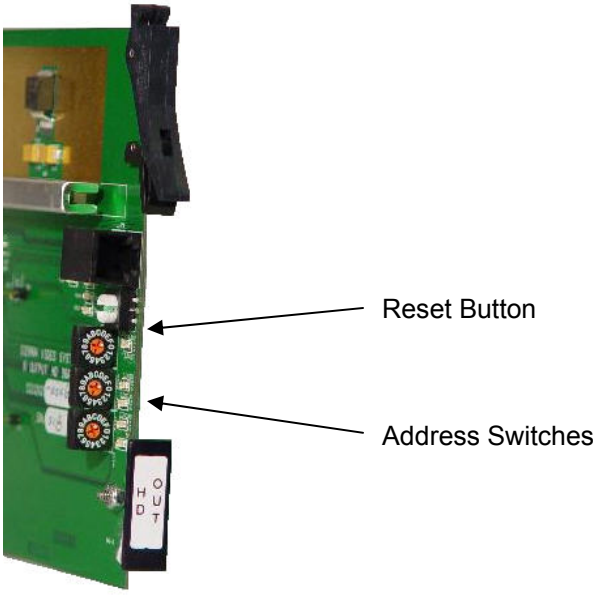
The output module is installed from the front of the frame with the BNC panel installed directly behind the output module in the back of the frame.

Output Module LEDs

Each output module has 5 Green LEDs located on the front edge of the board. The LEDs indicate the status of the module’s voltage. All 5 LEDs must be lit for the module to operate properly. The absence of any lighted LED indicates a failure of the module and the factory should be contacted.

Just behind the reset button there is a group of 6 LEDs used for de-bug purposes. The function of the LEDs is described below.

LED	Indication	Normal condition	Color
1	Transmit in progress	Flickers On/OFF when data is transferred	GREEN
2	Application has run	ON	GREEN
3	Boot program has run	ON	GREEN
4	Temperature out of range	OFF	RED
5	Voltage out of range	OFF	RED
6	Not used	OFF	RED



BNC Rear Panel

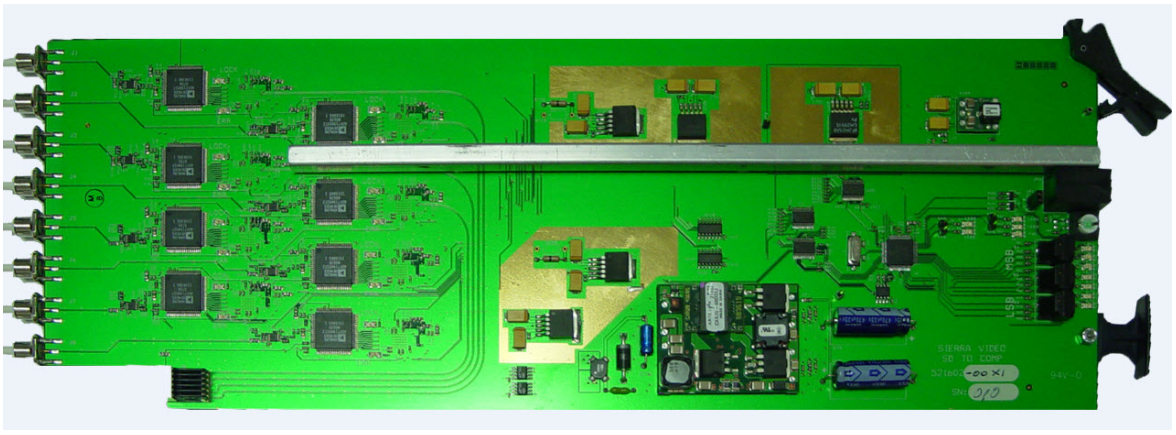
D to A Output Module (Optional)

The optional D to A Output module is an 8 output board that replaces a “standard” 8 output HD/SD board.

This board will take a valid 270 Mbps 525 or 625 digital video signal and output a valid NTSC or PAL composite video signal.

There are 8 D to A converters on each board and each of them operates independently.

Each output will automatically detect the incoming signal format (525 or 625) and output the corresponding composite output (NTSC or PAL).



The performance specifications are:

Return loss: <-30 db @ 5 MHz

Differential gain: +/- 0.3 percent @ 3.58 MHz or 4.443 MHz

Differential phase: +/- 0.5 degrees @ 3.58 MHz or 4.443 MHz

10 bit D to A

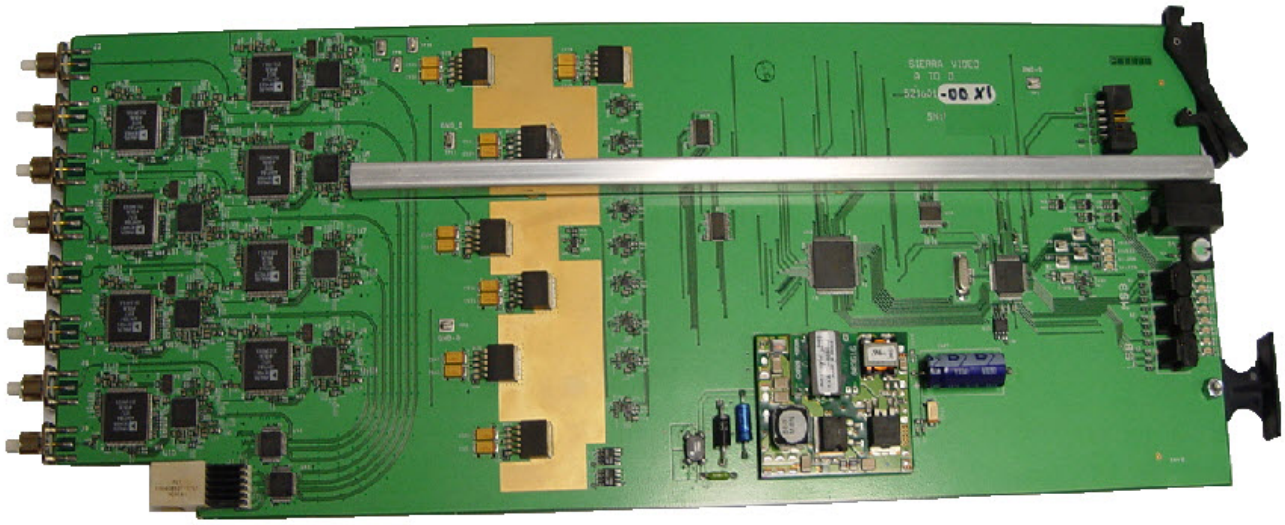
A to D Input Module (Optional)

The optional A to D Input module is an 8 input board that replaces a “standard” 8 input HD/SD board.

This board will take a valid NTSC or PAL composite video signal and convert it to 270 Mbps video.

There are 8 A to D converters on each board and each of them operates independently.

Each input will automatically detect the incoming signal format (525 NTSC or 625 PAL) and output 270Mbps digital video.



Input Impedance: 75 ohm

Quantization: 10 bits

Differential gain: less than +/- 0.7 % @ 3.58 MHz or 4.443 MHz

Differential phase: less than +/- 0.7 degrees @ 3.58 MHz or 4.443 MHz

Luma non-linearity: less than +/- 0.7% @ 3.58 MHz or 4.443 MHz

SNR unweighted: > 54 db using Luma flat field test signal

Hue Accuracy: better than 1 degree

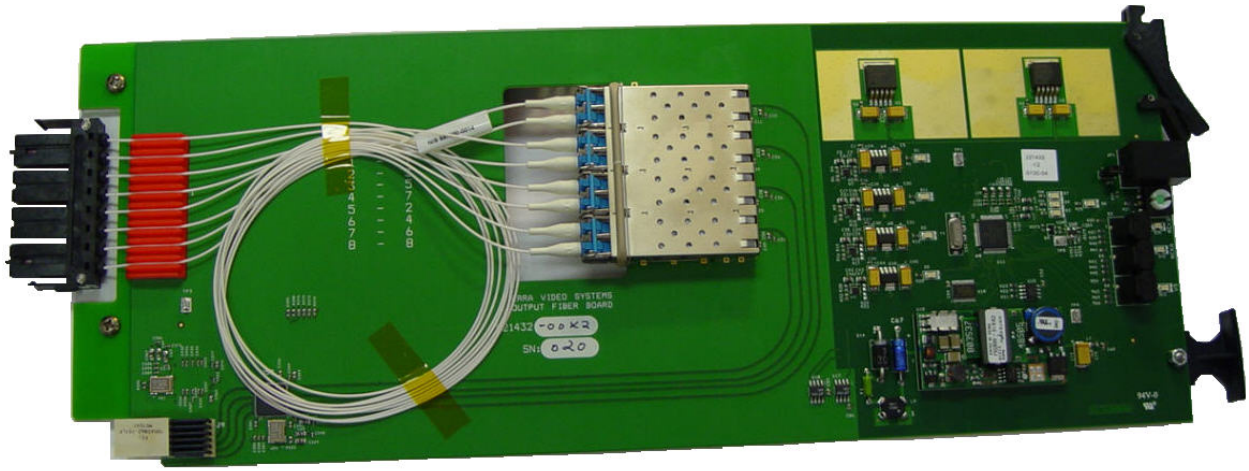
Color Saturation Accuracy: better than 1%

Fiber Output Module (Optional)

The optional Fiber Output module is an 8 output board that replaces a “standard” 8 output HD/SD board.

Each module handles 8 outputs on LC style connectors using single-mode cable.

This module provides bandwidth from 50Mbps to 3Gbps.



