USER GUIDE

3GBPS COMPATIBLE
DIGITAL VIDEO ROUTING SWITCHER

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Our commitment is to continue earning the trust and confidence of our customers throughout the industry by incorporating cutting-edge technology into the highest quality, most cost effective products on the market. And we would like to invite you to tell us how we're doing. If you have any comments or suggestions concerning your PESA equipment, please contact our Customer Service Department.

Again, thank you for choosing PESA and we look forward to a long-term partnership with you and your facility.

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Chapter 1 Introduction

1.1 DESCRIPTION

PESA's Cougar3 is a compact, versatile 32 input, 32 output video router, in a 1RU frame, compatible with SDI signals up to 3Gbps, 1080p resolution. Two available control options allow the Cougar3 to either be incorporated as a component of an existing router system; or installed as a stand-alone router, when equipped with the available internal system controller.

When added as a component of an existing PESA router system, Cougar3 can communicate with either a 3500PRO or PERC2000 System Controller that is common to all router components over the proprietary PESA Router Control (PRC) bus. All router configuration and monitoring functions are performed through the controller user interface software application running on a host PC. Operator interface with the Cougar3 is unified with other system components through various available remote control panels. An interface cable is provided to adapt the 9-pin RS-422 PRC bus connector to the RJ45 PRC connector on the Cougar3 rear panel.

Equipping the Cougar3 with the available Small Scale System Controller (SSC3) module incorporates the system controller function with the video frame creating a versatile, full-featured, self-contained small-scale router system. Cougar3 systems with the SSC3 module are fully network compatible, and communicate with other system components over an Ethernet interface.

Operator interface with the stand-alone Cougar3 is through PESA Ethernet-based PNet remote control panels. One PNet panel may be installed as a local control panel in place of the standard front cover; a total of up to 80 PNet panels may be interfaced to the SSC3 controller. In addition to the video router and control panels, the SSC3 can provide control functions to a stand-alone DRS-SA audio router frame, thereby creating a full-featured video/audio system in only 2RU. Configuration and monitoring functions are performed through operator screens of PESA's Cattrax software control application installed on a host PC. Communication with the host PC is over a standard 10/100 Ethernet link. Multiple PESA Ethernet-capable devices may be controlled with a single instance of Cattrax.

Figure 1-1 illustrates the front of a Cougar 3 video router with and without a local control panel attached.

Figure 1-1 Cougar3 Video Router – With and Without Local Control

1.2 FEATURES

- 1RU Frame supports 32 Inputs and 32 Outputs
- Available as 16X16 or 32X32
- Auto-EQ on all inputs and Auto Re-clocking on all outputs
- Supports SMPTE 259M, SMPTE 292M and SMPTE 424M to 3Gbps
- Compatible with PESA's 3500PRO and PERC2000 system controllers and the full line of Cheetah remote control panels
- May be integrated into an existing PESA routing system
- Use stand-alone with PESA's internal small-scale controller

1.3 SPECIFICATIONS

Digital Video Specifications

INPUTS/OUTPUTS

Number	16 or 32
Type	Standard 75 Ohm, self-terminating, unbalanced BNCs with auto-EQ. conforming to SMPTE259M, SMPTE292M and SMPTE424M.
Return Loss	≥15dB 1MHz to 1.5GHz; ≥10dB, 1.5GHz to 3GHz.
Equalization	300m auto-equalization Belden 1694A or equivalent at 270Mbps.; 100m auto-equalization Belden 1694A or equivalent at 1.5Gbps; 80m auto-equalization Belden 1694A or equivalent at 3Gbps
Level	800mVpp, ±10%

SIGNAL SPECIFICATIONS

Rise/Fall	≤ 600ps +/-10% SD SMPTE259M; ≤ 270ps HD SMPTE292M; ≤ 135ps 3G SMPTE424M.
Overshoot	≤ 10% of amplitude max.
Alignment Jitter	≤ 0.2 UI from 100kHz to 150MHz SMPTE259M or SMPTE292M; ≤ 0.3 UI from 150MHz to 300MHz SMPTE424M.
Timing Jitter	≤ 1.0 UI from 10Hz to 100kHz SMPTE259M or SMPTE292M; ≤ 2.0 UI from 10Hz to100kHz SMPTE424M.
Reference Inputs	Two independent 75 ohm BNC connectors, 0.5Vpp to 2.0Vpp; PAL, NTSC or Tri-Level sync.
Data Rates	143Mbps to 3Gbps
Form Factor	1RU

Environmental & Miscellaneous

Control	Internal controller supports all PESA P-Net Ethernet-based control panels; Supports single-bus, multi-bus and XY control panels, using external system controller.
(Serial 422 PRC I/F)	4-wire, full duplex, multi-drop, serial RS422 port capable of accepting PESA PRC control protocol.
AC Input Connections	IEC 320C6 socket (accepts IEC 320 C5 line cord)
Input Voltage	90-260 VAC, 47-63Hz
Operational Temp	0-40 degrees C
Operational Humidity	90% Non-condensing

Chapter 2 System Architecture

2.1 COUGAR3 FRAME COMPONENTS

A front view illustration of a typical Cougar3 video frame, equipped with a local control panel, showing location of key components is shown by Figure 2-1. Removing the front cover provides access to the video router board; primary and, if equipped, secondary power supply or system controller modules; and rear panel of the local control panel, if present.

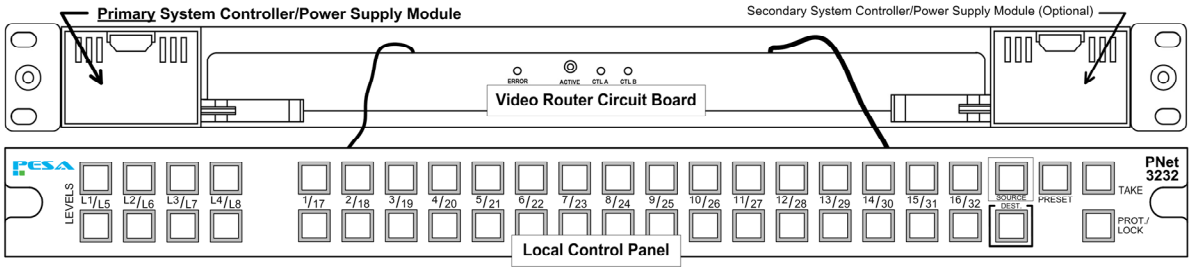


Figure 2-1 Frame Component Layout (Typical)

If the Cougar3 router is installed using the PRC communication bus with an external system controller, a minimum of one power supply module is required – installed in the primary power supply module slot. A second power supply module may be installed in the secondary slot for power redundancy. Each Cougar3 power supply module also contains cooling fans for the chassis and a fan controller circuit that monitors and controls operation of the fans.

In stand-alone configuration, the Cougar3 video frame is factory equipped with a small-scale System Controller/Power Supply Module installed in the primary controller slot that combines functions of system controller and power supply into a single removable unit. The system controller (SSC3) oversees operation of entire system – router frame and control panels and communicates with other system components through an Ethernet interface. One SSC3 module is required per system; a second controller may be installed at any time, using the secondary controller slot, to add full redundant control capability. Each SSC3 module also contains cooling fans for the chassis and a fan controller that monitors and controls operation of the fans.

In PRC or stand-alone configurations, video switching and interface circuitry is contained on the Video Router Circuit Board. In addition, the board is equipped with front edge status lights that provide a visual indication of the active system controller and system errors. The board also provides power and dedicated Ethernet connection points for a local control panel.

A Local Control Panel may be installed in place of the front cover **only** on stand-alone Cougar3 frames with the internal SSC3 controller module. Any standard 1RU PNet remote control panel may be used as a local panel; in most applications, however, the P3232 panel is used since it allows full access to all 32 input and 32 output channels at all switching levels. When a control panel is attached to the router, power for the panel is derived from the frame power supply, and a dedicated Ethernet interface is provided on the router rear panel.

2.2 REAR PANEL LAYOUT

Rear panel layout is the same for both PRC and SSC3 stand-alone Cougar3 routers, the active connectors, however, differ by application.

Rear panel connections used when installing the Cougar3 to an external system controller over the PRC bus interface are shown by Figure 2-2, and connections used when installing the router as a stand-alone device using the SSC3 controller and Ethernet connectivity between system components are shown by Figure 2-3. A brief introduction to the function of each connector is presented in the following paragraphs.

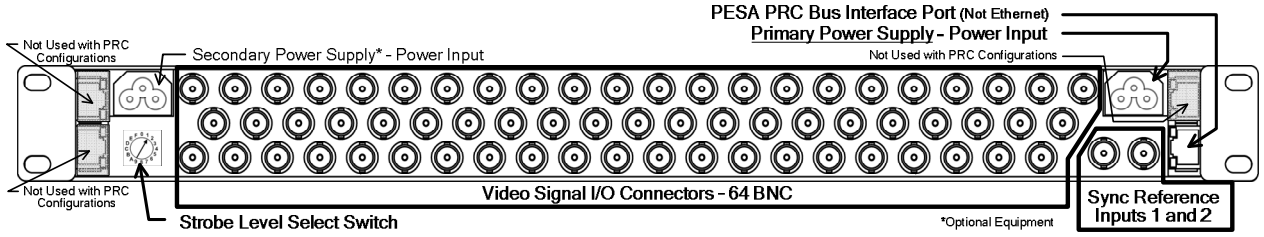


Figure 2-2 Rear Panel Connections – PRC Bus Installation

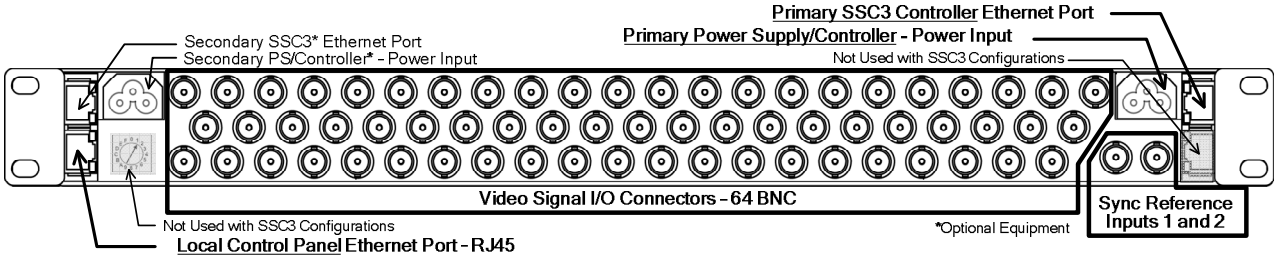


Figure 2-3 Rear Panel Connections – Cougar3 Stand-Alone SSC3 Configuration

PESA Routing Control (PRC) Bus Interface Port - When viewed from the rear of the frame the right-hand RJ45 connector on the lower edge of the frame is the PRC port, as shown by Figure 2-2. In PRC Bus systems, this port is the interface connection between the Cougar3 router and an external 3500PRO or PERC2000 System Controller. An adaptor cable is provided to connect the RJ45 connector on the Cougar3 rear panel to the 9-pin "D" system controller PRC connector.

Ethernet Connection Ports – With stand-alone SSC3 configuration systems, there are two rear panel RJ45 connectors that interface the system controller circuitry internal to the video router to an Ethernet communication port. These are the top connectors on each side of the Cougar rear panel and they are module slot specific, as shown by Figure 2-3. Viewed from the rear, the connector on the right-hand side of the router is the Ethernet port for the controller installed in the primary controller slot, and the left-hand connector is the port for the secondary slot. Connection is through standard Cat5x cable; LEDs on the connector indicate communication activity.

Sync Reference Connectors - There is a pair of BNC connectors on the rear panel for connecting up to two independent sources of sync reference to the Cougar3. Sync source applied to Input 1 connector is defined as the default sync source. Both inputs are self-terminating. Through controller configuration, either input may be defined as the sync reference source for any router output.

Strobe Level Select Switch – When the Cougar3 is installed as a component of a larger routing system under command of an external system controller, the frame must be assigned a strobe level within the system, using the Strobe Level Select Switch, Figure 2-2. Any strobe level between 1 and 15 may be selected by rotating the switch to the hexadecimal digit for the desired level setting. To set the router as strobe level 1, set the switch to position 1; to set level 15, set the switch to position F, etc.

Power Cord Connector Access - Each power supply/controller module is fitted into a chassis slot (either slot 1 or slot 2). When a power supply is installed, its 3-prong input power receptacle is accessible through this opening on the frame rear panel. Each power supply carries its own dedicated power receptacle; input power is not bussed between modules. When two power supplies are used (for redundancy) a separate power cord must be attached to each receptacle through its access port. Each access port is equipped with a harness device that secures the cord to help prevent accidentally disconnecting the frame from its power source. Cougar3 typically ships from the factory with power cord and securing harness pre-installed.

If you need to remove power cord for any reason, loosen thumb screw on cord harness and pull cord from its mating connector.

Replace cord by aligning mating connectors, firmly seat connector and secure cord with harness and thumb screw.

Do not remove power cord while connected to a power source.

Local Control Panel Ethernet Port – With stand-alone SSC3 installations equipped with a local control panel in place of the front cover, this RJ45 connector, Figure 2-3, is the dedicated access port for connecting the local PNet control panel to an Ethernet interface. Connection is through a standard RJ45 connector for use with Cat5x cable. LEDs on connector indicate communication activity.

Video Signal I/O Connectors - 64 BNC connectors for connecting 32 video input signals and 32 output destinations to the Cougar3 router.

2.3 SYSTEM INTERCONNECTION

If used as a component of an installation with other PESA routers, such as a Cheetah video matrix router, the controller for the entire router system, either the PESA 3500PRO or PERC2000 System Controller, controls the Cougar3 router through the proprietary PESA Routing Control (PRC) communication bus. Typical installations are shown pictorially by Figure 2-4-for the 3500PRO controller and Figure 2-5 for the PERC2000 controller.