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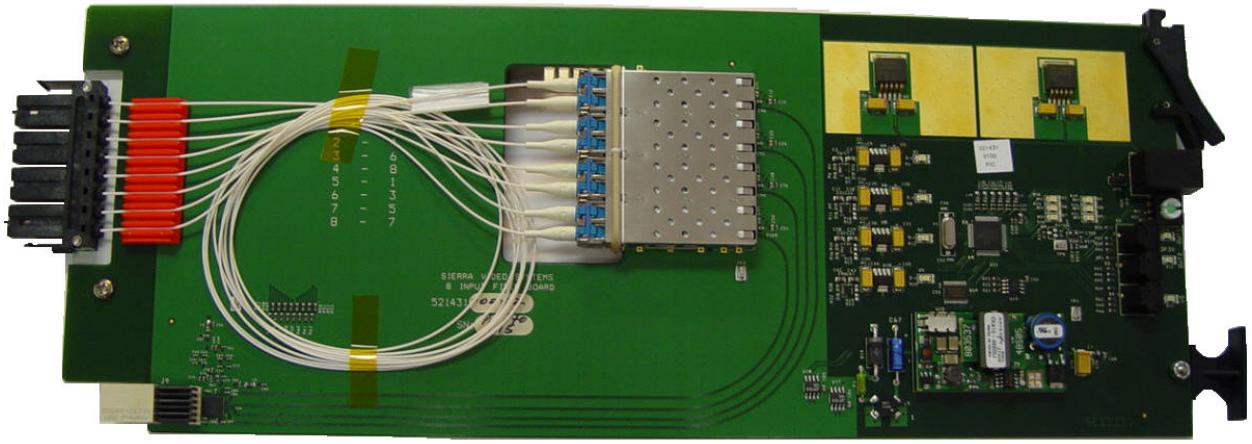
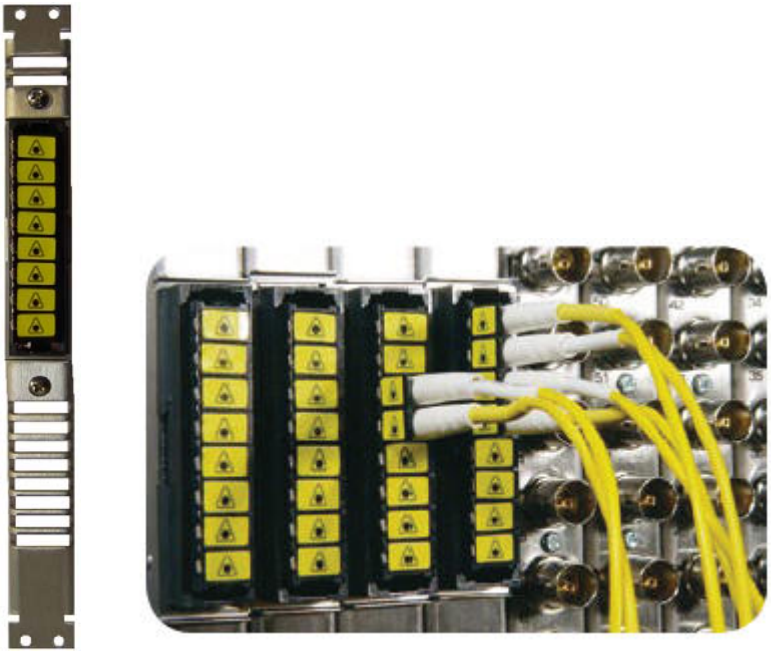
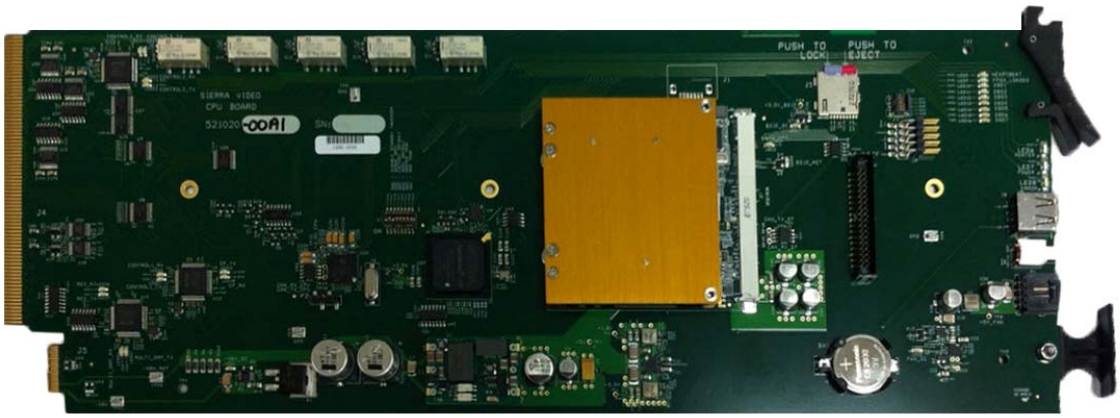


Fiber Rear Connector Panel



Processor Module

Master



BYPASS CPU

The Bypass processor module contains no components. The purpose of the PCB is to transfer switching commands from the “Master” processor to the crosspoint boards and must be installed in order for the slave frame(s) to operate.

Power Supply Module

Power supply modules “auto senses” input voltages 90 to 250VAC. The fuse is located behind the removable panel just above the AC connector on the rear of the frame.

The fuse sizes are 5A/250V.

Chapter 9

Optional Audio

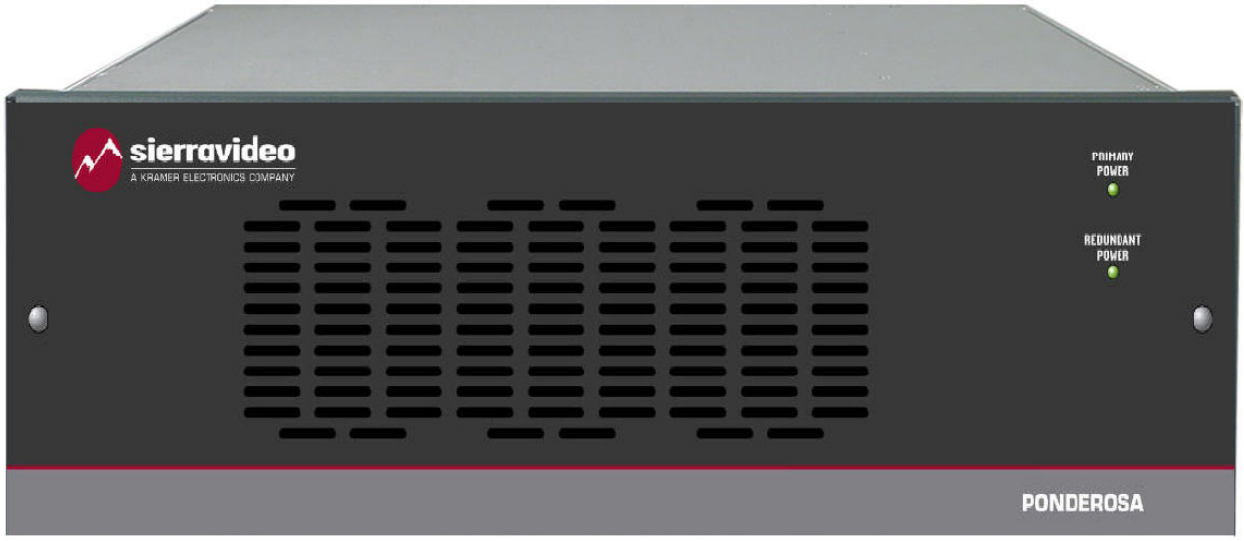
Introduction

The Ponderosa Series Audio routing switchers from Sierra Video are modular for those applications requiring worry-free performance and mission critical reliability. The advanced features and performance set it apart from the competition. These include:

- Modular configurations expandable by 32 input and/or 32 output increments
- Compact frame size – 3RU (6464 frame) or 5RU (128128 frame).
- Hot-swappable I/O boards.
- Standard redundant power supplies.

Front-door access to hot-swappable I/O boards allows for field service or matrix reconfiguration. Serial control is standard in every model.

The Ponderosa analog audio frames populate in increments of 32 on both the inputs and outputs, and come in two compact sizes: 3RU and 5RU. These frames can be configured to be either mono or stereo and are set at the factory. For example, the 3RU frame can be ordered to be either a 64x64 mono or 32x32 stereo audio router. When in the stereo mode, each channel is independently switchable.



Model Suffix Designations

This User's Guide provides installation and operational information for Ponderosa Audio Routing Switchers. Front and Rear panel illustrations are provided in the following subsections for each switcher model.

Model Suffix Designations	
A	Analog Audio
E	AES/EBU Digital Audio

Frame Configurations

Ponderosa Audio frames can be ordered in a “mono” or “stereo” mode.
Configuration is done at the factory or can be changed in the field (see section on “stereo mode” operation).

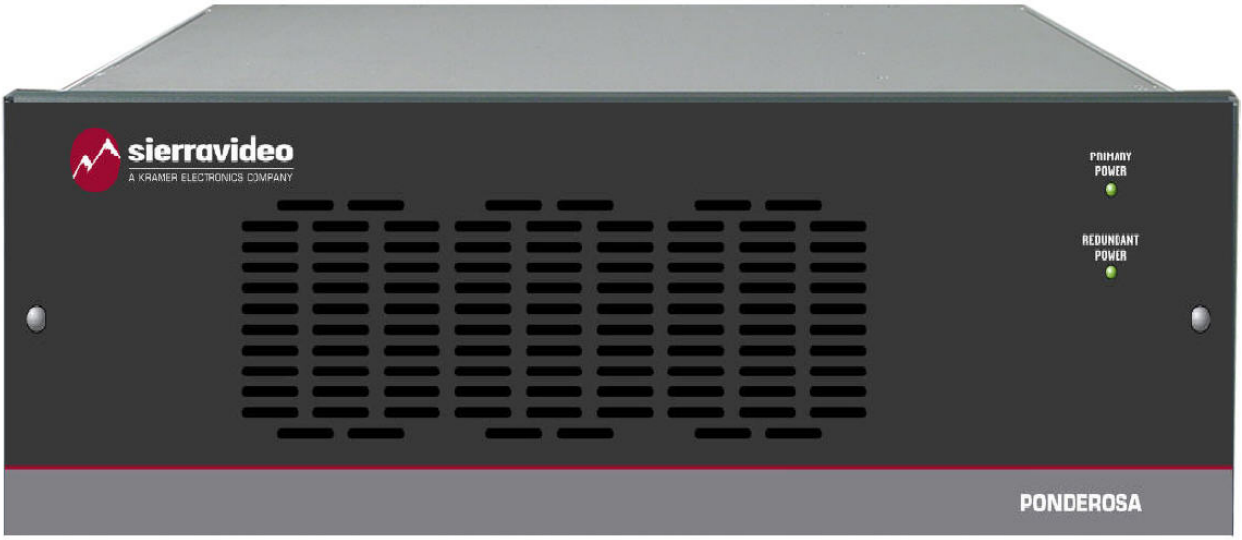
Mono Configurations	
128128 A/E Frame	**6464 A/E Frame**
32x32	32x32
32x64	32x64
64x32	64x32
64x64	64x64
32x96	
96x32	
64x96	
96x64	
96x96	
32x128	
64x128	
128x64	
96x128	
128x96	
128x128	