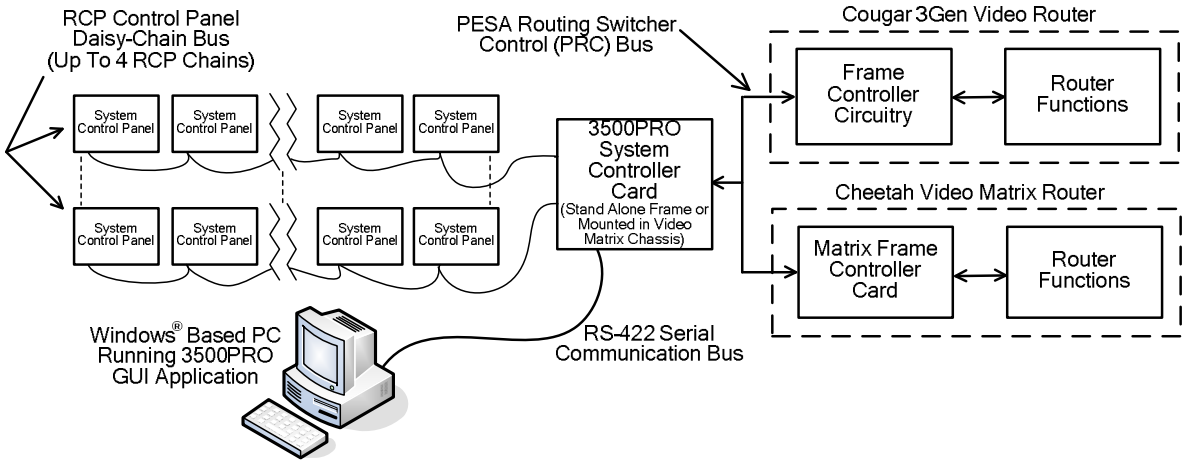


Figure 2-4 Typical Installation – 3500PRO Controller

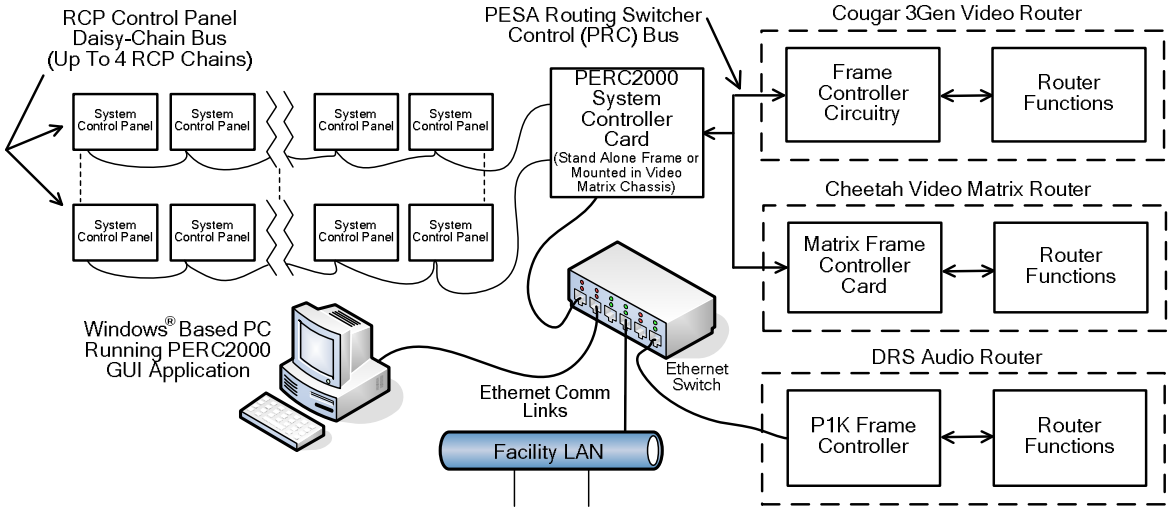


Figure 2-5 Typical Installation – PERC2000 Controller

When used as a stand-alone router, the Cougar3 chassis is equipped with PESA's Small-Scale System Controller (SSC3) module. The SSC3 controls the entire Cougar3 system and interfaces over an Ethernet link with a host PC running PESA's Cattrax software control application. Operator screens and menus in Cattrax allow you to configure and monitor all aspects of the Cougar3 router through the system controller.

Depending on the application, Cougar3 system components can communicate over an Ethernet interface configured as a closed Ethernet communication loop established directly between devices through an Ethernet switch; or Ethernet communication may be established over the facility network.

Figure 2-6 pictorially illustrates a Cougar3 system interconnected through a closed Ethernet communication loop established using an Ethernet switch device. In this application, no component of the router installation is connected to the facility network. Figure 2-7 illustrates the same components in a network installation. In this application, every router component can be directly connected to the network, and use of the Ethernet switch is optional.

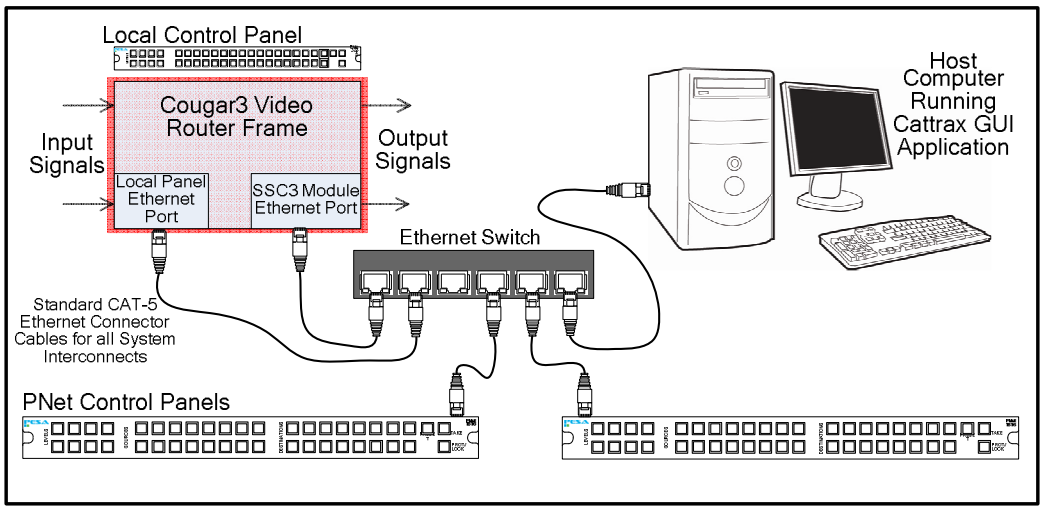


Figure 2-6 - Typical Cougar3 Closed Loop Installation

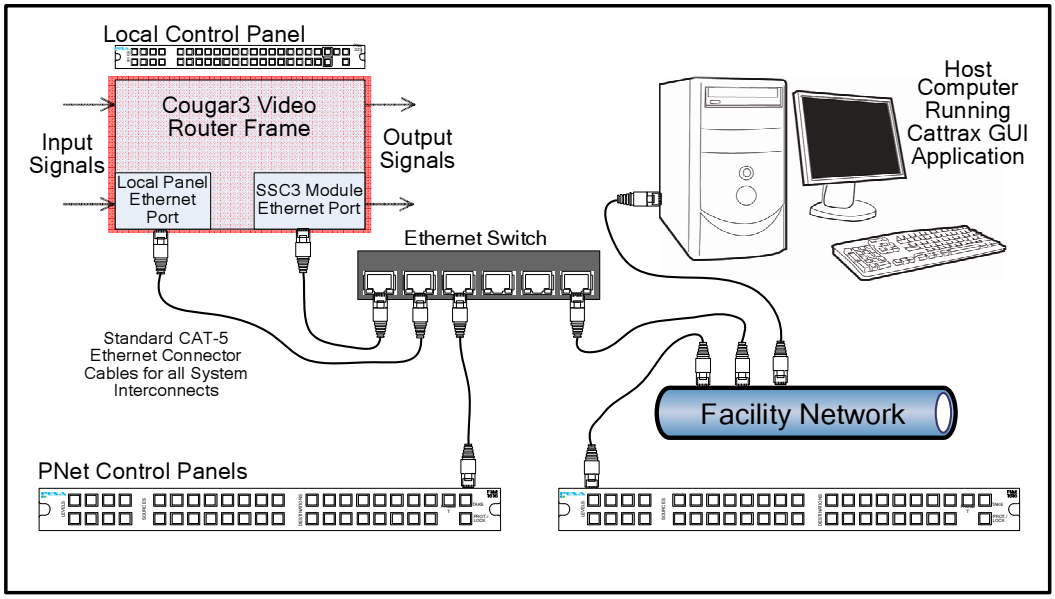


Figure 2-7 Typical Cougar3 Network Installation

2.4 POWER SUPPLY/CONTROLLER MODULES

Two Power Supply/Controller Modules are available in the Cougar3 system architecture. Both supplies are constructed as a modular unit that can slide into either of the two available slots in the chassis frame. In redundant power supply applications, a power supply/controller module is used in both slots of a chassis frame.

A typical power supply/controller module is shown in Figure 2-8. Although virtually identical in appearance, the two modules are distinctly different in *controller* function. For purposes of this brief introduction the basic functional difference is discussed in the following paragraphs. The two modules are identified as follows:

Power Supply/Fan Controller Module - This module contains the power supply circuitry, a pair of fans used to circulate cooling air through the chassis frame, and a controller circuit that controls operation and reports status of the on-board cooling fans.

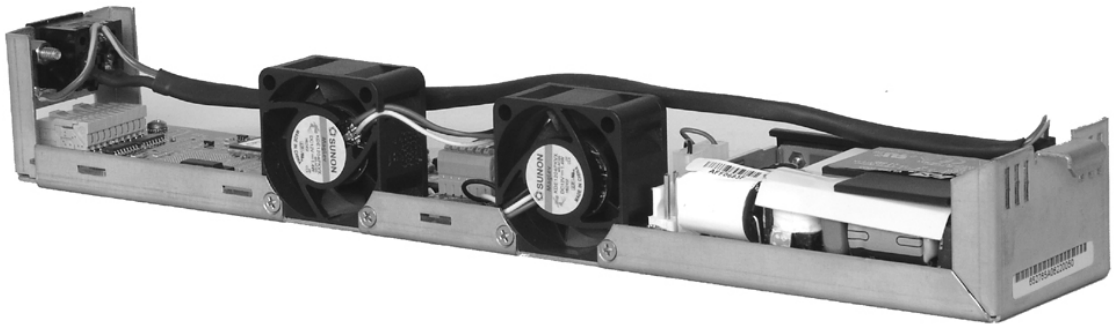


Figure 2-8 Power Supply/Controller Module (Typical)

Power Supply/System Controller Module - This module also contains power supply circuitry, a pair of fans used to circulate cooling air through the chassis frame and fan controller functions. In addition it contains the Small-Scale System Controller circuitry that allows the router to function in a stand-alone configuration.

Chapter 3 Installation

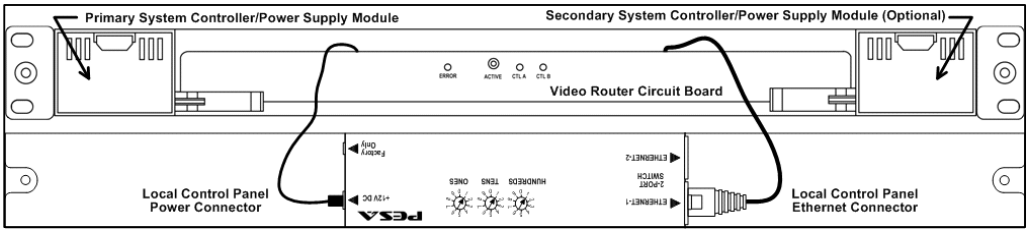
3.1 MOUNT COUGAR 3 ROUTER IN AN EQUIPMENT RACK

Although rack mounting is not a requirement for operation, the Cougar3 video router frame is designed for quick installation in a standard 19" equipment rack. If you do choose to rack mount the router frame, be sure that there is sufficient space behind the equipment racks to allow for signal, interconnect and power cables; and around all sides for cooling. Use all chassis mounting holes, and tighten mounting hardware securely by using the rack equipment manufacturer's suggested torque settings.

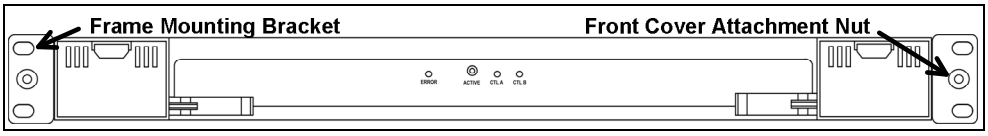
CAUTION	**Fans mounted inside of this equipment provide forced-air cooling. Do not block airflow around these fans.**

INSTALL VIDEO FRAME

- Detach front cover, or local control panel, from video frame by loosening the two captive thumb screws located on either edge of the front cover.
- If the router is not equipped with a local control panel, pull front cover away from router frame and set aside.
- When removing local control panel, carefully separate control panel from frame to expose power and Ethernet wiring on back side of panel as shown in the diagram.



- Disconnect Ethernet cable and power cable from rear of panel and set control panel aside.
- Insert frame assembly into equipment rack and support bottom of frame until all mounting hardware has been installed and properly tightened.



- Install bottom two panel-mounting screws through holes in frame mounting bracket.
- Install top two screws.
- Tighten all panel-mounting screws until secure.
- If no local control panel is used, replace front cover on frame by aligning captive screws with captive nuts on frame mounting brackets and secure by tightening thumb screws.
- Before replacing local control panel on video routing frame, re-attach power and Ethernet cables to connectors on rear of panel. You may attach the Ethernet cable from the router to either connector 1 or 2 on the control panel.

3.2 INSTALL REAR SUPPORT RAILS

Your Cougar3 router is shipped with a Rear Rack Rail Kit. It is important that this kit be installed as part of the mounting procedure for the frame. Major components included with the kit are shown in Figure 3-1. Each kit consists of two rear rack rails, two rail mounting ears and four screws (not shown) to attach rails to the frame.

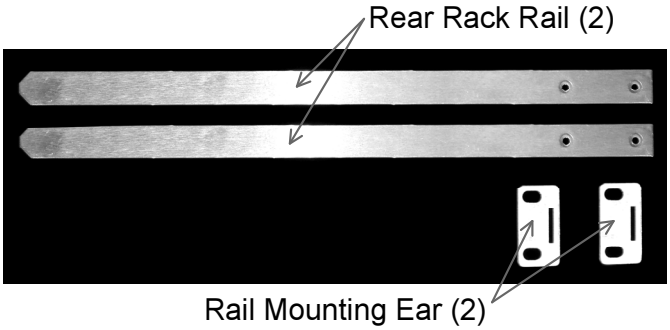
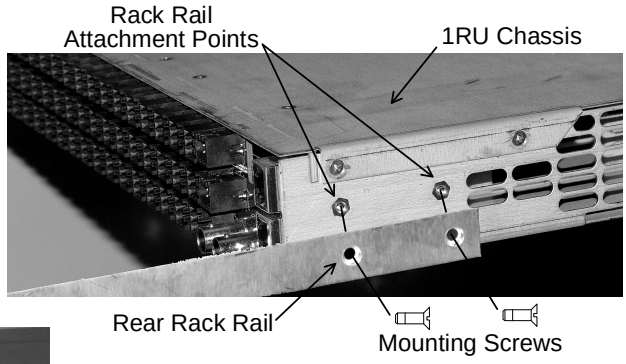


Figure 3-1 Rear Rack Rail Kit

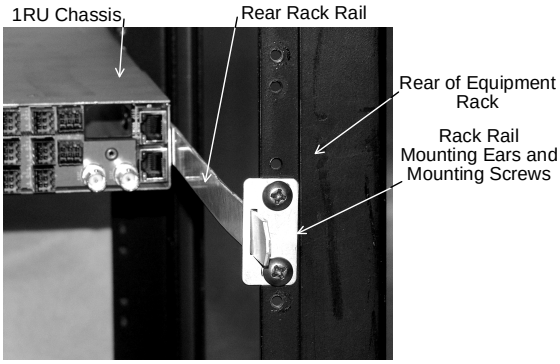
Install Rear Support Rails

- Mount router frame in equipment rack and secure chassis.
- Install one Rear Rack Rail to chassis at the two Rack Rail Attachment Points using two Mounting Screws as shown at right.



- Repeat on opposite side of chassis using second rack rail and remaining two mounting screws.
- Figure at left shows rear of chassis with both rack rails installed.

- Install rack rail mounting ears by aligning rectangular cutout in mounting ear with one of the rack support rails previously installed and sliding mounting ear onto rail. Ensure that the two screw holes in mounting ear face to outer edge as shown in Figure at right.



- Secure mounting ear to rear rail of equipment rack using two rack mounting screws (not supplied) as shown. Be sure that screw holes in mounting ear align with screw threads in equipment rack in such a way that the chassis is level in equipment rack from front to rear as shown at left.

- Repeat for the remaining mounting ear and rack rail.

3.3 EXTERNAL CONTROL SYSTEM CONNECTION

When integrating the Cougar3 router into an existing PESA routing system, control functions are communicated from an external PESA 3500PRO or PERC2000 System Controller through the PESA Router Control (PRC) interface bus. An adapter cable is provided with the router to connect the RJ45 PRC Interface Port of the router to the female 9-pin "D" PRC cable. Install the adapter as shown in Figure 3-2, and connect one end of the PRC hook-up cable to the male end of the adapter.

System controller cards may be mounted in a stand-alone chassis frame, or may be installed in a Cheetah Series video matrix switcher. Regardless of where the controller is located, connect the remaining end of the PRC cable to the "COM3/PRC" port on the chassis. A single controller stand-alone chassis is shown in Figure 3-2 as an example. Regardless of which controller installation method is used in your system, the rear panel port labeled "COM3/PRC" is used to complete connection with the Cougar3 router.

Strobe level in router configuration files may be thought of as a hardware address. In systems with only one router, the strobe level is normally set to 1. In systems with multiple router frames, such as a Cheetah router for analog signals, a DRS system for audio and a Cougar3 for routing SDI signals, strobe level identifies to the controller which hardware component contains a particular input or output signal for a desired switching function.

Strobe level switch setting is normally made at the factory and should not need to be changed. If for any reason you ever need to select a different strobe level for the Cougar3 router, simply use a small blade screwdriver to set the switch position to the desired strobe setting. Settings are entered in a hexadecimal numbering system.

When frame installation is complete, continue to Paragraph 3.5 and proceed with video signal connections.

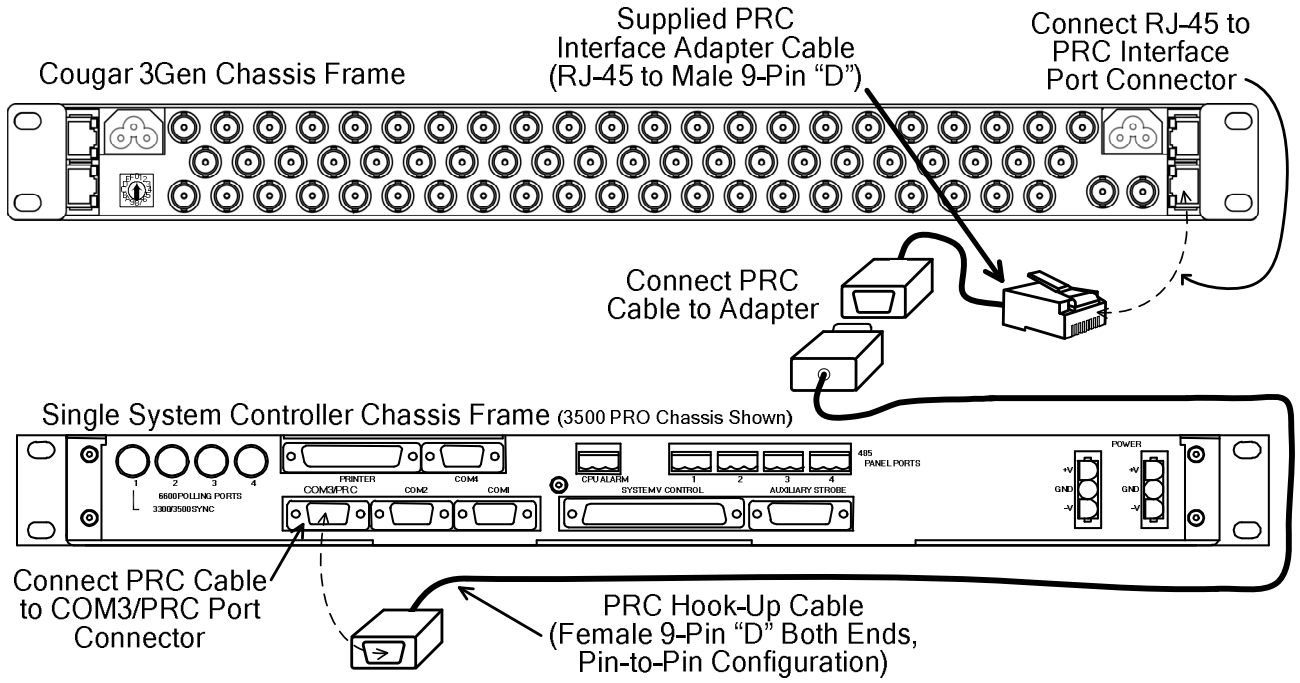


Figure 3-2 Control System Connection

3.4 INTERNAL CONTROL SYSTEM CONNECTION

In stand-alone Cougar3 applications, the SSC3 controller communicates system commands to the router and all PNet control panels. PESA's Cattrax control software application running on a host PC is the software control application for the Cougar3 router. All communication with the SSC3 and other system components is over an Ethernet interface. Through Cattrax, a controller configuration file must be created and downloaded to the SSC3 in order for the router or any PNet control panels to operate.

Depending on application, the SSC3 controller, all control panels and the host PC can reside on a facility network for Ethernet communication. It is also possible to interconnect the Cougar3 components in a closed loop Ethernet arrangement, without being added to a network. A closed Ethernet communication loop is formed through an Ethernet switch between the SSC3 system controller; local control panel, if used; external PNet control panels; and a host PC.

3.4.1 COUGAR3 ROUTER – CLOSED ETHERNET LOOP CONFIGURATIONS

In a closed loop arrangement you may choose whether or not to include a host PC as a permanent system component; however, it is not necessary for router operation to have a host PC continuously connected to the SSC3 once the controller configuration file has been created and downloaded.

In order for the host PC to communicate with the router components, its IP address and other network parameters must be set to a value that allows it to "find" the router components with the following **factory configured IP address values:**

- Primary System Controller – 192.168.1.203 (Video Frame)
- Secondary System Controller – 192.168.1.204 (Video Frame)

Once the SSC3 system controller and host PC are communicating, you may use Cattrax to set the network parameters, such as IP address, subnet mask and gateway, of the router components to any value best suited to your installation.

Follow Figure 3-3 and connect router components as follows:

- If the Cougar3 is equipped with a local control panel, install a Cat5 Ethernet cable between the Local Control Panel Ethernet Port, **A**, on rear panel of video routing frame and any open port on Ethernet Switch, **C**.
- Install a Cat5 cable between the Primary System Controller Ethernet Port, **B**, on video frame and any open port on Ethernet Switch, **C**.
- Install a Cat5 cable between the Ethernet Port on host PC, **D**, and any open port on Ethernet Switch, **C**.
- If the Cougar3 is equipped with an optional Secondary System Controller, install a Cat5 cable between Ethernet Port, **E**, on video frame and any open port on Ethernet Switch, **C**.

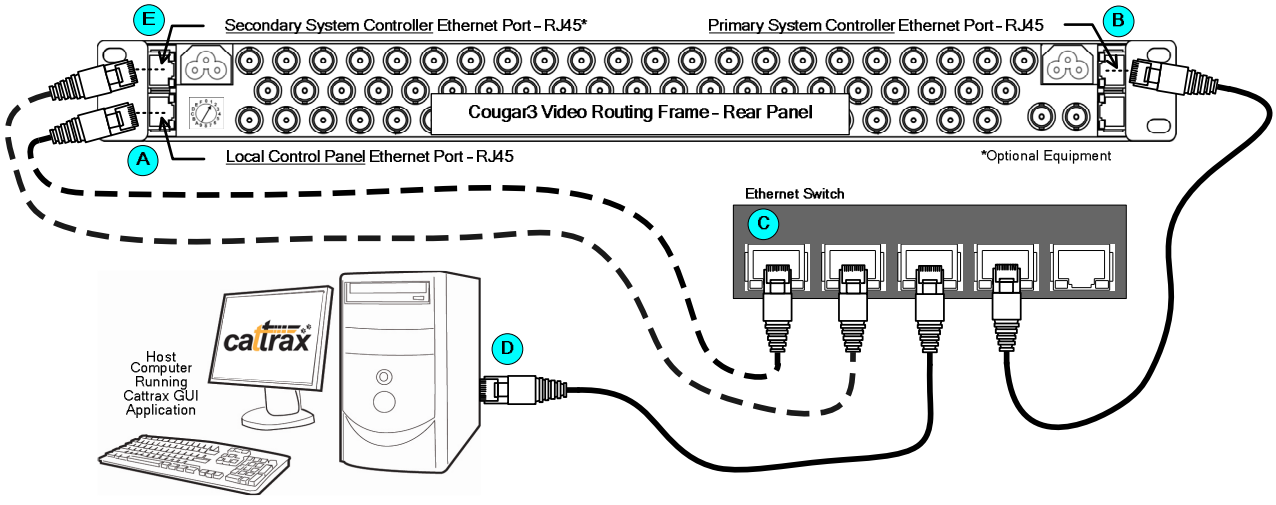


Figure 3-3 System Cabling – Closed Ethernet Loop

3.4.2 INTEGRATE COUGAR3 ROUTER INTO FACILITY NETWORK

Adding Cougar3 components to your facility network greatly increases system flexibility and user access; and also allows you to locate the router frame and control panels for maximum convenience and shortest video cable runs. Ethernet communication between the system controller, PNet control panels and the host PC is conducted over the facility network.

In order for the Cougar3 components to communicate on the network, the IP address and other network parameters of each router component must be set to a value that is compatible with the network; usually to values assigned by the facility IT administrator.

Cougar3 router components are preset to the following **factory configured IP address values**:

- Primary System Controller – 192.168.1.203 (Video Frame)
- Secondary System Controller – 192.168.1.204 (Video Frame)

If these values are not compatible with your network application, the values may be changed through operator menus available through Cattrax.

Figure 3-4 and the procedure sequence below installs Cougar3 to the facility network using an Ethernet switch to minimize the number of direct network connections.

Using the switch is not a requirement for installation, and it is permissible to connect any router component directly to a facility network drop.

Host PC for Cattrax may be any compatible computer installed on the facility network.

Follow Figure 3-4 and connect router components as follows:

- If the Cougar3 is equipped with a local control panel, install a Cat5 Ethernet cable between the Local Control Panel Ethernet Port, **A**, on rear panel of video routing frame and any open port on Ethernet Switch, **C**, or directly to an available facility network drop.
- Install a Cat5 cable between the Primary System Controller Ethernet Port, **B**, on rear panel of video routing frame and any open port on Ethernet Switch, **C**, or directly to an available facility network drop.
- If an Ethernet switch is used, Install a Cat5 cable between any open port on Ethernet Switch, **C**, and an available facility network drop, **D**, to interface the router components with the house network.
- If the Cougar3 is equipped with an optional Secondary System Controller, install a Cat5 cable between Ethernet Port, **E**, on video frame and any open port on Ethernet Switch, **C**.