Stereo Configurations	
128128 A/E Frame	**6464 A/E Frame**
16x16	16x16
16x32	16x32
32x16	32x16
32x32	32x32
16x48	
48x16	
32x48	
48x32	
48x48	
16x64	
32x64	
64x32	
48x64	
64x48	
64x64	

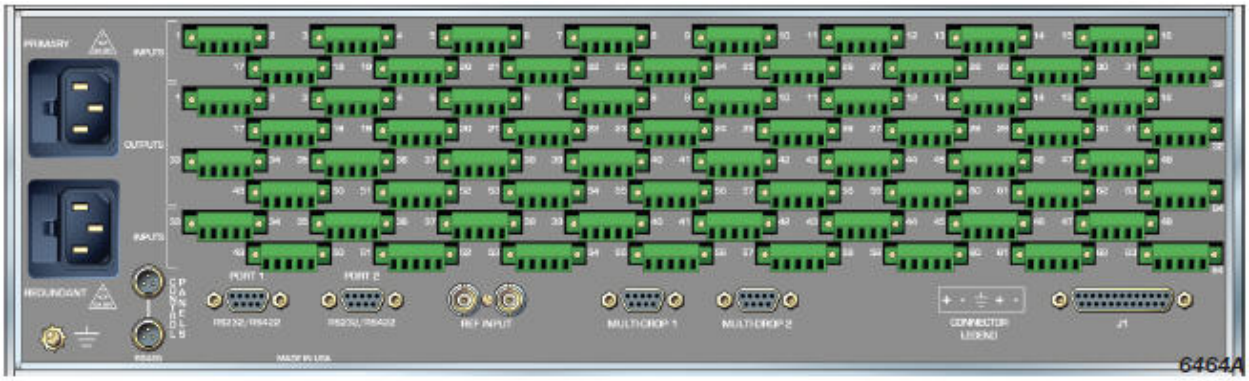
Ponderosa Analog Audio 6464 Frame

Model 6464A

Frame Front Panel



Frame Rear Panel



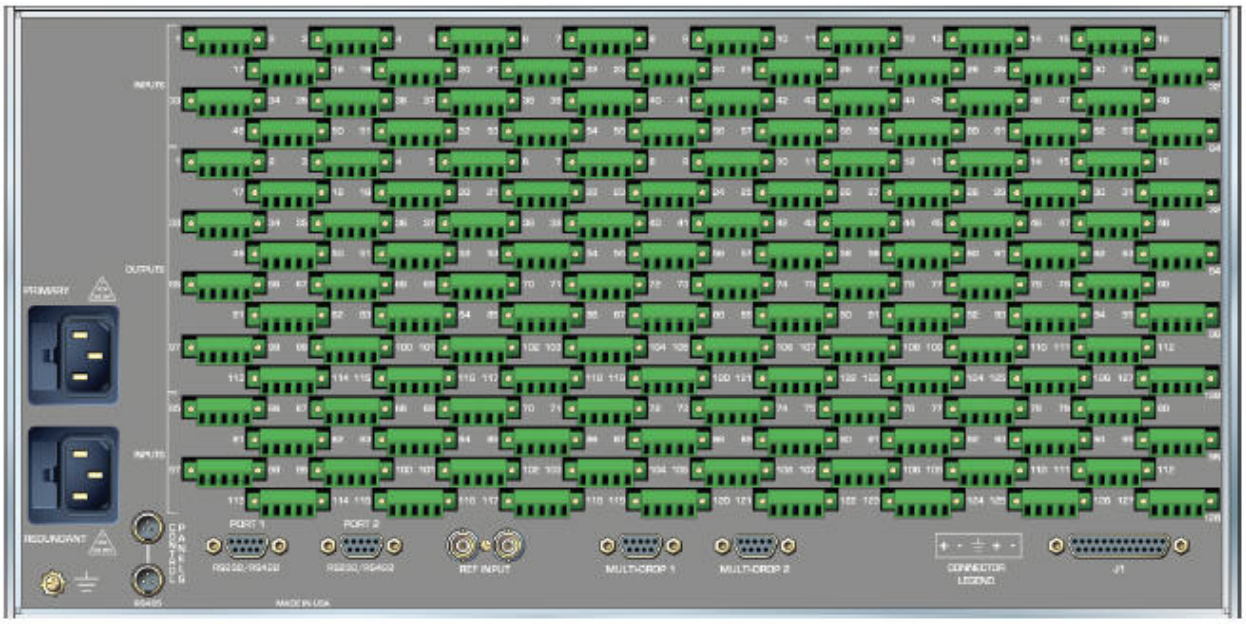
Note
The Sierra Video models shown here and in the subsequent sections are fully loaded matrices. In some cases, these frames may be configured with less outputs or inputs. Consult the rear panel serial number and model number to verify your order and product. **The system you receive is customized for the size & type requested at time of purchase from Sierra Video**

Ponderosa Analog Audio 128128 Frame

Model 128128A

Frame Front Panel

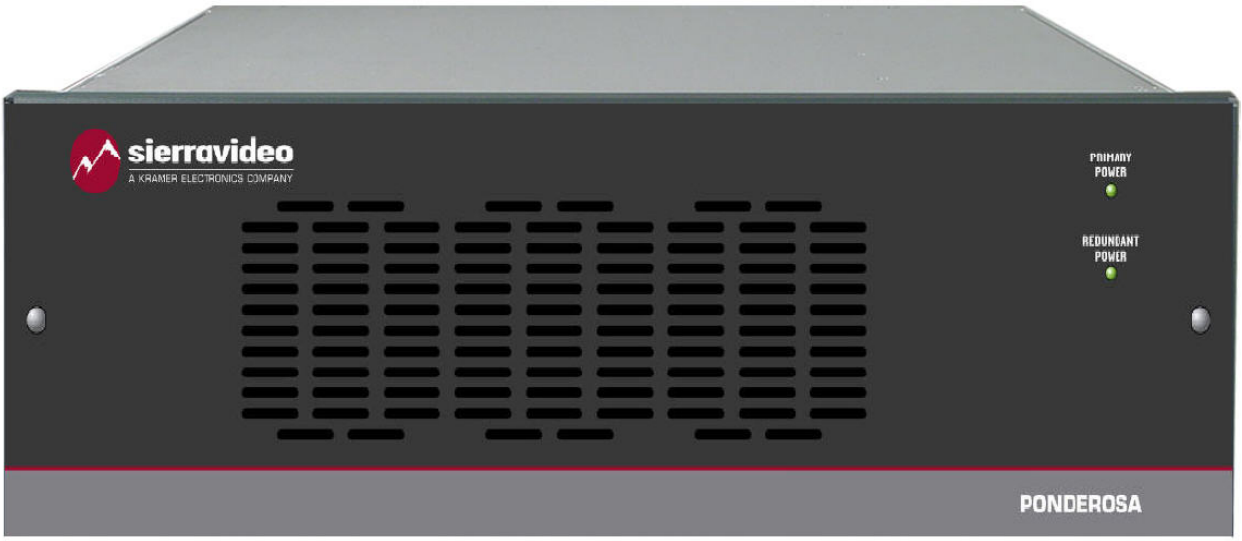
Frame Rear Panel



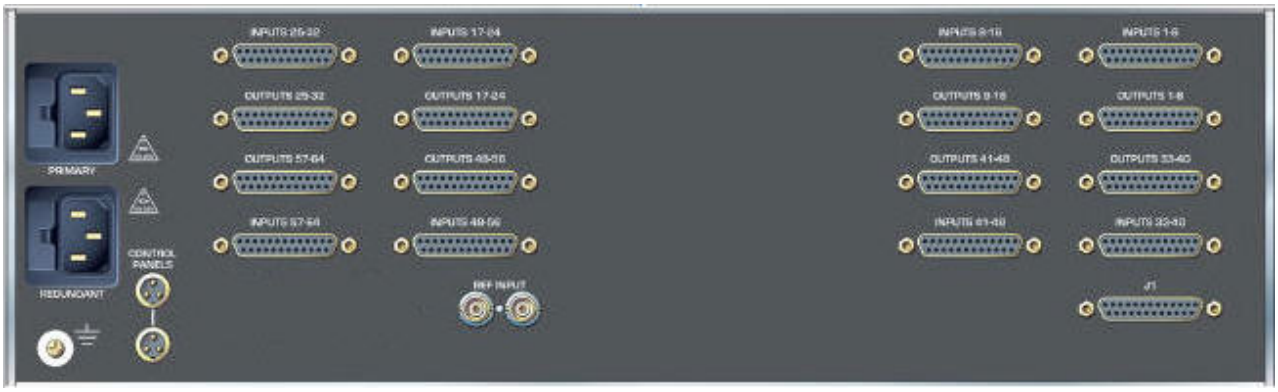
Ponderosa Digital Audio 6464 Frame

Model 6464E

Frame Front Panel



Frame Rear Panel



Note
The Sierra Video models shown here and in the subsequent sections are fully loaded matrices. In some cases, these frames may be configured with less outputs or inputs. Consult the rear panel serial number and model number to verify your order and product. **The system you receive is customized for the size & type requested at time of purchase from Sierra Video**

Ponderosa Digital Audio 128128 Frame

Model 128128E

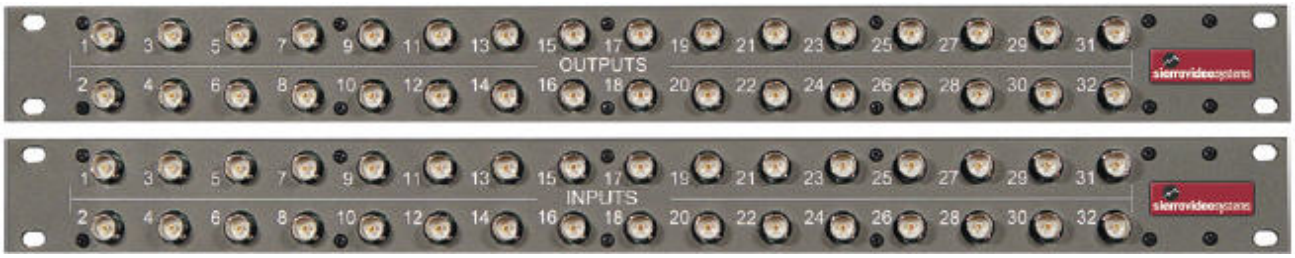
Frame Front Panel

Frame Rear Panel

Digital Audio Output Accessories

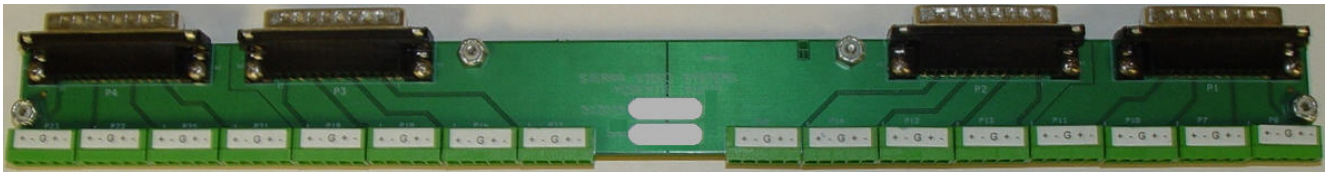
75 ohm Unbalanced Digital Audio

By using BNC adapter panels, each of the 110 ohm balanced inputs is converted to 75 ohm unbalanced 1 V P-P nominal input level. The BNC conversion / adapter panel option for the outputs converts each output to BNC connectors with 75 ohm source impedance and nominal 1 V P-P output level. The adapter panels require more space than the routing switcher. They are separate rack mount panels which interconnect to the 25 in D connectors with short cables that we provide with the adapter panels.



110 ohm Balanced Digital Audio

All inputs are internally terminated with 110 ohms in the Ponderosa digital audio routing switchers. Likewise, all outputs are source-terminated with 110 ohms (55 ohms per line).



Installation

Installation procedures are similar for all frames covered within this manual. Exceptions, if any, have been noted in each of the following paragraphs.

Rack Mounting

Carefully inspect the frame to ensure that there has been no shipping damage. Make sure all shipping material is removed from the router frame.

Each of the routing switchers described in this manual can be rack mounted in a standard 19" (RU) EIA rack assembly and includes rack "ears" at the ends of the front of the frames. None of the switcher models require spacing above or below the unit for ventilation. If ample space exists, a 1RU spacing gap is recommended.

To rack mount any of the routing switchers, simply place the unit's rack ears against the rack rails of the rack, and insert proper rack screws through each of the holes in the rack ears. Always rack mount the routing switcher prior to plugging the unit into a power receptacle or attaching any cables.

Important: Rear mounting brackets must be installed prior to installation of the router into a rack. The rear mounting brackets are contained in the accessory kit supplied with your router.

CAUTION!

The operating temperature range of the Ponderosa series router is 0 to 40 °C. Do not exceed the maximum (40 °C) or minimum (0 °C) operating temperature.

Rear mounting brackets must be installed prior to installation of the router into a rack. The rear mounting brackets are contained in the accessory kit supplied with your router.

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer’s maximum rated ambient temperature (TMRA).

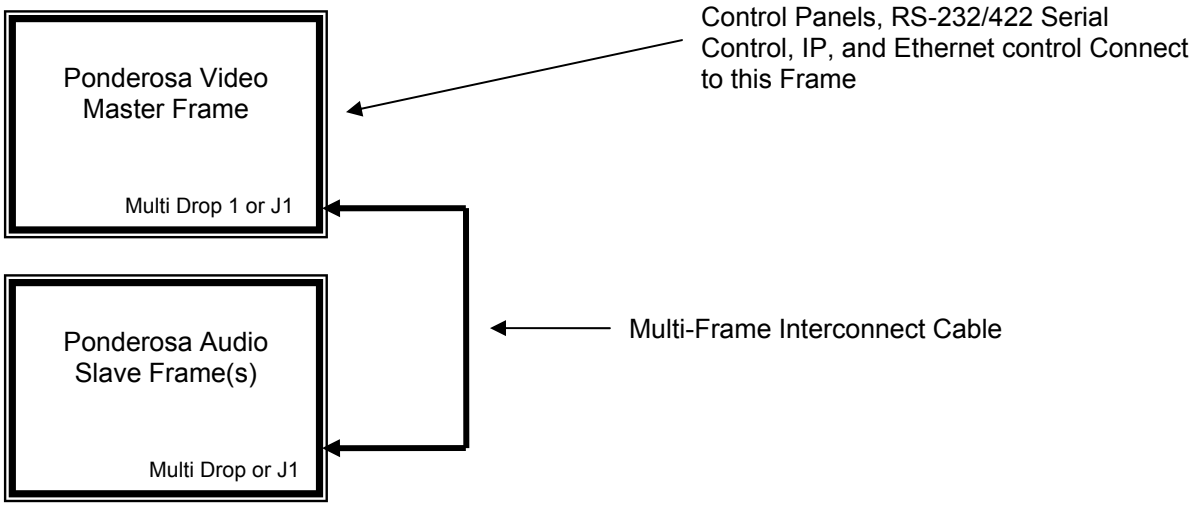
Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Multi-Frame Connection

The Ponderosa Audio routing switcher is connected to the Ponderosa video router to work as one system.

Depending on the other frames in the system, connections are either made using the “J1” (25 pin) or “Multi-drop” (9 pin) connector. A system drawing will be included in the shipment if a multi-frame system is ordered.

Control panels and serial control connect to the frame containing the master processor.



Note:

The 9 pin Multi-drop connection is not a serial connection.

Rear Panel Connections

The Ponderosa Audio frame(s) are used in other Sierra Video audio applications and models. Therefore there are several unused connectors on the rear of the unit.

Unused connectors;

- Control Panels.
- 9 pin Serial Ports (port 1 and port 2).
- REF Input.

Only the J1 and multi-drop connectors are used in the Ponderosa Audio models.

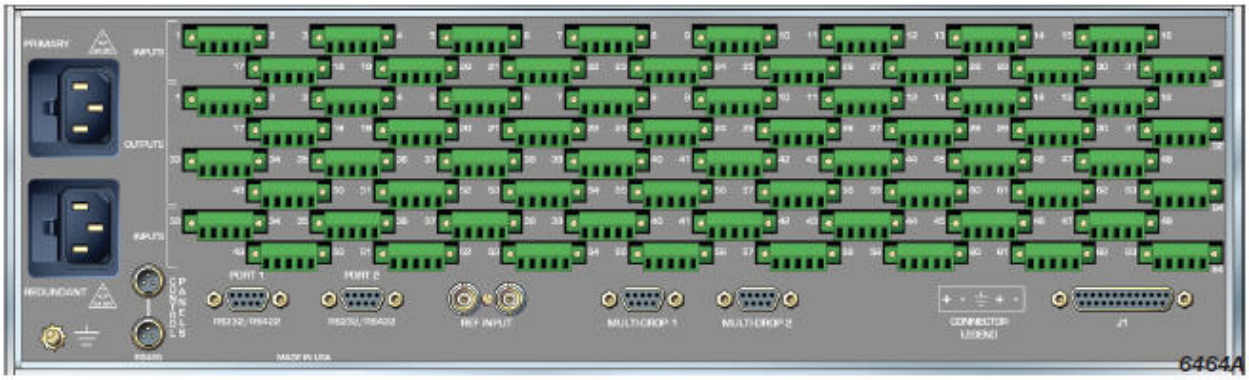
The multi-drop connectors do not exist on the digital audio (E) models.

A system drawing will be sent with your order indicating the proper connections.

Connecting to Audio Devices

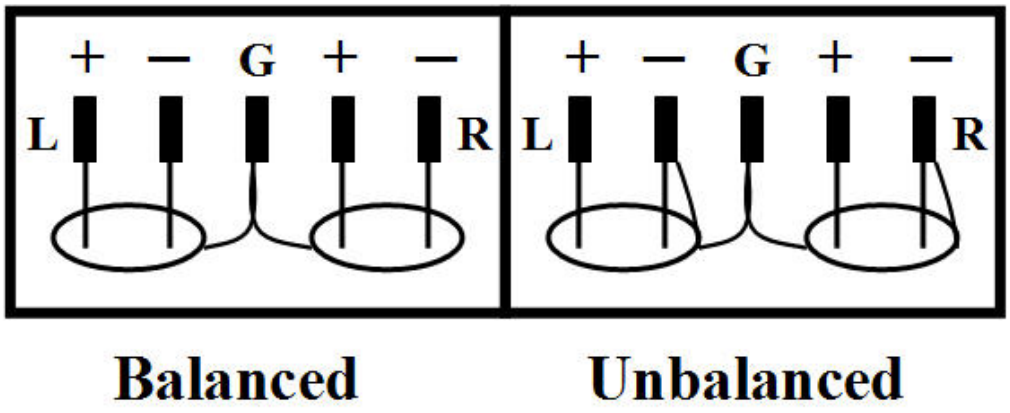
Mono Analog Audio

Audio sources and destination devices (such as amplifiers or recorders) may be connected to the switchers via a 5-pin latching, removable, terminal block style connectors located at the back of the switchers.



Balanced/Unbalanced Analog Audio Connections

All audio sources from the routing switcher are balanced audio. Connect the balanced audio to the balanced input of your destination device(s). To convert balanced to unbalanced audio signals, ground the negative (-) side and use the positive (+) side for both inputs and outputs. Grounding the negative side of the output drive adds +6dB of audio gain. The audio pin outs for balanced and unbalanced audio are described in the tables below:



Stereo Analog Audio

Ponderosa Audio frames can be ordered in a “mono” or “stereo” mode and are pre-configured at the factory. Input and output connections differ when the unit is in the stereo mode.
In the mono mode connectors are wired as silk screened on the rear of the router. However, when ordered in the stereo mode, the input or output is wired as indicated below;

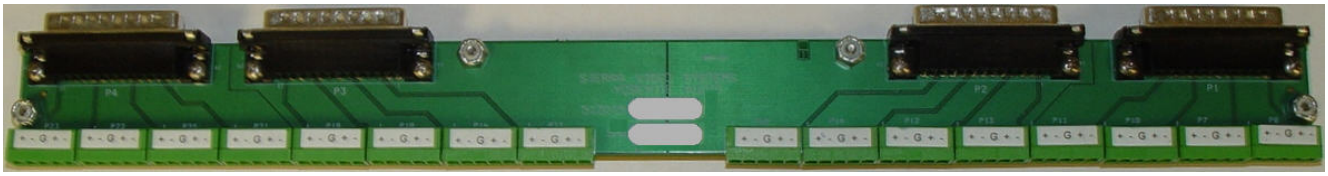
Stereo Audio Wiring											
	Connector #			Connector #			Connector #			Connector #	
I/O #	Left	Right	I/O #	Left	Right	I/O #	Left	Right	I/O #	Left	Right
1	1	2	17	33	34	33	65	66	49	97	98
2	3	4	18	35	36	34	67	68	50	99	100
3	5	6	19	37	38	35	69	70	51	101	102
4	7	8	20	39	40	36	71	72	52	103	104
5	9	10	21	41	42	37	73	74	53	105	106
6	11	12	22	43	44	38	75	76	54	107	108
7	13	14	23	45	46	39	77	78	55	109	110
8	15	16	24	47	48	40	79	80	56	111	112
9	17	18	25	49	50	41	81	82	57	113	114
10	19	20	26	51	52	42	83	84	58	115	116
11	21	22	27	53	54	43	85	86	59	117	118
12	23	24	28	55	56	44	87	88	60	119	120
13	25	26	29	57	58	45	89	90	61	121	122
14	27	28	30	59	60	46	91	92	62	123	124
15	29	30	31	61	62	47	93	94	63	125	126
16	31	32	32	63	64	48	95	96	64	127	128