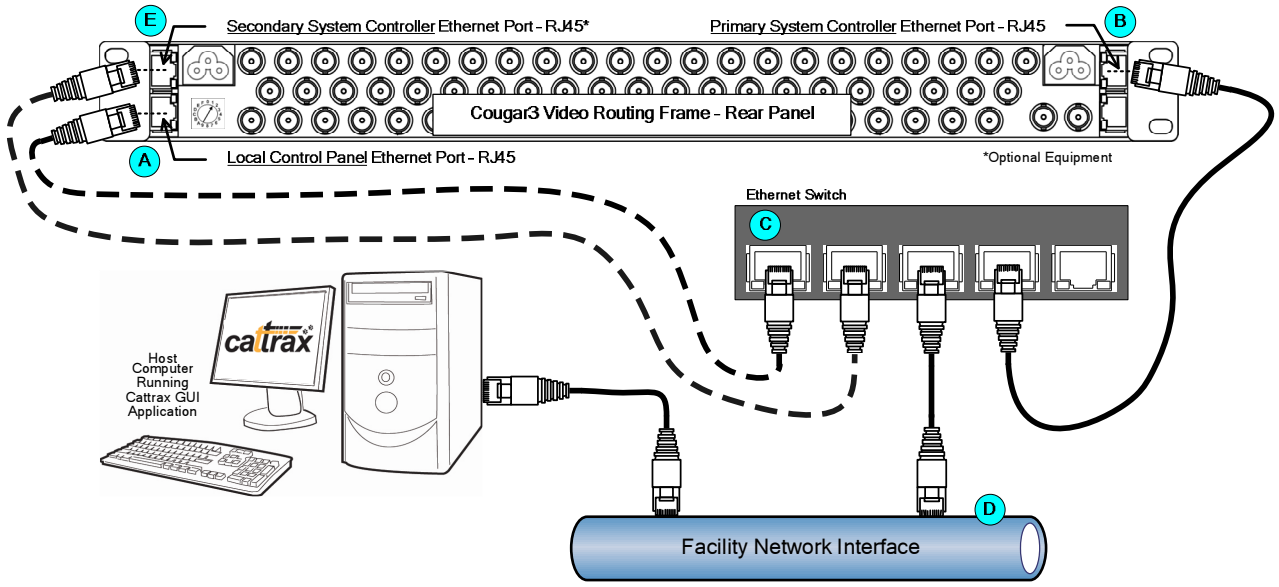


Figure 3-4 System Cabling – Network Based Cougar3

3.5 VIDEO CONNECTIONS

There are 64 BNC I/O connectors on the Cougar3 rear panel, 32 each for video input and output signals, as shown in Figure 3-5. Using the figure as a reference, connect video input and output cables to the router.

.

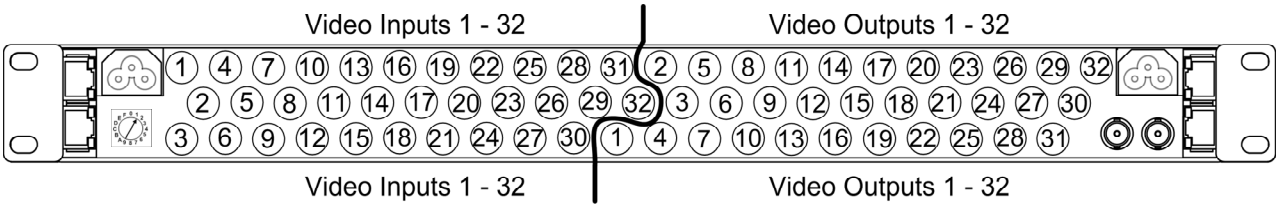


Figure 3-5 Cougar3 Video I/O Connector and Channel Identification

3.6 SYNC REFERENCE CONNECTIONS

The Cougar3 router is capable of operating in either asynchronous or synchronous switching modes. Asynchronous switching occurs when the router is not synchronized with other video equipment in the air chain or production chain through an externally generated sync reference signal. In many applications, asynchronous switching is acceptable, but in other circumstances synchronous, vertical interval timed switching is used to prevent a visual “glitch” in the output signal when sources are switched.

A Cougar3 router will function in either mode, but is capable of synchronous, vertical-interval switching by applying a NTSC, PAL or Tri-Level sync source, 0.5V p-p to 2.0V p-p, to the sync reference input, Figure 3-6.

Sync connectors 1 and 2 on the video frame are terminating connections. Sync input 1 is the default sync source.

Cougar3 allows you to connect a second source of sync reference to the video frame through Sync Input 2. The second reference signal is often used in facilities dealing with mixed signal formats. Cattrax allows you to selectively apply either sync reference signal to any router output.

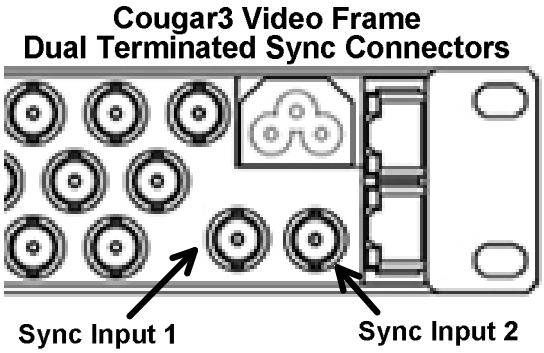


Figure 3-6 Sync Reference Inputs

3.7 POWER CONNECTIONS

Power for the Cougar3 router is derived from wall receptacles. No special direct wiring or heavy gauge wire is required for this equipment. There are two power connector access ports, one located on the upper left-hand side and the other on the upper right-hand side of the rear panel. These ports allow access to the power receptacle on the power supply/controller module located in the slot associated with each. In a non-redundant power installation, only one of the slots will have a power supply module installed. Attach the power cord through the proper access port to the receptacle on the power supply module. Each power supply carries its own dedicated power receptacle. Input power is not bussed between modules. When two power supplies are used (for redundancy) a separate power cord must be attached to each receptacle through its access port.

Each access port is equipped with a harness device for the input power cord that secures the cord to prevent accidentally disconnecting the frame from its power source. To use the harness, slip the groove on the power cord connector end horizontally into the opening of the harness.

Connecting the power cord to a source of power immediately applies power to the router. Do not apply power for the first time until all signal and control connections have been made and verified.

Before applying power for the first time, please take time to go back over your installation and check for electrically sound connections, proper connector placement and possible wiring errors.

3.8 PNET CONTROL PANEL INSTALLATION

Up to 80 PNet remote control panels may be used with the SSC3 system controller. PNet panels communicate over an Ethernet connection with the controller and may be located convenient to operator stations or control areas. Additional PNet remote control panels may be added to a Cougar3 installation at any time as follows:

- Locate PNet panel in desired area for installation and ensure a connection point to the facility Ethernet is available and a source of power is nearby.
- Using a small screwdriver, set desired Panel ID address on the three rotary switches on the rear panel as shown by Figure 3-7. Every PNet panel must be assigned a unique panel ID address. You may use any series of numbers in the range 001 – 999. Panel ID is a required parameter for control panel configuration as discussed in Paragraph 5.15.9 of this User Guide
- The connector labeled Factory Only is not used for system installation and should be left open.
- Install a Cat5 Ethernet cable between either rear panel Ethernet Port (1 or 2) and an Ethernet hub or switch, or directly to any available facility Ethernet interface drop.
- Every PNet panel has a 2 port Ethernet switch built-in. You may use the open connector as a connection point for another device. Often, this feature is used to daisy-chain PNet panels. Be aware, however, that if the directly connected panel is removed or loses power, the downstream device will also lose connection to the Ethernet.
- Connect supplied 12VDC power supply to a source of AC power and attach the output connector of the supply to its mating plug, labeled *+12V DC*, on rear panel.
- Mount PNet Remote Control Panel in an equipment rack or other desired location.
- Add panel to system configuration file as discussed in Paragraph 5.15.8 and 5.15.9 of this User Guide. PNet panel will not communicate with system controller or operate router until it is added to the system configuration.

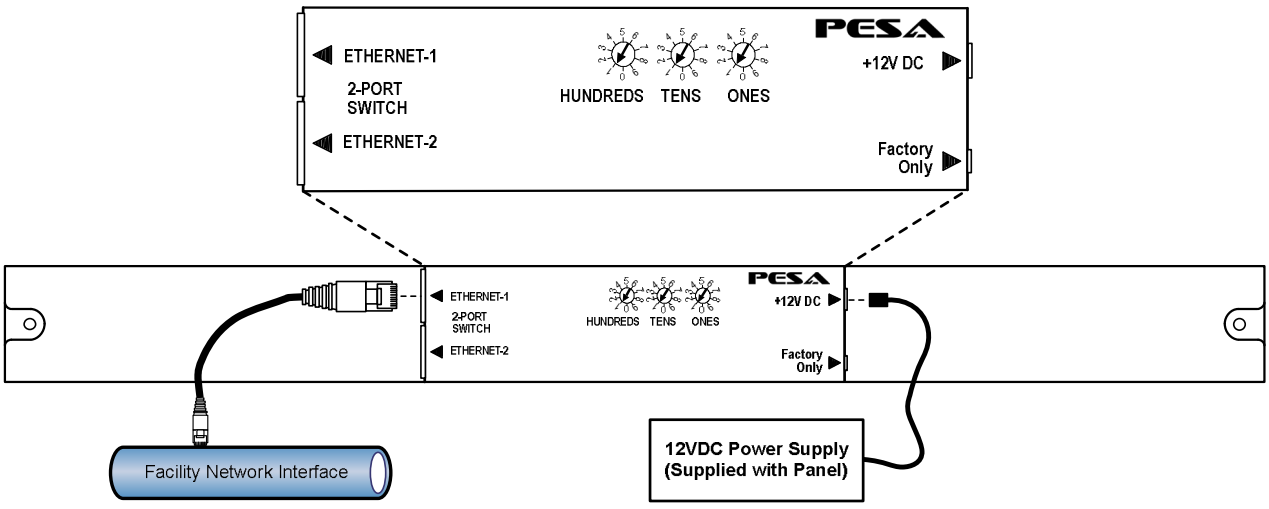


Figure 3-7 PNet Remote Control Panel Connections

If you are installing a PNet panel as the local control panel on the front of the Cougar3 router, use the following procedure:

- Remove front cover from Cougar3 video router chassis frame and set aside.
- Use card extractors to loosen circuit board and slide card out of chassis far enough to expose panel interface connectors as shown by Figure 3-8.
- Using a small screwdriver, set desired Panel ID address on the three rotary switches on rear panel as shown by Figure 3-7. Every PNet panel must be assigned a unique panel ID address. You may use any series of numbers in the range 001 – 999. Panel ID is a required parameter for control panel configuration as discussed in Paragraph 5.15.9 of this User Guide.
- The connector labeled *Factory Only* is not used for system installation and should be left open.
- Install a short length of Cat5 Ethernet cable between the Local Control Panel connector on circuit board and either rear panel Ethernet Port (1 or 2) on PNet panel.
- Install a jumper cable (supplied) between the Local Control Panel Power connector on circuit board and connector labeled *+12V DC*, on rear panel. Connectors are keyed to ensure proper polarity.
- Re-install router circuit board, ensure it is securely in place, and install local control panel in place of front cover on Cougar3 chassis frame.
- Provide PNet local control panel a direct Ethernet connection through chassis rear panel connector as discussed in Paragraphs 3.4.1 and 3.4.2.
- Add panel to system configuration file as discussed in Paragraph 5.15.8 and 5.15.9 of this User Guide. PNet panel will not communicate with system controller or operate router until it is added to system configuration file.

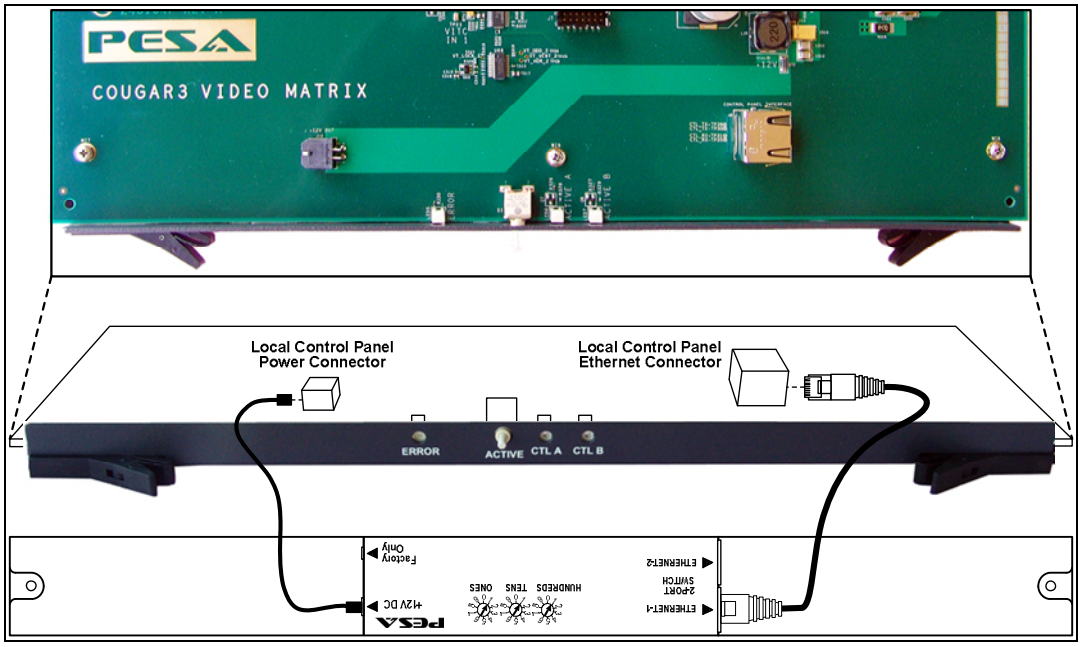


Figure 3-8 Local Control Panel Installation

Chapter 4 Operation

4.1 ROUTER CONTROL APPLICATIONS

A major component of any PESA router control system is the software control application and the graphical user interface (GUI). With PERC2000 or 3500PRO the GUI is a dedicated software application, specific to the controller. With SSC3, configuration and operation menus and screens are available through PESA's Cattrax software control application installed on a Windows® based "host" computer for the router installation. Complete instructions for installing the GUI application are provided in documentation for the respective controller. All control and setup operations for a Cougar3 router are performed through the controller GUI.

Regardless of which control method (PRC or Ethernet) or which controller device (SSC3, PERC2000 or 3500PRO) is used with the Cougar 3, in order for any of the system controllers to operate, we must write a configuration file using the GUI software application, and load it into controller memory. This file contains programming data for individual sources and destinations such as where (frame and physical connector) each signal connects to the system, the type of signal and names we wish to associate with each; as well as switching levels, components, source groups, destination groups, and other system functions. In many installations, remote control panels are located at operator stations or consoles; these are programmed through the router configuration file and allow an operator to control designated functions of the router from a remote station.

4.2 OPERATING COUGAR3 AS COMPONENT OF A PRC SYSTEM

When Cougar3 is installed as a router system component under control of an external system controller via a PRC bus connection, all operator interface is through system control panels configured through the controller configuration file, or thorough direct commands from the software GUI application.

There are no operations or procedures specific to the Cougar3, PNet panels are not used and all commands are communicated through the external system controller. Refer to system controller documentation for information on writing and using configuration files; and documentation for the type(s) of remote control panel(s) used in your router system for panel-specific operating procedures.

4.3 OPERATING COUGAR3 AS A STAND-ALONE ROUTER

When Cougar3 is installed as a stand-alone video router, or as a video/audio router when equipped with a DRS-SA audio router, the SSC3 system controller is installed in the video router frame, and operator interface is through PESA's PNet control panels. As with any PESA router, a configuration file must be loaded into system controller memory in order for the router or control panels to operate. Chapter 5 of this User Guide introduces the process of generating and loading a configuration file using the Cattrax control application. Operation of the PNet control panel is discussed in the following paragraphs.

4.4 PNET CONTROL PANELS – COUAGR3 STAND-ALONE

A local PNet control panel may be installed in place of the router front cover, and remote panels may be added to the system, up to a system maximum of 80, to greatly enhance operator access and control capability.

All PNet panels communicate with the system controller over an Ethernet interface using standard Cat5 cable and RJ45 connectors, either through a closed-loop Ethernet configuration or with full integration into the facility network. Each panel provides an internal 2-port Ethernet hub that allows network cables to be daisy-chained to other panels. PNet control panels are available in configurations that vary the number of sources and destinations each can control, but all panels provide the following common capabilities:

- All-level, audio-follow-video (AFV) switching
- Breakaway switching on up to 8 switching levels
- Operate in hot-take or preset panel modes
- Destination protect and lock features
- Source and destination key channel assignments configurable through Cattrax
- Single button “Take” for preset switches
- Illuminated and legendable “soft touch” keys

4.5 INTRODUCTION TO PESA’S SWITCHING METHODOLOGY

In order to get the greatest functionality from your PNet control panels, there are a few basics of the PESA router architecture and control system you need to be familiar with. For this discussion, assume a router installation in a production facility with multiple signal sources of SDI video and analog stereo audio which we need to route to multiple destinations. In our example facility we are using a Cougar3 equipped with a SSC3 controller for video. We also have a stand-alone PESA DRS-SA router under control of the SSC3 controller for routing audio signals and a local PNet control panel on the video router.

Assume one of the program sources in our example facility is a network receiver, we’ll call it NET1, which provides video and stereo audio signal outputs we need to switch through our router. NET1, while being identified as a single entity, actually produces three totally independent source signals. Similarly, if we have a recorder device we’ll identify as a single entity named VTR1 on which we wish to record a program originating from NET1, we must provide all three of the signals from NET1 as inputs to recorder VTR1.

It would be possible to individually switch the three signals from NET1 to VTR1 through our router as single sources to single destinations. We would have to configure an individual source named, for example, NET1VID for the video signal; another individual source named NET1LAUD for the left audio channel, and yet another individual source named NET1RAUD for the right audio channel. Then we would have to perform a switching function routing NET1VID to the video router output providing a signal to the video input of VTR1, another switch to route the audio;…and you get the idea.

Fortunately, router control systems make it a lot easier to route multiple signals simultaneously. PESA routers accomplish this by the use of switching levels, components, sources (source groups) and destinations (destination groups), created and assigned through the controller configuration file.

Loosely defined, a ***switching level*** is a grouping of like-signals. Considering our example, we have three groups of like-signals that we need to pass through our router system: video, left channel audio and right channel audio; and each of these groups can be configured as a switching level of the router. When we create the controller configuration file we would define these three switching levels, and for ease of identification we could name them VID, AUDL and AUDR, respectively.

By defining the switching levels we've told the system controller it has three sets of signals to treat as separate groups. Next, we have to tell the controller where the signals for each level physically enter and exit the router hardware, i.e., which frame of the router system is carrying the signal, and whether or not the switching level contains multiple component signals. This is done by defining the ***components*** of the switching level in the controller configuration file. PESA's control system requires that every switching level be tied to at least one unique component.

When configuring the Cougar3 system for our example facility we would create a component entry that identifies, by IP address, the Cougar video frame as the physical router device for signals assigned to the VID switching level. Likewise, we would create a unique component entry for each audio switching level that identifies the DRS-SA audio router, by IP address, as the physical router for signals assigned to switching levels AUDL and AUDR.

Sources, or source groups, are created in the controller configuration file by associating signals from one or more switching levels grouped under a common name and switched as a single entity. The source group entry allows you to specify the physical input to the router that you wish to associate with each switching level defined for the source. It is quite common for the same physical input to be used in multiple source definitions.

We previously introduced a receiver named NET1 that provides a video signal and two audio signals used as inputs (sources) to the router. Let's assume we physically connect the video output of the receiver to the Cougar3 video router as input #1, and the left and right audio signals to the DRS audio router as audio inputs #1 and #2, respectively.

Through controller configuration, we can add a source group entry that creates a router source by the name of NET1 and define that whenever the source named NET1 is selected at a router control panel:

- Physical input #1 to the Cougar video router is the selected signal for the VID switching level.
- Physical input #1 to the DRS audio router is the selected signal for switching level AUDL.
- Physical input #2 to the DRS router is the selected signal for switching level AUDR.

Destinations, or destination groups, are also configured during creation of the controller configuration file, and define the router outputs just as sources define the router inputs.

Our example destination device is a recorder named VTR1 that requires a video signal and two audio signals derived from outputs (destinations) of the router. Let's assume we physically connect the video input cable of the recorder to the Cougar3 video router at output #1, and the left and right audio cables to the DRS audio router at audio outputs #1 and #2, respectively.

Through controller configuration, we can add a destination group entry that creates a router destination by the name of VTR1 and define that whenever VTR1 is selected as a destination at a router control panel:

- Physical output #1 from the Cougar video router is the selected destination for the source signal selected on switching level VID.
- Physical output #1 from the DRS audio router is the selected destination for the source signal selected on switching level AUDL.
- Physical output #2 from the DRS router is the selected destination for the source signal selected on switching level AUDR.

By defining and associating various router I/O signals with source and destination groups you can easily configure system control panels to access and switch multiple signals in a single operation. PNet panels also give you the ability to switch individual signals of a source or destination group as a breakaway operation. Panel functionality is discussed further in the following paragraphs.

4.6 PNET SWITCHING METHODS

4.6.1 ALL LEVELS SWITCH

All-Levels or **Audio-Follow-Video (AFV)** is the power-on default switching method for the PNet panel, and is the active switching method when *none* of the ***LEVELS*** pushbuttons are lit. When an AFV switch is performed, signals on all switching levels defined for the selected source are switched simultaneously to all switching levels defined for the selected destination.

Using devices NET1 and VTR1 introduced in Paragraph 4.5 for this example, with an AFV switch whenever we select the destination button on a PNet panel assigned to VTR1, and specify NET1 as the source selection to route to the destination, we will route signals assigned to all switching levels defined for NET1 to physical outputs defined for switching levels of VTR1. The actual switches would be:

- Video signal present at physical input #1 to the Cougar router is routed to output #1 from the video router through switching level VID.
- Audio signal present at input #1 to the DRS audio router is routed to physical output #1 from the DRS audio router through switching level AUDL.
- Audio signal present at input #2 to the DRS audio router is routed to output #2 from the DRS audio router through switching level AUDR.

4.6.2 BREAKAWAY SWITCH

A **Breakaway** switch allows you to selectively choose specific sources for each switching level defined for the destination.

Again, using devices NET1 and VTR1 from previous examples, let’s assume that we are recording a program on VTR1 with the video signal originating from receiver NET1, but we’d like to use the audio track from a local audio recorder. Stereo audio signals from the recorder enter the DRS audio router at physical inputs 3 and 4, and we’ve created a source group, REC1, that defines input 3 as the signal source for switching level AUDL and input 4 as the signal source for switching level AUDR.

Using a breakaway switch we can select NET1 as the source for switching level 1 (VID) and REC1 as the source for switching levels 2 and 3 (AUDL and AUDR). By doing so we specify that the source selected for switching levels 2 and 3 be different from the source selected for switching level 1, and thus place the sources for destination VTR1 in a breakaway condition.

4.7 PNET SWITCHING MODES

4.7.1 HOT-TAKE SWITCHING MODE

Hot-Take is the power-on default mode for the PNet panel, and is the active mode of the panel when the ***PRESET*** button is **not** illuminated. When Hot-Take is active, anytime you press a ***SOURCES*** button, the input signals on the selected switching levels for that source are routed immediately to the currently selected destination outputs. If no switching level buttons are lit (all-levels mode), source signals from all switching levels defined for the source group are routed to the destination group outputs.

4.7.2 PRESET SWITCHING MODE

Preset mode allows you to pre-define sources for an all-levels or breakaway switch on the selected destination, but not initiate the switch until you press the ***TAKE*** button. Preset is the active switching mode of the panel when the ***PRESET*** button is illuminated. When Preset mode is active, use the ***SOURCES*** buttons and ***LEVELS*** buttons to define sources you wish to route to the selected destination when the preset switch is initiated.

4.8 CONTROL PANEL CONFIGURATION

In order for a PNet control panel to be functional, the following conditions must be met:

- It must have Ethernet communication with the SSC3 device in the video router frame.
- It must be assigned a unique hardware panel ID entered through rotary switches on the rear of the control panel.
- It must be configured through Cattrax into the system controller configuration file.

There are several operating parameters we must define for each control panel as part of creating the configuration file. In addition to defining source and destination groups, we also assign specific switching levels, source groups and destination groups to specific pushbuttons on the PNet control panel through the creation of data key lists.

During control panel configuration a Status Level and Default Destination must be specified for each panel:

- **Status Level** – allows you to specify the switching level that the panel initially statuses by default when a destination is selected, and no specific level has been selected through the ***levels*** keys. This is also the switching level that the panel uses as the reference level when indicating breakaway routing conditions.
- **Default Destination** – defines the router destination for which the panel displays status when initially powered-up or following a reset.

With panel configuration data entered, the configuration file with panel operating parameters must be downloaded and become the active configuration file used by the system controller in order for the panel to be functional. Refer to Paragraphs 5.15.8 and 5.15.9 of this User Guide for information on configuring PNet panels with Cattrax.

4.9 PESA FURNISHED CONFIGURATION FILES

Cougar3 routers incorporating the SSC3 system controller are often used in installations that do not require a high degree of customization or application-specific configuration. In many such instances the Cougar3 is used to route video signals across a single switching level with each input signal individually assigned as a source channel and each output signal individually assigned as a destination channel. In order to assist with a quick and simple installation for such applications, PESA has included pre-written configuration files with Cattrax control software that can be loaded in minutes and allow use of the Cougar3 as a full-feature 32x32 video only or video/audio system (when paired with a DRS-SA router) with very little operator input or action, refer to Paragraph 5-16.

If you are using the video only factory configuration file, video signal connections follow a one-to-one numbering sequence with the router channel numbers. For example, the video signal present at BNC connector Input 1 is designated in the configuration file as source IN1 on the VIDEO switching level, and the signal at BNC connector Output 1 is destination OUT1 in router channel designation, etc.

When a DRS-SA audio router is added to the system, the video/audio factory controller configuration defaults the router to 2 audio switching levels, *Audio 1* and *Audio 2* in addition to the video switching level.

If desired, you may use Cattrax to modify the furnished configurations for number of switching levels, input and output channel assignments, etc.

4.10 PNET PANEL - KEY FUNCTIONS

PNet control panels, with the exception of the P3232 panel, follow the pushbutton key layout shown by Figure 4-1; Figure 4-2 illustrates layout of the P3232 panel. The function of each key is presented below.