Balanced Digital Audio

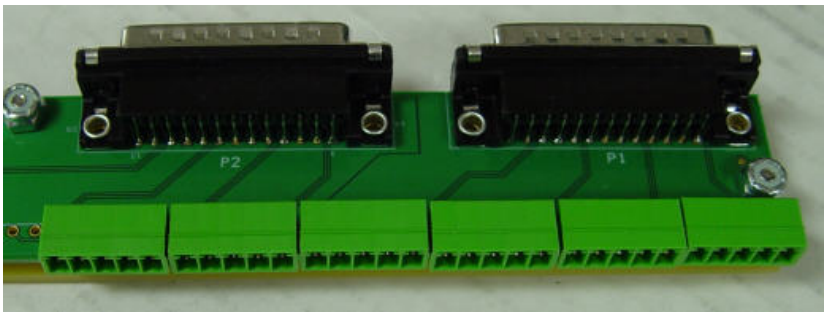
Ponderosa digital audio routers use 25-pin “D” connectors for input and output connection..

All inputs are internally terminated with 110 ohms in the digital audio routing switchers. Likewise, all outputs are source-terminated with 110 ohms (55 ohms per line).

When balanced digital audio is ordered, Sierra Video supplies a removable screw terminal adapter. Use of the adapter is optional.

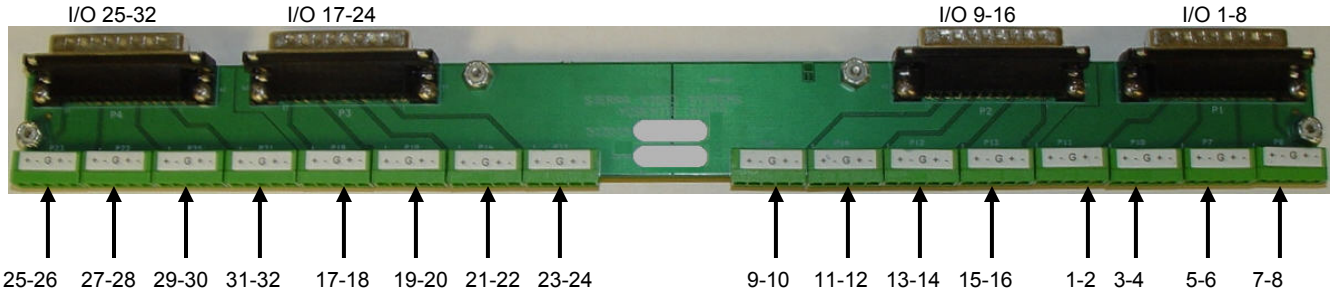


Each adapter panel connects to 4 of the 25-pin “D” connectors. This connects a total of 32 inputs or outputs.



The 25-pin “D” connectors each support a group of 4 inputs or outputs and the screw terminals are in groups of 4 containing 2 inputs or outputs each.
Example: If an adapter panel is connected to the top row of 25-pin “D” connectors on the back of the frame, the screw terminals will be configured as below;

Rear of Frame



Use of the screw terminal adaptable is optional. If it is preferred to wire directly to the 26-pin “D” connectors using a male 25-pin “D” connector, the pinout connections are as follows;

Inputs & Outputs 1 - 32

Audio Pin Connections – I/Os 1 - 32								
Pin #	**1-8**		**9-16**		**17-24**		**25-32**	
Pin #1	8	(+)	16	(+)	24	(+)	32	(+)
Pin #14	8	(-)	16	(-)	24	(-)	32	(-)
Pin #2	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #15	7	(+)	15	(+)	23	(+)	31	(+)
Pin #3	7	(-)	15	(-)	23	(-)	31	(-)
Pin #16	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #4	6	(+)	14	(+)	22	(+)	30	(+)
Pin#17	6	(-)	14	(-)	22	(-)	30	(-)
Pin #5	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #18	5	(+)	13	(+)	21	(+)	29	(+)
Pin #6	5	(-)	13	(-)	21	(-)	29	(-)
Pin #19	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #7	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #20	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #8	4	(+)	12	(+)	20	(+)	28	(+)
Pin #21	4	(-)	12	(-)	20	(-)	28	(-)
Pin #9	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #22	3	(+)	11	(+)	19	(+)	27	(+)
Pin #10	3	(-)	11	(-)	19	(-)	27	(-)
Pin #23	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #11	2	(+)	10	(+)	18	(+)	26	(+)
Pin #24	2	(-)	10	(-)	18	(-)	26	(-)
Pin #12	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #25	1	(+)	9	(+)	17	(+)	25	(+)
Pin #13	1	(-)	9	(-)	17	(-)	25	(-)

Inputs & Outputs 33 - 64

Audio Pin Connections – I/Os 33 -64								
Pin #	**33-40**		**41-48**		**49-56**		**57-64**	
Pin #1	40	(+)	48	(+)	56	(+)	64	(+)
Pin #14	40	(-)	48	(-)	56	(-)	64	(-)
Pin #2	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #15	39	(+)	47	(+)	55	(+)	63	(+)
Pin #3	39	(-)	47	(-)	55	(-)	63	(-)
Pin #16	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #4	38	(+)	46	(+)	54	(+)	62	(+)
Pin#17	38	(-)	46	(-)	54	(-)	62	(-)
Pin #5	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #18	37	(+)	45	(+)	53	(+)	61	(+)
Pin #6	37	(-)	45	(-)	53	(-)	61	(-)
Pin #19	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #7	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #20	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #8	36	(+)	44	(+)	52	(+)	60	(+)
Pin #21	36	(-)	44	(-)	52	(-)	60	(-)
Pin #9	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #22	35	(+)	43	(+)	51	(+)	59	(+)
Pin #10	35	(-)	43	(-)	51	(-)	59	(-)
Pin #23	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #11	34	(+)	42	(+)	50	(+)	58	(+)
Pin #24	34	(-)	42	(-)	50	(-)	58	(-)
Pin #12	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #25	33	(+)	41	(+)	49	(+)	57	(+)
Pin #13	33	(-)	41	(-)	49	(-)	57	(-)

Inputs & Outputs 65 - 96

Audio Pin Connections – I/Os 65-96								
Pin #	**65-72**		**73-80**		**81-88**		**89-96**	
Pin #1	72	(+)	80	(+)	88	(+)	96	(+)
Pin #14	72	(-)	80	(-)	88	(-)	96	(-)
Pin #2	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #15	71	(+)	79	(+)	87	(+)	95	(+)
Pin #3	71	(-)	79	(-)	87	(-)	95	(-)
Pin #16	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #4	70	(+)	78	(+)	86	(+)	94	(+)
Pin#17	70	(-)	78	(-)	86	(-)	94	(-)
Pin #5	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #18	69	(+)	77	(+)	85	(+)	93	(+)
Pin #6	69	(-)	77	(-)	85	(-)	93	(-)
Pin #19	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #7	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #20	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #8	68	(+)	76	(+)	84	(+)	92	(+)
Pin #21	68	(-)	76	(-)	84	(-)	92	(-)
Pin #9	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #22	67	(+)	75	(+)	83	(+)	91	(+)
Pin #10	67	(-)	75	(-)	83	(-)	91	(-)
Pin #23	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #11	66	(+)	74	(+)	82	(+)	90	(+)
Pin #24	66	(-)	74	(-)	82	(-)	90	(-)
Pin #12	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #25	65	(+)	73	(+)	81	(+)	89	(+)
Pin #13	65	(-)	73	(-)	81	(-)	89	(-)

Inputs & Outputs 97 - 128

Audio Pin Connections – I/Os 97-128								
Pin #	**97-104**		**105-112**		**113-120**		**121-128**	
Pin #1	104	(+)	112	(+)	120	(+)	128	(+)
Pin #14	104	(-)	112	(-)	120	(-)	128	(-)
Pin #2	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #15	103	(+)	111	(+)	119	(+)	127	(+)
Pin #3	103	(-)	111	(-1)	119	(-)	127	(-)
Pin #16	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #4	102	(+)	110	(+)	118	(+)	126	(+)
Pin#17	102	(-)	110	(-)	118	(-)	126	(-)
Pin #5	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #18	101	(+)	109	(+)	117	(+)	125	(+)
Pin #6	101	(-)	109	(-)	117	(-)	125	(-)
Pin #19	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #7	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #20	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #8	100	(+)	108	(+)	116	(+)	124	(+)
Pin #21	100	(-)	108	(-)	116	(-)	124	(-)
Pin #9	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #22	99	(+)	107	(+)	115	(+)	123	(+)
Pin #10	99	(-)	107	(-)	115	(-)	123	(-)
Pin #23	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #11	98	(+)	106	(+)	114	(+)	122	(+)
Pin #24	98	(-)	106	(-)	114	(-)	122	(-)
Pin #12	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #25	97	(+)	105	(+)	113	(+)	121	(+)
Pin #13	97	(-)	105	(-)	113	(-)	121	(-)

Unbalanced Audio Pin Out Example

Pin #	**1-8**		**9-16**		**17-24**		**25-32**	
Pin #1	8	(+)	16	(+)	24	(+)	32	(+)
Pin #14	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground
Pin #2	Ground	Ground	Ground	Ground	Ground	Ground	Ground	Ground

Unbalanced Digital Audio

Since all audio sources and destinations in the routing switcher are balanced, Sierra Video supplies BNC adapter panels when you order unbalanced digital audio.

By using BNC adapter panels, each of the 110 ohm balanced inputs is converted to 75 ohm unbalanced 1 V P-P nominal input level. The BNC conversion / adapter panel option for the outputs converts each output to BNC connectors with 75 ohm source impedance and nominal 1 V P-P output level. The adapter panels require more space than the routing switcher. They are separate rack mount panels which interconnect to the 25 in D connectors with short cables that we provide with the adapter panels.