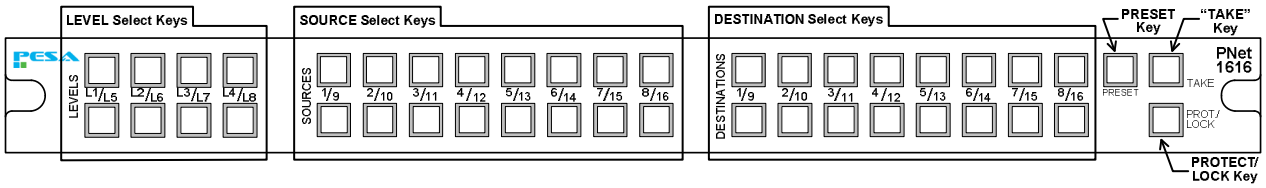


Figure 4-1 PNet Control Panel Layout (Except P3232 Panel)

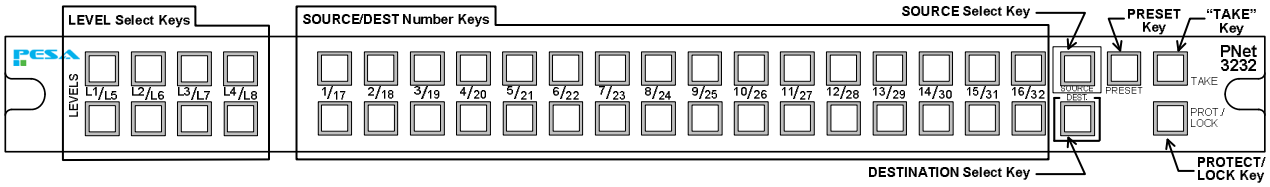


Figure 4-2 PNet 3232 Control Panel Layout

- **Level Keys** - On all PNet panels there are 8 ***Level*** keys that allow you to select the switching level on which you wish to perform a breakaway switch, or display current status of the selected level for a specific destination.

- **SOURCE Select Keys (All panels except P3232)** – Select source group routed to currently selected destination. Illuminated source button indicates selected source group.
- **DESTINATION Select Keys (All panels except P3232)** – Select destination group to which you wish to route a source. Illuminated button indicates currently selected destination group.
- **SOURCE Select Key (P3232 panel only)** – Pressing the ***Source Select*** key places the ***SOURCE/DEST Number*** keys in source select and status mode. When the Source Select key is illuminated, pressing any number key selects the source group routed to currently selected destination.
- **DESTINATION Select Key (P3232 panel only)** - Pressing the ***Destination Select*** key places the ***SOURCE/DEST Number*** keys in destination select and status mode. When the Destination Select key is lit, pressing any number key selects the destination group to which you wish to route a source.

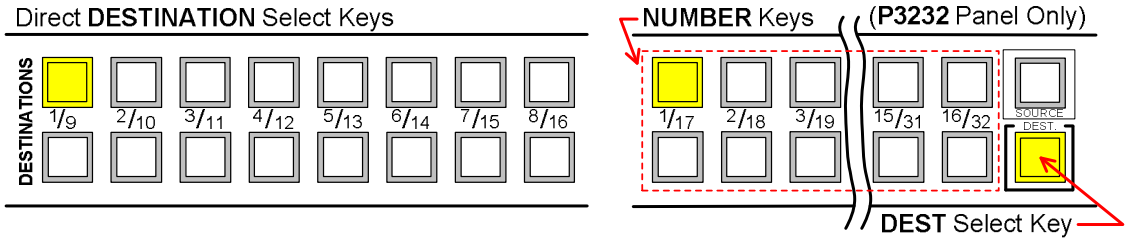
  You may press the ***Dest*** key at any time to display the currently selected destination.
- **SOURCE/DEST Number Keys (P3232 panel only)** – Selects the source or destination, depending on which of the Select Keys is lit.
- **Preset and Take Keys** – The ***Preset*** key allows you to pre-define an all-levels or breakaway switch and manually initiate the switch by pressing the ***Take*** key. If a source selection on one or more switching levels is changed as a "preset" function, when the "Take" key is pressed, those selected levels will be changed to the new source selected in the preset.
- **Protect/Lock Key** – Selects and indicates lock status of currently selected destination. If the key is not illuminated, the destination is available for switching. A momentary key press places the active destination in "Protect" mode, whereby the protected destination can still be switched by the panel which originally placed the destination in "Protect" mode, but is "Locked" to all other panels and Users. When the Protect/Lock key is unlit, pressing and holding the key for approx. 2 seconds causes the active destination to enter "Lock" mode (Lock/Protect Key Blinking). If the Protect/Lock key is blinking, the selected destination is "Locked" for all users and can not be switched to a different source by any panel or other user without first unlocking the selected destination. Pressing the Lock key causes the lock state to toggle for the active destination.

4.11 STATUS AND TALLY FUNCTIONS

All *active* PNet panel pushbuttons are backlit for ease of viewing in low-light environments. In order to be active on the panel, source, destination and level keys must be defined through the data key list assigned to the panel configuration. Any pushbuttons that are not defined are not backlit, thus providing a visual display of pushbutton status for the current panel configuration. Currently selected pushbuttons illuminate brightly and provide a visual indication of the status and operating mode of the channel or panel. Visual status and tally functions are discussed in the following paragraphs:

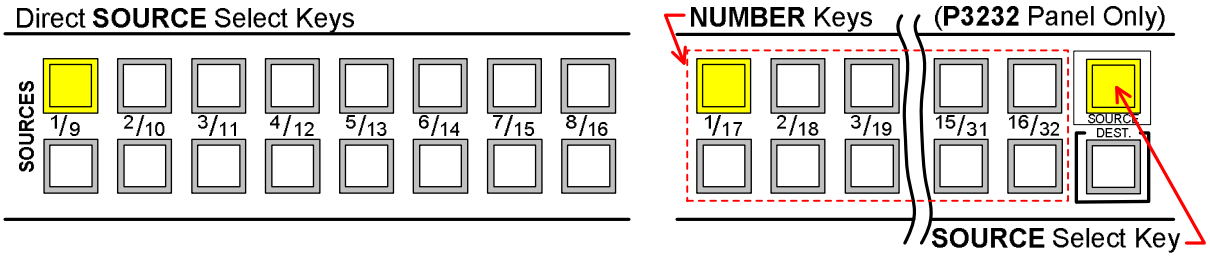
4.11.1 DESTINATION STATUS

Indicates the currently selected destination group either as a direct readout on the ***Destination*** keys, or on the ***number*** keys when the ***Dest.*** Pushbutton is selected (P3232 Only). Any destination button that is not backlit indicates there is no destination group defined for the button.



4.11.2 SOURCE STATUS

Indicates the currently selected source group routed to the selected destination group, either as a direct readout on the ***Source*** keys, or on the ***number*** keys when the ***Source*** Pushbutton is selected (P3232 Only).

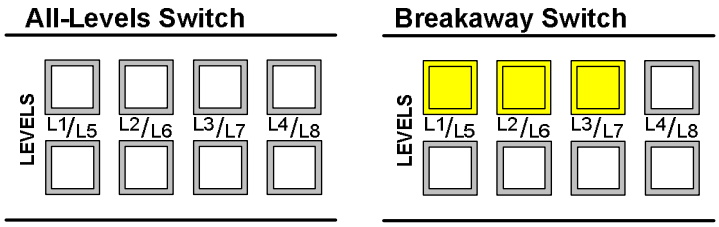


- **Button Dark (No Backlight)** - Indicates there is no source group defined for the button.
- **Steady Lit Source Button** - Indicates the source group definition is applied to all switching levels.
- **Blinking Source Button** – If none of the ***Level*** pushbuttons are illuminated, a blinking source button identifies the source group currently selected on the switching level defined as *status level* for the panel, and indicates the switching levels are in a breakaway condition – meaning the source selected on one or more of the switching levels is different than the displayed source.

  Selecting any of the ***level*** buttons displays the source currently selected for that switching level - see Switching Levels Status, below.
- **Sources Buttons 1 and 2 Blinking Simultaneously** – This condition indicates a communications error between the PNet panel and the system controller.

4.11.3 SWITCHING LEVELS STATUS

Switching ***LEVEL*** buttons select the levels for breakaway switching and level status display with the panel operating in either Hot-Take or Preset modes. Each button is a push-on/push-off toggle function, and is illuminated when the level is selected. Any levels button that is not backlit indicates there is no switching level defined for the button.



- **No Levels Selected** – Indicates panel is operating in All-Levels Switch mode, and any ***Source*** button you press will select that source on all switching levels of the source group.

  For status tally, when no levels buttons are lit, the illuminated Source button indicates source group currently selected on switching level defined as *status level* for the panel.

- **One or More Levels Selected** – Indicates panel is operating in Breakaway Switch mode, and selects switching levels for the breakaway switch. Any Source button you press selects that source on selected switching levels of the source group.

  Pressing any one of the ***level*** buttons selects that switching level for status display and the corresponding illuminated ***Source*** button indicates the currently selected source for the switching level.

  If multiple ***Levels*** buttons are selected (lit), the illuminated ***Source*** button ALWAYS displays status of the *numerically lowest* selected switching level. A blinking ***Source*** button indicates the switching levels are in a breakaway condition – meaning the source selected on one or more of the selected switching levels is different than that of the currently displayed level.

  Remember, when no levels buttons are brightly lit, the illuminated ***Source*** button always indicates source group currently selected on the switching level defined as *status level* for the panel.

4.12 CONTROL PANEL OPERATION

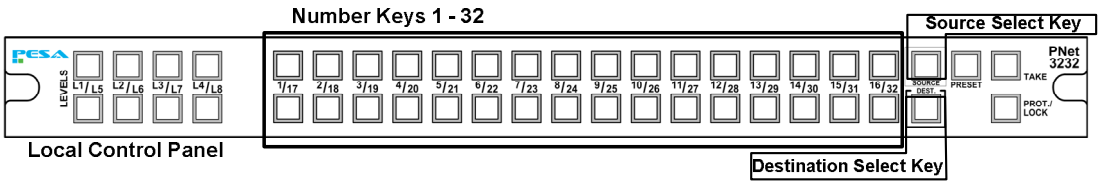
Procedures in the following paragraphs discuss operation of the PNet panel using the P3232 local control panel for an example, and assuming the PESA furnished configuration file is loaded into the SSC3 controller. With the exception of the Source and Destination select keys, these procedures may be applied to any PNet control panel.

PESA routers are destination oriented, meaning that switches are made by first selecting the destination group and then selecting the signal channels, through source groups, that you wish to route to the destination outputs. Default operation for a PNet panel on power-up or reset is All Levels and Hot Take.

4.12.1 PERFORMING A HOT-TAKE, ALL-LEVELS SWITCH

To perform an all-levels switch, verify that none of the levels keys are illuminated; if any are lit, the panel is operating in breakaway mode. Press any illuminated ***levels*** keys to toggle the breakaway function off. AFV mode is active when **no** levels keys are lit.

To make switches on all switching levels of a selected input source to a selected output destination, in audio-follow-video (AFV) mode, use the control panel diagram below as a quick reference guide and perform the following steps:



- **Select Desired Output Destination:**

  Press the ***DESTINATION*** Select Key on the local control panel, the button will light.

  Press the number key (1 – 32) corresponding to the **Destination** (destination group) you want to select. When you select a destination, output ports defined through the destination group assigned to the destination number key are selected; both the DEST key and the selected number key should be lit.

- **Select Desired Input Source for Selected Destination:**

  Press the ***SOURCE*** Select Key on the local control panel, the source button will light and the number key corresponding to the source selected for the status level of the panel, and *currently* routed to the destination you selected in the previous step will also light. If the button is blinking, this indicates the switching levels are currently in a breakaway condition and one or more of the levels is switched to a source that is different from the source assigned to the status level of the panel.

  Press the ***number*** key (1 – 32) corresponding to the **Source** (source group) you want to route to the destination selected in the previous step.

  When you select a source key, input signals defined through the source group assigned to the source number key through router configuration are selected as the individual sources routed to the destination output ports on all switching levels defined for the source group. When a source is selected, the pushbutton lights and the switch immediately occurs.

  When you are switching in AFV mode, ***Levels*** buttons will **not** be lit.

4.12.2 HOT-TAKE, BREAKAWAY SWITCHING

If you are using one of the PESA furnished configuration files, the control panel is configured with the following switching levels assigned to ***LEVEL*** keys 1, 2 and 3.

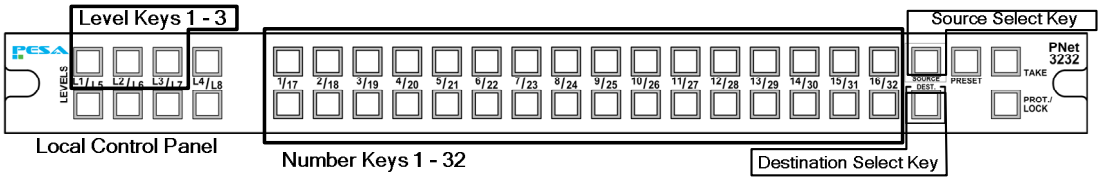
Level Key 1 – Selects sources and destinations on the VIDEO switching level.

Level Key 2 – Selects sources and destinations on the AUDIO1 switching level - only active with systems equipped with a DRS-SA audio router.

Level Key 3 – Selects sources and destinations on the AUDIO2 switching level - only active with systems equipped with a DRS-SA audio router.

A breakaway switch allows you to switch source signals defined for one or more specific switching levels of a selected source group to the output channels defined for the corresponding switching levels of a selected destination group. For additional information on breakaway switching, refer to Paragraph 4.6.

To perform a breakaway switch, use the control panel diagram below as a quick reference guide and follow the steps below:



- **Select Desired Output Destination:**

  Press the ***DESTINATION*** Select Key on the local control panel, the button will light.

  Press the number key (1 – 32) corresponding to the **Destination** (destination group) to which you want to route sources you specify in the breakaway selection. When you select a destination, output ports defined through the destination group assigned to the destination number key are selected; both the DEST key and the selected number key should be lit.

- **Select Desired Input Source for Selected Destination:**

  Press the ***SOURCE*** Select Key on the local control panel, the source button will light and the number key corresponding to the source selected for the status level of the panel, and *currently* routed to the destination you selected in the previous step will also light. If the button is blinking, this indicates the switching levels are currently in a breakaway condition and one or more of the levels is switched to a source that is different from the source assigned to the status level of the panel.

  Press the ***Level*** key(s) corresponding to the switching level(s) for which you wish to select source signal(s) to route to the destination output switching levels. You may select any number of switching levels for the breakaway switch. The level button(s) light, and the illuminated number key displays *current* status of switching levels - depending on which level buttons are selected. Refer to Paragraph 4-11 for information on reading the status display.

  Press the number key (1 – 32) corresponding to the **Source** (source group) you want for the breakaway switch on the selected switching level(s) to the destination selected in the previous step.

  When you select a source key, input signals defined through the source group assigned to the source number key are routed to destination outputs on only the switching levels defined for the breakaway switch. When a source is selected, the pushbutton lights and the switch immediately occurs.

  Using example devices from paragraph 4.5, if you wish to route video from NET1 and audio from REC1 to VTR1, perform the following steps:

  - Press the Destination Select key, the button lights.
  - Press the number key assigned to destination group VTR1, in this example OUT1.
  - Press the Source Select key, the button lights.
  - Press level key 1 to select the VID level for breakaway, the button lights.
  - Press the number key configured to source group NET1, in this example IN1, the button lights.
  - Press level key 1 a second time to de-select VID level, the button is not lit.

- Press level keys 2 and 3 to select switching levels AUD1 and AUD2 for breakaway, the buttons light.
- Press the number key configured to source group REC1, in this example IN2, the button lights.
- Press level keys 2 and 3 a second time to de-select breakaway and return the panel to AFV operation.

4.12.3 PERFORMING A PRESET SWITCH

Preset switching mode is active when the ***PRESET*** button is illuminated – and remains the active mode of the panel until the button is pressed again to cancel. Preset may be used for All-Levels or Breakaway switches and allows you to pre-define a switch operation and execute the switch, when needed, by pressing the TAKE button. Follow steps below to perform a breakaway switch:

- **Select Desired Output Destination:**

  Press the ***DESTINATION*** select key on the local control panel, the button will light.

  Press the number key (1 – 32) corresponding to the **destination group** for which you wish to configure a preset switch, for example OUT1 corresponds to key 1; now both the DEST key and the selected number key should be lit.

- **Place Panel in PRESET Switching Mode:**

  Press the ***PRESET*** pushbutton on the panel, the key illuminates and the number key select function (Dest./Source) changes to Source. The Source Select button lights and the number key corresponding to the source *currently* routed to the destination you selected in the previous step also lights.

- **Define Sources for PRESET Switch:**

  Following procedures introduced in Paragraphs 4.12.1 and 4.12.2 to select sources for an All-Levels or Breakaway switch, use the ***number*** keys and ***level*** keys to define sources you wish to route to the selected destination when the preset switch is initiated.

  With Preset mode active, the switch does not occur as keys are pressed; however, the panel status tally display changes to indicate pre-defined source for the preset switch.

- **Initiate PRESET Switch:**

  Press the ***TAKE*** pushbutton on the panel to immediately perform the preset switch.

  Preset remains the active operating mode of the panel until cancelled by the user.

  When a preset switch is completed, and Preset is still the active mode of the panel, the channel status **prior to the switch** is stored as the next preset definition and displayed as preset status by the illuminated number key.

  In essence, the preset mode may be used as a toggle function, allowing you to return to the previous status of the channel, until a new preset switch is defined, or preset mode is cancelled.

  Remember, when preset mode is active and you have entered a pre-set source definition, the illuminated panel number key displays status of the preset source, **NOT** the currently active source; and will continue to display the preset source until preset mode is cancelled.

- **Cancel PRESET Switching Mode:**

  When active, press the ***PRESET*** pushbutton on the panel to cancel the mode and return the panel to Hot-Take mode. The illuminated number key displays the source *currently* routed to the selected destination.

4.13 APPLYING DESTINATION PROTECT OR LOCK

Applying protection to a destination prevents another user or an accidental key press from switching the current source selection. The ***Protect/Lock*** key is used to apply destination protection, and it also provides a visual status of the current protection status of the selected destination. If the Protect/Lock button is **not** illuminated, there is currently no active destination protection and the source selected for the destination may be switched by any panel in the system allowed access to the destination.

There are two protection methods available, each is introduced below:

- **Destination PROTECT** – A momentary press of the Protect/Lock button places the currently selected destination in "Protect" mode, whereby the protected destination can still be switched by the panel which originally placed the destination in "Protect" mode, but is "Locked" to all other panels and users. When the destination is in Protect mode, the Protect/Lock button is steadily illuminated. Pressing the Protect/Lock key toggles the protect mode of the selected destination.
- **Destination LOCK** – Pressing and holding the Protect/Lock button for approx. 2 seconds places the currently selected destination in "Lock" mode (Lock/Protect Key Blinking). In Lock mode the selected destination is "Locked" for all users and can not be switched to a different source by any panel or other user without first unlocking the selected destination. Pressing the Protect/Lock key toggles the protect mode of the selected destination.

Chapter 5 Router Control and Configuration with Cattrax

5.1 INTRODUCTION

PESA's Cattrax software control application allows you to view real-time status of virtually every aspect of router operation, modify many system operating parameters, issue manual switches on individual or multiple destinations, create new, or modify existing, configuration files for the system controller, plus many other control and system monitoring functions.

The configuration file loaded into the system controller is where the actual signal switching functions, such as signal input/output assignments, signal names and aliases, switching levels, components and other special router functions are defined for the system. Through Cattrax you can create application-specific files that define all operational aspects for the router. Once created, a configuration file can be stored, edited or downloaded to the system controller device to become the active operating router configuration.

5.2 INSTALL CATTRAX APPLICATION ON HOST PC

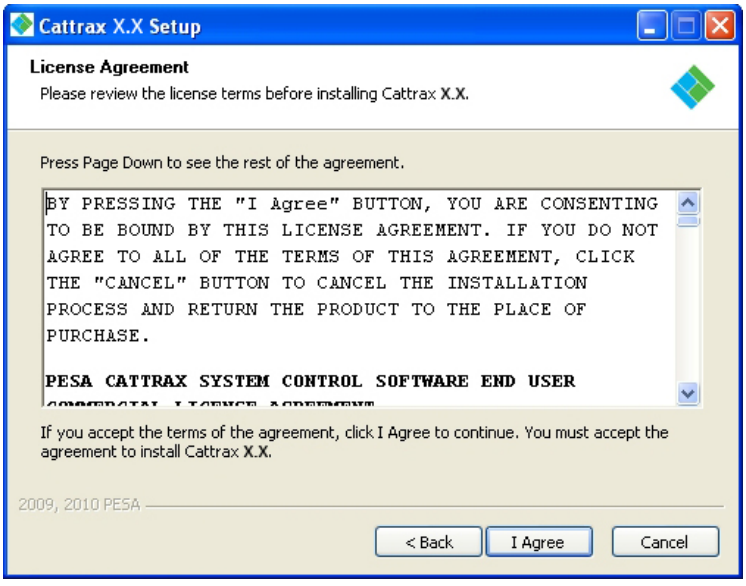
Cattrax is a graphical user interface (GUI) type software application for use on a standard PC running the Microsoft Windows® 2000, XP, Vista or Windows 7 Operating System. The PC must have a CD-ROM drive for installation of Cattrax. A mouse with scroll-wheel is recommended for precise control of device parameter values using slider controls, and a monitor size of 19 inches or larger is also recommended.

Your Cattrax installation disk contains an auto-run file that guides you through the installation process. Examples of the pop-up screens you will see are shown below with the appropriate step. Notice the "X" used in place of actual values on each example screen presented here. During installation the release number of Cattrax software you are installing is displayed.

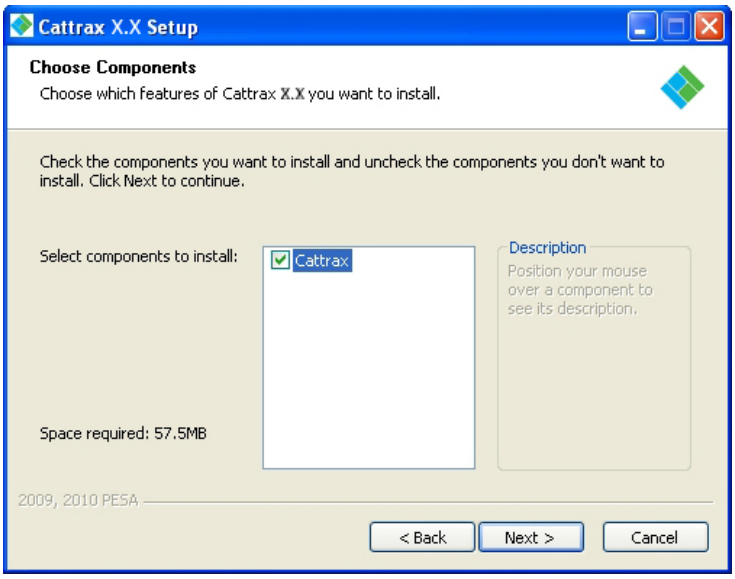
Install the Cattrax software application as follows:

- Insert Cattrax CD into CD Drive of host PC.
- Allow the disk to initiate the auto-run function. When initialization is complete, the following banner is displayed on the desktop. Click **Next** to begin installation of the Cattrax application.

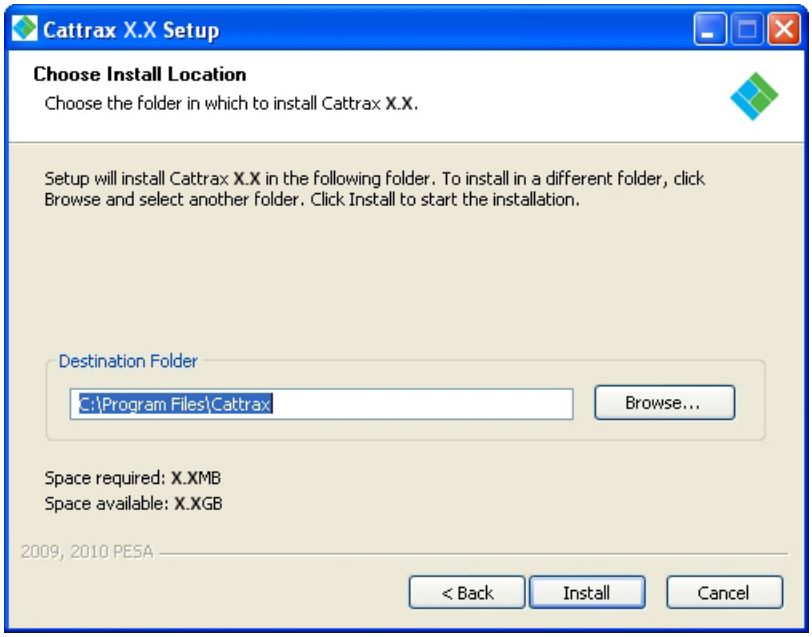
- If the auto-run function does not automatically launch, navigate to the directory of the disk drive containing the installation CD and double click the **Cattrax.exe** file. The banner shown above should be displayed on the desktop. Click **Next** to begin installation.
- Read the license agreement and click **I Agree** to continue, as shown below.



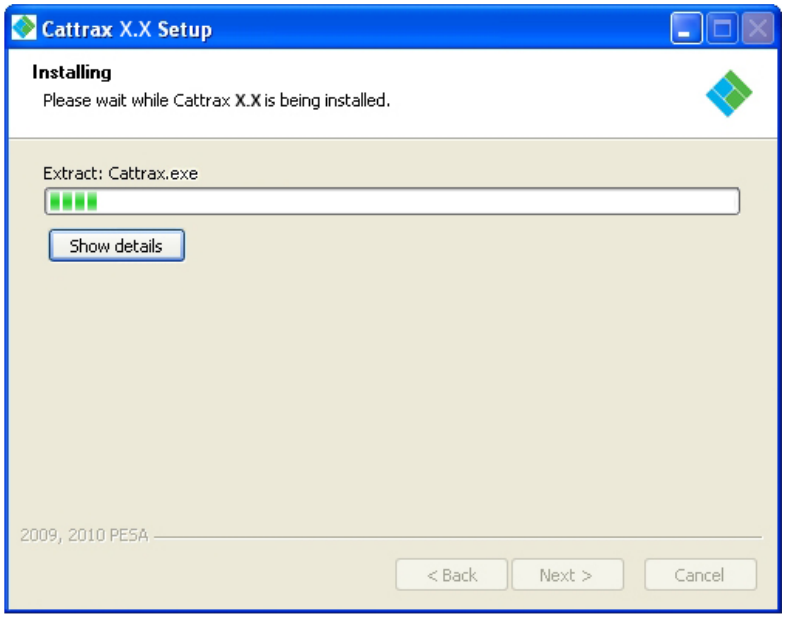
- The Choose Components window allows you to select the software components you wish to install. During initial installation, the only option is to install the entire program. Ensure that the box next to “Cattrax” in the list box is checked. Click **Next** to continue installation.

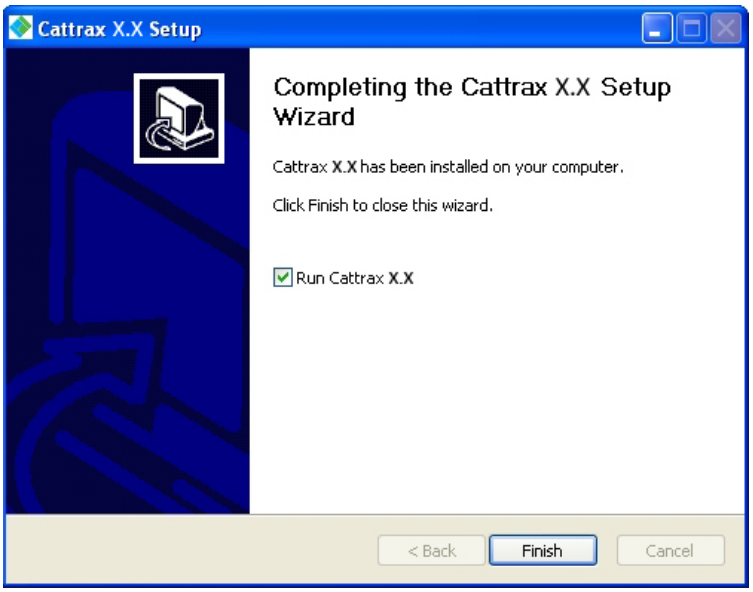


- By default auto-install creates the folder shown below for the Cattrax application. If you wish to install the software in a directory or folder other than the default, click **Browse** and navigate to the destination. Click **Install** to continue installation.