Each panel accommodates 4 of the 25-pin “D” connectors.

Input BNC adapter panels are “active” and come with an external power supply. Output BNC adapter panels are passive and do not require power to operate.

Chapter

10

Audio Module Overview

Introduction

The Ponderosa Audio routing switcher is based upon a modular architecture of an integrated frame, motherboard and backplane. Common input and crosspoint modules are used. The same two types of modules are used for both frame sizes: 64x64 and 128x128.

There are two basic modules:

- Input Buffer Module
- Crosspoint/ Output driver Module

The 64x64 frame has positions for two 32-channel input buffer and two crosspoint/output driver modules; and the 128x128 frame has positions for four 32-channel buffer modules and four crosspoint/output driver modules.

All modules are front extractable and “hot-swappable”. The frame is force air cooled using internal cooling fans contained within the front panel.

Note:

Although modules are “hot-swappable” it is advised that power be removed when removing or inserting modules when possible.

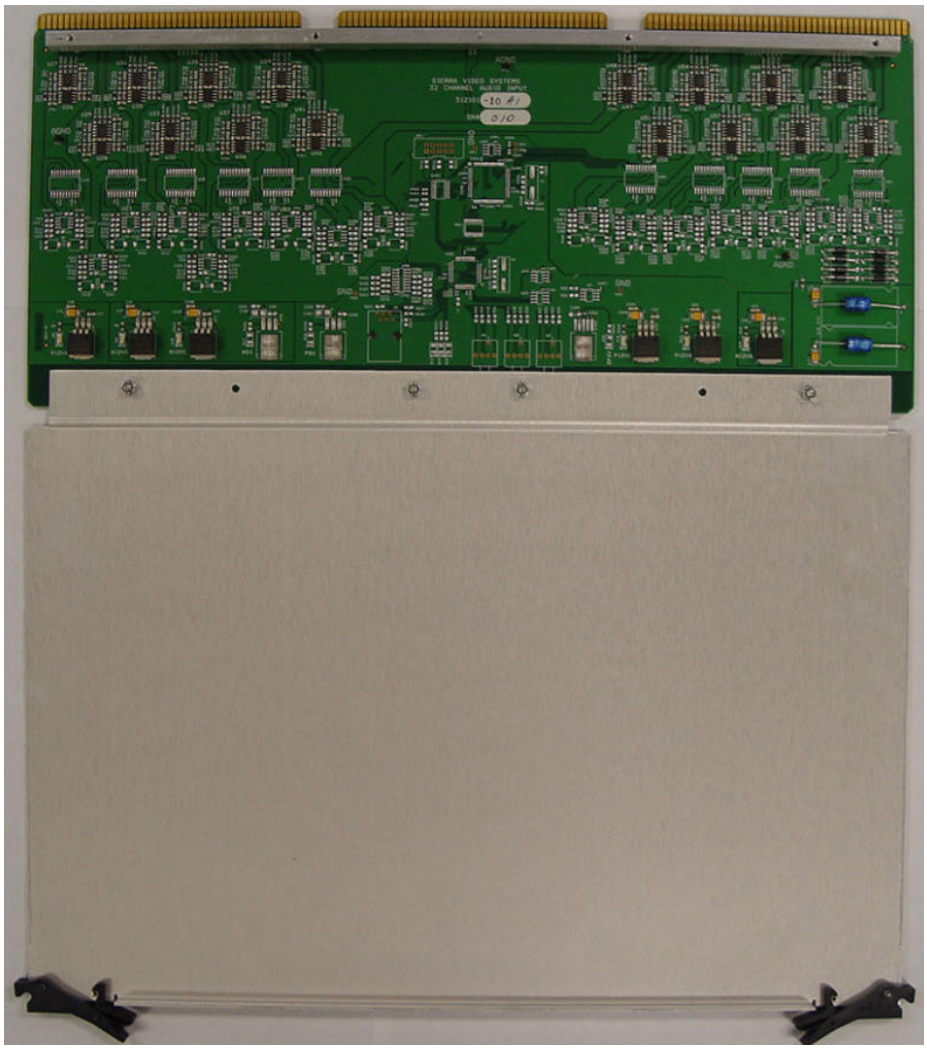
Analog Audio

Input Buffers

Each input buffer module has 32 identical circuits. Ponderosa Audio routers are designed to work in broadcast and production facilities, and are compatible with balanced interconnections.

The buffers have multiple purposes:

1. **Present a high impedance to the incoming signal.**
2. **Remove unwanted common mode IE Hum signal.**
3. **Convert the signal to the level and impedance needed by the switching matrix that follows.**



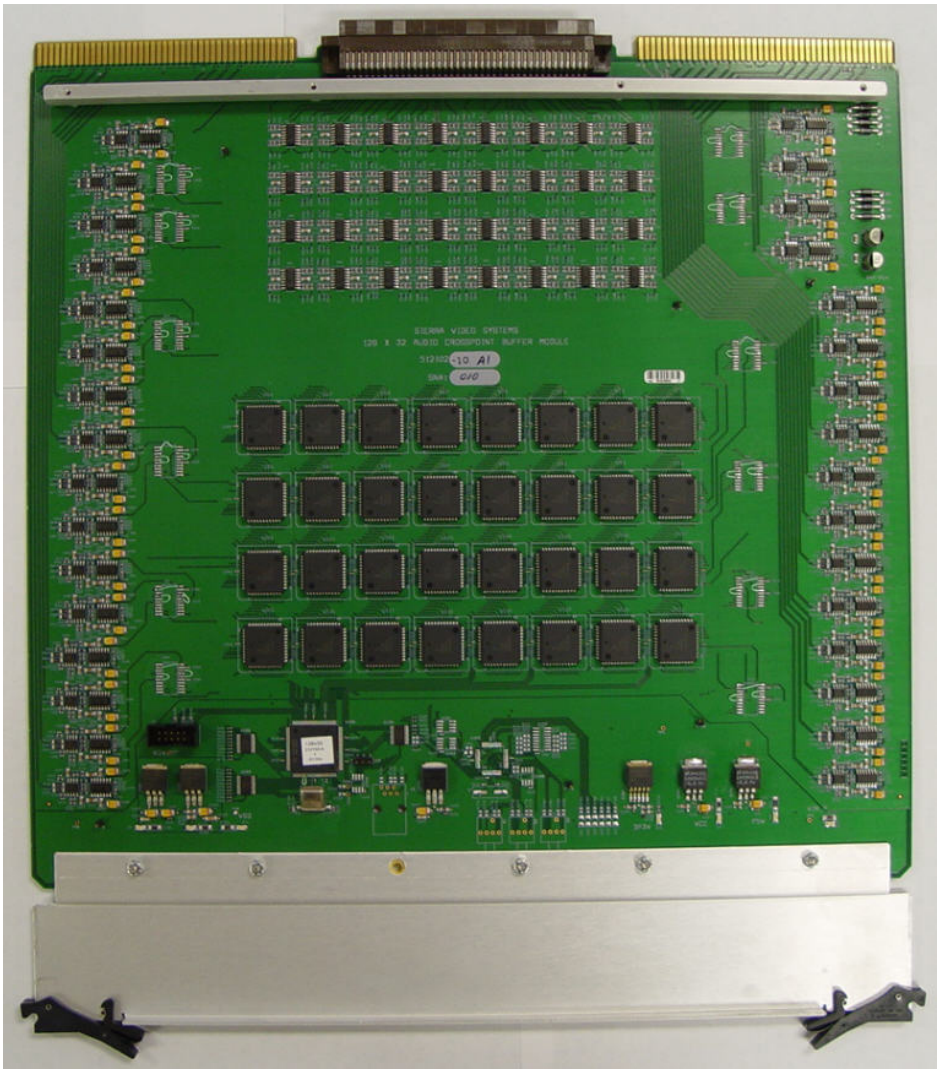
The output of the input buffer circuits are connected to the switching matrix via the internal motherboard. The 64x64 frame has positions for two 32-channel buffer modules; and the 128x128 frame has positions for four 32-channel buffer modules.

Crosspoint/ Output Driver Modules

The analog audio crosspoint module used in Ponderosa Audio is a 128x32 module. The switching integrated circuit (IC) is a HCMOS 16x8 array. Thirty-two of these switching IC's are arranged to form a 128x32 matrix.

Each output bus from the switching matrix feeds a differential output. The output driver provides a symmetrical low impedance output signal.

The 64x64 frame has positions for two 128x32 / 32-channel output driver modules; the 128x128 frame has positions for four 128x32 / 32-channel output driver modules. Grounding the negative side of the output drive adds +6dB of audio gain.



Digital Audio

As with analog audio systems described above, the digital audio routing switchers use digital modules with the same form factor. These audio AES/EBU compatible routers use high-frequency digital 110 ohm balanced line receivers. They can also be ordered to support S/PDIF single-ended signals with an input/output impedance of 75 ohm.

Input buffers

The basic digital audio input buffer module has thirty-two balanced 110 ohm AES/EBU audio line receiver circuits that in turn connect their outputs via the motherboard to the crosspoint modules.

Module Layout

For the routing system to function properly, every module must be placed in the proper slot.

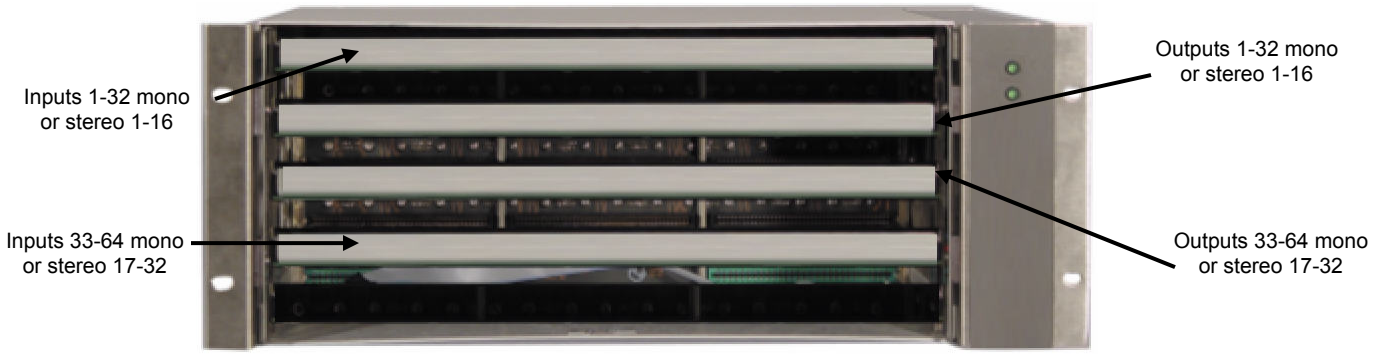
Access to the modules is made by removing the front door containing the fans and unplugging the fan harness.

Warning:

The unit must not be operated with the front fans removed or damage could be caused to the modules. Although modules are "hot-swappable" it is advised that power be removed when removing or inserting modules when possible.

6464 Frame Analog Mono and Digital

The 3RU 6464 has 5 slots for modules with the bottom slot unused.



The top slot in both the analog and digital frame contains the input buffer module for inputs 1-32.

The next (2nd) slot down contains the crosspoint/output driver module for outputs 1-32.

The 3rd slot from the top contains another crosspoint/output driver module for the outputs 33-64.

The 4th slot from the top contains an input buffer module for inputs 33-64.

*The bottom slot (slot 5) is not used.

Note:

If the frame is configured as a 32x32 mono router, only the top 2 slots are loaded with modules.

6464 Frame Analog Stereo

Modules are arraigned the same in the stereo mode as the mono mode with the exception of which inputs and outputs the module controls.

The top slot controls stereo (left and right) inputs 1-16.

The next (2nd) slot down controls stereo outputs 1-16.

The 3rd slot from the top controls stereo outputs 17-32.

The 4th slot from the top control stereo inputs 17-32.

*The bottom slot (slot 5) is not used.

128128 Frame Analog Mono and Digital

The 5RU 128128 is similar to the 6464 frame except it has 9 slots for modules with the bottom slot unused.

The top slot in both the analog and digital frame contains the input buffer module for inputs 1-32.

The next (2nd) slot down contains the input buffer module for inputs 33-64.

The 3rd slot from the top contains a crosspoint/output driver module for the outputs 1-32.

The 4th slot from the top contains a crosspoint/output driver module for the outputs 33-64.

The 5th slot from the top contains a crosspoint/output driver module for the outputs 65-96.

The 6th slot from the top contains a crosspoint/output driver module for the outputs 97-128.

The 7th slot down contains the input buffer module for inputs 65-96.

The 8th slot down contains the input buffer module for inputs 97-128.

*The bottom slot (slot 9) is not used.

128128 Frame Analog Stereo

Modules are arraigned the same in the stereo mode as the mono mode with the exception of which inputs and outputs the module controls.

The top slot controls stereo (left and right) inputs 1-16.

The 2nd slot from the top controls stereo inputs 17-32.

The 3rd slot down controls stereo outputs 1-16.

The 4th slot from the top controls stereo outputs 17-32.

The 5th slot from the top controls stereo outputs 33-48.

The 6th slot from the top contains stereo outputs 49-64.

The 7th slot from the top contains stereo inputs 33-48.

The 8th slot down contains stereo inputs 49-64.

*The bottom slot is not used.

Front Door Fans

Three 12VDC cooling fans are mounted on the front door and plugged into the frame's power supply.

The unit should not be operated without the front door with fans operating as this could cause failure of the modules.

Chapter 11

Specifications

HD Video Specifications

Video	
Data Rates	19Mbps – 2.97Gbps
Data Types	SMPTE 424, 372M, 310M, 259, 344M, 292M, DVB-ASI, ITU-R BT.601
Jitter	< 0.2 UI
INPUT	
Video Level	800mV p-p +/-10%
Connector Type	BNC
Impedance	75 Ohm
Return Loss	<-20dB up to 2.97 GHz
Cable Equalization	0 – 100 meters for SMPTE 292, 424 or 372M, Belden 1694A 0 – 300 meters for all other standards, Belden 1694A
OUTPUT	
Video Level	800mV p-p +/-10%
Connector Type	BNC
Impedance	75 Ohm
Return Loss	<-20dB up to 2.97 GHz
Rise/Fall Times	< 0.4 nsec for 270 Mbps SDI and < 135 psec for HD-SDI
Optional D to A Output Module	
Return Loss	<-30db @ 5 MHz
Differential Gain	+/- 0.3 % @ 3.58 MHz or 4.443 MHz
Differential Phase	+/- 0.5 Deg @ 3.58 MHz or 4.443 MHz

Fiber Option	
Input/Output	Modules accept 8 fiber optical connectors
Connector Type	LC
Fiber Type	Single Mode
Wavelength	1310 (nm)
Data Rates	50Mbps – 3Gbps
Min. Optical Input/Output Power	-5dBm
Max. Distance @ 3Gbps	10km

Control	
Serial	3 General purpose 9-pin D. Each switchable RS-232 or RS-422 9600, 38.4K, 115.2K baud
Serial Protocols	SVS Host
Ethernet	10/100 Base-T, full duplex, RJ-45 connector
Ethernet Protocols	ARP, ICMP, TCP/IP, Telnet, HTTP
Web Server	For control
Redundant Control Processor	Optional
Control Panels	Supports full line of Sierra Video SCP remote control panels
GPI/GPO	5 inputs/ 5 outputs

General	
Rack Unit/ Frame Size	4RU-6464 Frame & 8RU-128128 Frame
Dimensions	6464 Frame-19” W x 7” H x 20 ⅜” D 128128 Frame 14” H x 20 ⅜” D Mounts in Standard 19” rack Depth measurements do not include front panel hardware or rear cabling
Power	90VAC to > 240VAC Auto-detecting <150Watts for 6464 Frame <300Watts for 128128 Frame
Redundant Power Supply	Optional
Storage Temperature	-40° to +150° F
Operating Temperature	30° to 100° F Ambient
Humidity	10% to 90% Non-condensing

Analog Audio Specifications

Gain	+/- 0.5 dB
Frequency Response: 20 Hz to 20 KHz	+/- 0.5 dB
Max I/O Level- Balanced	+21 dB
Max I/O Level- Unbalanced	+15 dB
Noise (20 Hz to 20 KHz)	-79 dBu
Crosstalk: 1 KHz	< -90 dB
Crosstalk: 10 KHz	< -70 dB
THD+N (20 Hz to 20 KHz @ +4 dBu)	< 0.025%
IM (20 Hz to 20 KHz @ +4 dBu	< 0.025%

Digital Audio Specifications

	AES 3	**AES 3-id**
I/O connections	110 ohm balanced/shielded cable	75 ohm BNC
Input/Output impedance	110 ohm +/- 20%	75 ohm
Return Loss	< -15 db	< -15 db
Output Voltage	2 V p-p Min	1 V p-p +/- 20%
DC Offset	N/A	< 50 mv
Rise/Fall Time	5 to 30 ns	30 to 44 ns
Intrinsic Jitter	< 0.025 UI using intrinsic-jitter filter	< 0.025 UI using intrinsic-jitter filter
Min Input Voltage	200 mv p-p	320 mv p-p
Data Rates	32 KHz to 96 KHz Sampling Rate 2.048 Mbps to 6.144 Mbps Data Rates Meets all above specifications with 32 KHz, 44.1 KHz, 48 KHz, and 96 KHz Sampling Rates	

General	
Rack Unit/ Frame Size	3RU-6464 Frame & 5RU-128128 Frame
Dimensions	6464 Frame-19” W x 5 1/4” H x 20 1/2” D 128128 Frame 8 3/4” H x 20 1/2” D Mounts in Standard 19” rack Depth measurements do not include rear cabling
Power	90VAC to > 240VAC Auto-detecting <150Watts for 6464 Frame <300Watts for 128128 Frame
Redundant Power Supply	Standard
Storage Temperature	-40° to +150° F
Operating Temperature	30° to 100° F Ambient
Humidity	10% to 90% Non-condensing

Chapter

12

Communication Protocol

Introduction

This section of this manual contains the most common Host Protocol commands. For a more detailed list of Protocol commands contact the Sierra Video factory.

The protocol uses the 7-bit ASCII character set. The protocol is compact, with few characters required to cause switch changes to occur. It is also human-readable and thus easy to understand and use.

All input, output, and level numbers begin at number 1, not 0.

Note:

When writing commands for a "third party" controller, pay careful attention to the levels of control.

Commands are sent to a routing switcher in a group called a command string.

A command string consists of a leader string of asterisk characters (**), zero, or more commands, and a trailer string of exclamation marks (!!).

When a command string is received, it is not acted upon until the final trailer character (!) of the command string is received.

Within the command string, certain ASCII characters may be present and are ignored: any ASCII character whose code is *less than* the SPACE character (includes all control characters and the SPACE character) and the DEL (ASCII 7F) character. Alphabetic characters within the command string may be in either upper-case or lower-case letters. The routing switcher always *sends* upper case characters, except for character strings such as input, output, and level names, which may have lower case characters in them.

When sending commands *to* the routing switcher, SPACE characters are optional. SPACES may also appear in character strings, such as input, output, and level names.

Certain commands have character strings that appear as arguments and use a ~ (tilda) character to delimit the character strings. The use of the tilda varies and will be defined in the individual commands.

After the command string has been executed, the routing switcher sends the following to the host.

**OK!!

This indicates that the command has executed successfully.

The simplest possible command string would be:**!! which consists of the leader and trailer characters. This command string would generate the response:

** OK !!

This can be useful for verifying that the communication to the routing switcher is operational.

If an error occurs within a command string, the remainder of the command string is ignored and the routing switcher returns the string " ERROR ", followed by *an optional descriptive string* followed by a string of trailer characters, to the host.

The simplest error response is one with no optional descriptive string. For example, this command string:

** XXX !!

might generate this response from the routing switcher:

** ERROR Syntax: No Number:XX !!

Command Summary

The following is the set of commands available for sending to the routing switcher.

Syntax	Example	Description
I	I	Capabilities Inquiry
Q	Q	Model Name and Software Version Inquiry
L	L	Routing Switcher Size and Level Names Inquiry
N	N	Source Status
O	O5	Output Status inquiry
S	S	Status inquiry
U {0 1}	U0	Update request on/off
V out,in,in…	V3,1,2,2	Connect levels
X out,in,lvl	X12,9,2	Connect crosspoint
Y out,in	Y1,7	Connect AFV
T {1-16}	T1	Trigger a Salvo Connect sequence
G	G SRC_NAMES,1,0~	The command “G” is used to query or modify a routing switcher configuration parameter or parameters.

“RESET”: Routing switcher Reset

When the routing switcher is powered up, the following will be sent on the serial port.

**RESET!!

“I”: Capabilities Inquiry

The command "**I**" requests that command capability information be returned to the host. The information is sent as a string of characters. The first characters are a space followed by "**I**", the next characters are the letters of the commands that are implemented and available in this routing switcher, and the last character is "~" (tilde). Do not count on the characters being in any specific order. Search all characters for a particular one.

For example, the command:

**I!!

might return the following string:

** ILSX~ OK !!

indicating that the routing switcher supports the **I, L, S, and X** commands from the host.

“Q”: Model Name and Software Version Inquiry

The command "**Q**" requests that the routing switcher model name and software version number string be returned to the host. The information is sent as a string of characters. The first characters are a space followed by "**Q**", the next characters are the routing switcher model name, terminated by a "~" (tilde). Following this are the characters of the software version number string, again terminated by a "~" (tilde).

For example, the command:

**Q!!

might return the following string:

** QSmall~V2.1~ OK !!<CR>

indicating that the routing switcher model name is "Small" and the software version number is "V2.1".

“L”: Routing Switcher Size and Level Names Inquiry

The command "**L**" requests that routing switcher size and level name information be returned to the host. The information is sent as a string of characters. The first characters are a space followed by "**L**", some optional values described below, then the number of outputs, a comma, the number of levels, a comma, the number of inputs, a comma, and then the level names, each terminated by a "~" (tilde), and the last followed by two tildes.

For example, the command:

**L!!

might return the following string:

** L64,3,32,VIDEO~AudioL~AudioR~~ OK !!

indicating that the routing switcher has 64 outputs, 3 levels, and 32 inputs, and the levels are named "VIDEO", "Audio L", and "Audio R".

“N”: Source Status Inquiry

The command "N" requests that status information for a single source be returned to the host. The status information is sent as one or more "Y" and/or "X" commands.

For example, the command:

**N4!!

to a router might have the following commands as its response:

** X12,4,1 X12,4,2 X12,4,3 X13,4,4 Y23,4 !!

showing that source 4 connects to

- destination 12 on levels 1-3,
- destination 13 on level 4, and
- destination 23 on all levels.

“O”: Output Status Inquiry

The command "**0**" requests that the status information for a single output be returned to the host. The status information is sent as a “Y” command or a “V” command or as a sequence of L “X” commands, where L=number of levels.

For example, the command:

**O5!!

to a 3-level routing switcher might have the following three commands as its response:

** X65,23,1 X5,-,2 X5,0,3 !!

Note the dash, indicating that on level 2, output 65 is not connected to an input. Also note the 0, indicating that the connection on level 3 is either unknown or that output 65 doesn't exist or isn't mapped on level 3.

Or, a 3-level routing switcher might have the following single command as its response:

** V65,23,-,0 !!

which has the same information as the three X commands in the previous example.

If the routing switcher has only one level, or if all levels are connected the same, the routing switcher might instead use the **Y** command. For example:

** Y65,23 !!

"S": Status Inquiry

Use command "S" to request that status information be returned to the host. The status information is sent as a series of strings.

For example, the command:

**S!!

might have the following two strings at the beginning of its response:

**V1, 12!!

**V2, 2!!

This indicates that output 1 is connected to input 12 on level 1, and that output 2 is connected to input 2 on level 1.

"U": Update Request on/off

The command "**U**" turns on or off the automatic sending of output change reports. The current mode can be queried with the command ** U !!. To change the setting, the command letter must be followed by either a number 0,1 or 2 to specify the new automatic change report state, as follows:

0: Automatic output change reporting is turned off.

1: Automatic output change reporting is turned on. Crosspoint change commands do not immediately report changed status, but instead, the report comes up to a few seconds after the crosspoint change command is received. The Aspen will send X commands when crosspoints change.

2: Automatic output change reporting is turned on, and crosspoint change commands immediately report changed status as part of the response to the command. The Aspen will send X commands when crosspoints change.

3: Same as mode 1 except the Aspen will send V commands when crosspoints change.

4: Same as mode 2 except the Aspen will send V commands when crosspoints change.

Output change reports are automatic messages sent to the host whenever an output is crosspoint status (i.e. connected source) is changed.

For example, the command:

**U1!!

turns on automatic output change reporting. When a crosspoint is changed, the “X” command will be sent to report the change. For example:

** X5,12,2 !!

indicating that output 5 is now connected to input 17 on level 1, to input 12 on level 2, and does not exist or is not available on level 3.

To turn off output change reporting, use the command:

**U0!!

For example, suppose the routing switcher sends the following crosspoint connect commands in a single command sequence:

** Y1,18!!

If U1 is in effect, the response to this command will be:

** OK !!

and then sometime later, the crosspoint change report will be sent

** X1,18 !!

“V”: Connect Levels

The command "**V**" is used to request that a connection be made. It must be followed by an output number, a comma, and a comma-separated list of input numbers, one for each level. Fewer than the number of levels in the routing switchermay be specified if desired, and the remaining levels will be left unchanged.

For example, the command:

**V12,7,8,9!!

says that connections are to be made to output 12: from input 7 on level 1, input 8 on level 2, and input 9 on level 3.

An input number of 0 means the output connection is to be left *unchanged*.

An input number of *-* (dash) means the output is to be *disconnected*. If the routing switcher does not support disconnected outputs, the output connection will be left unchanged.

“X”: Connect Crosspoint

Use command X to request that a connection be made. It must be followed by an output number, a comma, an input number, a comma, and a level number. For example:

**X8, 3, 2!!

This string says that a connection is to be made between output 8 and input 3 on level 2. If the level number is specified as “0”, this means that the connection is to be made on all levels (AFV).

“Y”: Connect AFV

Use command Y to request that a connection be made on all levels (AFV). It must be followed by an output number, a comma, and an input number.

For example, the command:

**Y2, 8!!

This string says that input 8 is to be connected to output 2 on all levels.

“T”: Trigger a Salvo

The command "**T**" is used to trigger a previously set up *salvo.* It must be followed by a register number from 1 to 32 giving the *register* to be triggered.

For example, the command:

** T2 !!

says to trigger salvo register 2.

If a salvo is triggered and it fails for some reason, the salvo trigger operation is aborted, and an error is reported:

For example:

“ERROR Salvo Has Locked Xpts”.

“G” Command

Details of the “G” command can be found on our website or by contacting the factory.

Commonly Used Switching Commands

This section contains the most commonly used switching commands. These commands are explained in detail in the proceeding.

“Y” Command- All Levels

The “Y” command switches all levels (i.e. video and audio).

For example;

**Y2,8!!

This requests that input 8 be connected to output 2 on all levels.

“X” Command- Specify Levels

Using the “X” command requires that a level is specified.

For example;

**X8, 3, 2!!

This requests that a connection is to be made between output 8 and input 3 on level 2. If a level number of “0” is used, all levels are switched.

“V” Command- Connect Levels

The “V” command is followed by an output number, a comma, and an input number for each level, up to the number of levels on the routing switcher.

For example;

**V12, 7, 8, 9!!

This requests that connections are to be made to output 12 from input 7 on level 1, input 8 on level 2, and input 9 on level 3.

Chapter 13

Warranty

A. General

Buyer assumes all responsibility for ascertaining the suitability of Sierra Video (hereinafter "SVS") products for Buyer's intended use. No product sold by SVS is designed or manufactured for use in any manner or under any conditions other than those described in SVS's instruction manuals and other printed material for each particular product. If any product is used or applied in a manner or under conditions not specifically authorized by such written materials or if any product is used by unqualified or improperly trained personnel, Buyer agrees that SVS shall have no liability of any kind arising from such use, and Buyer agrees to indemnify and hold SVS harmless from any claims of third parties arising from such use, and Buyer shall provide SVS with counsel of SVS's choice to defend against such claims.

B. Limited Warranty

1. This warranty applies only to the original purchaser and is non-transferable. This warranty begins on the date of purchase and will be in effect for seven (7) years for new equipment or and for three (3) years for "Factory Refurbished" equipment. Buyer must obtain a Return Material Authorization ("RMA") number from SVS prior to returning a product for repair. If, in SVS' sole discretion, the product is found to be defective during the term of this warranty, SVS will at its option: (a) provide free replacement parts, and/or (b) repair the unit at an SVS facility. During the warranty period, SVS will make every reasonable effort to support critical emergencies by supplying no-cost loan equipment while the defective unit is being repaired. SVS will provide replacement parts and/or factory service at no charge. Buyer bears the cost of shipping products returned to SVS under this warranty. SVS will bear the cost of shipping repaired products or replacement parts to the Buyer.

This limited warranty shall not apply to any of SVS's goods which have been altered or which shall have been subjected to misuse, mishandling, improper storage or negligence. The aforementioned provisions do not extend the original warranty period of any goods which have been replaced by SVS. This limited warranty shall not apply to any goods not of SVS's manufacture, Buyer to be entitled only to the warranty set forth in the original manufacturer's limited warranty.

THIS LIMITED WARRANTY IS EXPRESSED IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON SVS'S PART.

SVS neither assumes nor authorizes any other person to assume for SVS any other liabilities in connection with the sale of products of its own manufacture.

2. SVS's liability hereunder on any claim of any kind, except as set forth herein for any loss, injury to person or property or damage, shall in no case exceed the price allocable to the goods which give rise to such claim.

3. In no event shall SVS be liable for any damages or injuries to person or property if any goods do not meet the above limited warranty, including, without limitation, incidental expenses or consequential or special damages, except as set forth in such limited warranty. The foregoing states the exclusive remedy of Buyer and the exclusive liability of SVS for any breach of the foregoing limited warranty.

C. Cancellation

Except as provided in paragraph B immediately above, all sales are final, and Buyer may cancel this order or return products only upon written consent of SVS.

D. General

A. In the event of a breach of any of the terms hereof, the non-breaching party shall be entitled to recover all of its costs, fees, and expenses, including, without limitation, reasonable attorney's fees, from the breach party incurred as a result of such breach, regardless of whether or not a suit is actually filed to enforce the terms hereof.

B. The provision hereof shall be governed by the laws of the State of California (excluding its choice of law provisions).

C. The headings are for convenience only and do not limit or amplify the terms and provisions hereof.

D. In case any one or more of the provisions set forth herein shall be held to be invalid, illegal, or unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions contained herein shall not in any way be affected or impaired thereby.

E. No waiver, alteration, or modification of any of the provisions hereof shall be binding unless in writing and signed by an authorized Officer of SVS.

NOTE:

All products returned to SVS for service must have prior approval. Return authorization requests may be obtained from your SVS dealer.