- During installation, an indicator bar tracks progress of software load. Upon completion of installation, an “Installation Complete” prompt is displayed. An example of each screen is shown below.

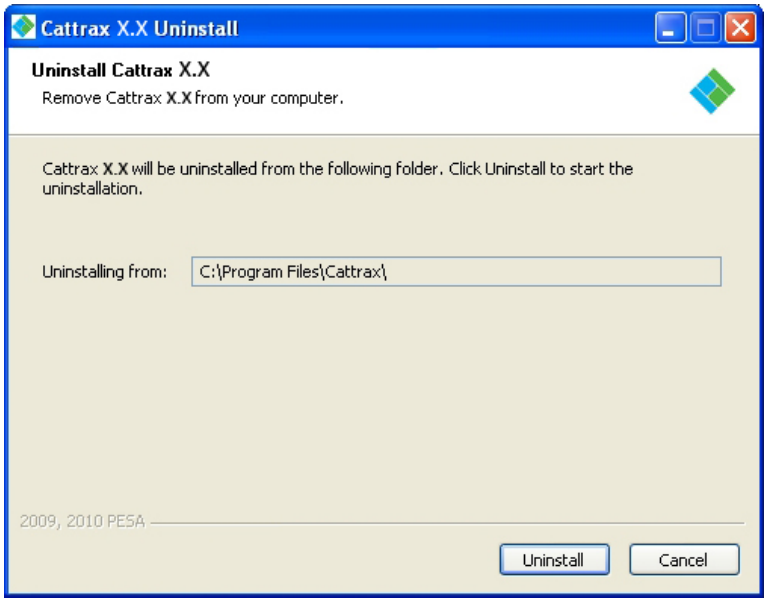




- Click **Finish** to exit the installation process. During installation a shortcut icon to launch Cattrax is automatically placed on the desktop. If the box next to "Run Cattrax Release X.X" is checked, the application will start immediately.

5.3 REMOVING CATTRAX INSTALLATION

Should it ever be necessary to remove Cattrax from the PC, the uninstall command is available through the Start menu of the Windows® operating system. A prompt window as shown below is displayed on the desktop. Click **Uninstall** to complete the command.



5.4 CATTRAX CONTROL APPLICATION

Cattrax is a multi-system application that communicates with, and controls, many different types of PESA equipment; it incorporates data files for specific equipment into the software structure that contain equipment-specific interface screens, configuration parameters and control functions. In order for Cattrax to "discover" and communicate with a Cougar3 router, or any other piece of PESA equipment, the proper data file must be present in the version of Cattrax used.

Cattrax automatically searches for PESA equipment through a process called "discovery." When a piece of equipment is detected on the facility network with Cattrax, the application establishes communication with the equipment and lists it as an active device in the Devices View window.

During installation of Cattrax, an icon is placed on the PC desktop. You may start the application by clicking on the desktop icon, or by navigating to the folder containing the Cattrax program files and clicking on the ***Cattrax.exe*** file. When Cattrax is first started, an application interface similar to the one shown in Figure 5-1 is displayed on the host PC monitor. As the discovery process continues, a listing of PESA devices discovered on the network is displayed in the Devices View window.

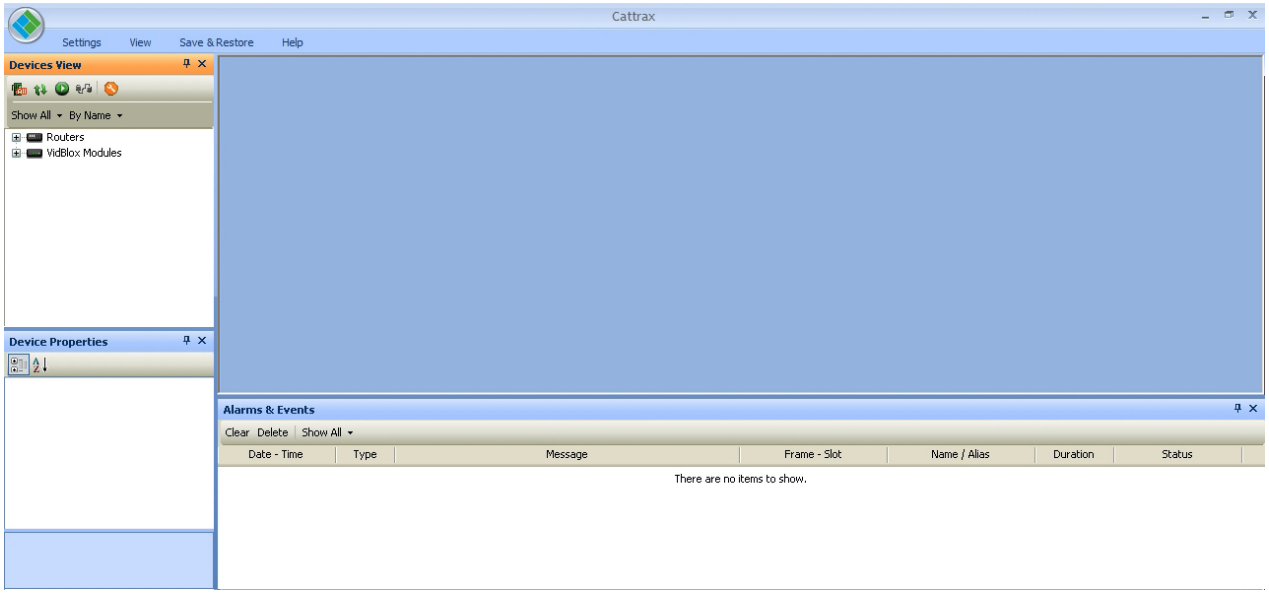
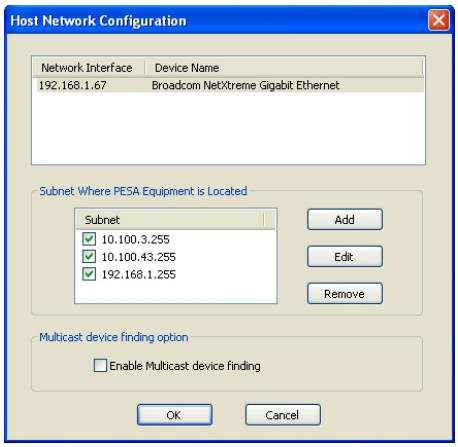


Figure 5-1 Cattrax Main Display Screen

5.5 NETWORK CONFIGURATION WITH CATTRAX

In order for Cattrax to communicate with PESA equipment, the network interface device used by Cattrax must be actively connected to the subnet, or multiple subnets, containing equipment you wish to control. When communicating on a subnet containing PESA network controllable devices, Cattrax should immediately begin the discovery process for all devices configured for the same subnet. In some installations, PESA devices may reside on subnets different from one another within the network. Cattrax allows you to easily select both the network interface device it uses and the subnets on which it communicates through the *Network Preferences* tab under the *Settings* menu.

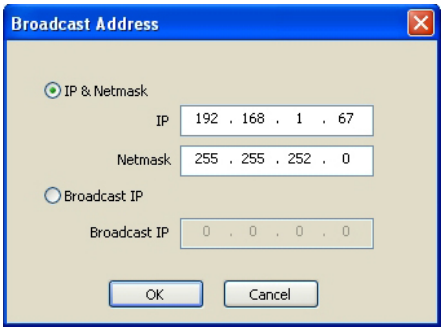
To view or modify current network communication parameters for Cattrax, click the Network Preferences tab under the Setting menu in the Cattrax menu bar to open the Host Network Configuration screen as shown here.



The upper window displays by IP address and name the network interface devices available to Cattrax. In many installations there is only one entry in the window and by default this would be the device used by Cattrax. If there are multiple entries, as would be the case, for example, if the host PC contains both an Ethernet cable NIC and a wireless adapter, the device Cattrax is currently communicating through is shown in bold type. You may select the network interface device you wish Cattrax to use by double-clicking the entry in the listing. Be sure that the network interface device you select is communicating over the subnet(s) containing the Cougar3 router you wish to control.

Subnets currently available to Cattrax are listed in the second window under the Subnet column. A check in the box beside an entry indicates that Cattrax is actively communicating over that subnet and will automatically discover PESA devices on it. If you wish to prevent Cattrax from communicating over a specific subnet, click the checkbox to remove the check. If you need to add additional subnets or modify address parameters of currently available subnets use the buttons to the right of the display window as follows:

- **Add** – allows you to add subnets to the list of those available. Clicking the Add button opens the screen shown here.



  Ensure that the IP & Netmask radio button is selected. Enter the subnet address you wish to add in the IP and Netmask fields of the window. Click OK to enter the parameter. The new entry is added to the listing and the checkbox will be checked to activate the new subnet. Do not modify the Broadcast IP field entry.

- **Edit** – allows you to modify address parameters of any entry in the listing. Highlight the entry you wish to modify and click the Edit button. The Subnet menu is displayed with current parameters for the entry listed. Make any changes you wish and enter OK to commit the changes.

- **Remove** – allows you to remove any subnet from the listing. Highlight the entry you wish to delete and click the Remove button. The entry is immediately removed from the listing.

5.6 NAVIGATING THE CATTRAX ROUTER SCREENS

As shown in Figure 5-2, the Cattrax display screen is divided into five major functional areas: Menu Bar, Devices View Window, Device Properties Window, Menu Display Window and Alarm and Events Window.

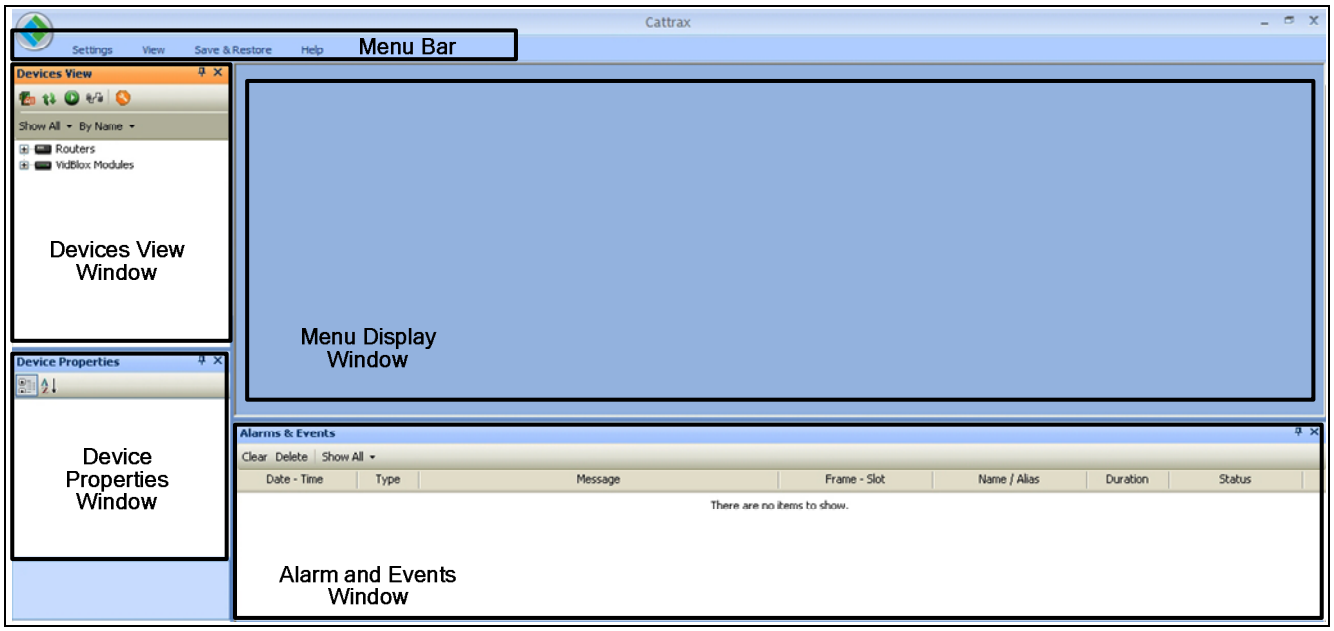


Figure 5-2 Cattrax Main Display Screen

The Menu Bar functions in a similar manner to other Windows® based programs; application specific commands are discussed in detail where appropriate in the operating guide paragraphs.

5.6.1 DEVICES VIEW WINDOW

Cattrax' Devices View window, as shown by Figure 5-3, identifies PESA devices on the network. Depending on the view mode selected, Cattrax can display devices that have previously been connected to the network, even if they are currently not active. Depending on the view mode, devices may be displayed in groups by device type as shown. Notice that the heading *Routers* appears in the menu tree with a branch to a Cougar3 router. When a PESA device is connected to the network, and communication is established, the device ID is displayed as a branch of the menu tree in bold letters. If the *Show Active* mode is selected, only active devices are listed. When the *Show All* view mode is selected the name of devices that have been "discovered" previously but are not currently under active control appear in the menu tree in gray letters; and continue to appear in the menu trees until they are manually removed. You may obtain more information on viewing modes and other operational features and functions of Cattrax by referring to the User Guide for the software application.

Figure 5-3 Example Devices View Window

5.6.2 ALARMS AND EVENTS WINDOW

The Alarms and Events Window, Figure 5-4, displays flags when a defined alarm condition occurs or when a defined event occurs within the system. Notice from the example screen that when Cattrax establishes connection with a device, it is flagged as an event; as is disconnecting a device from the network. When a module is discovered and flagged as connected, its identity appears in the Devices View window in bold letters, and the information screen is displayed in the main display window.

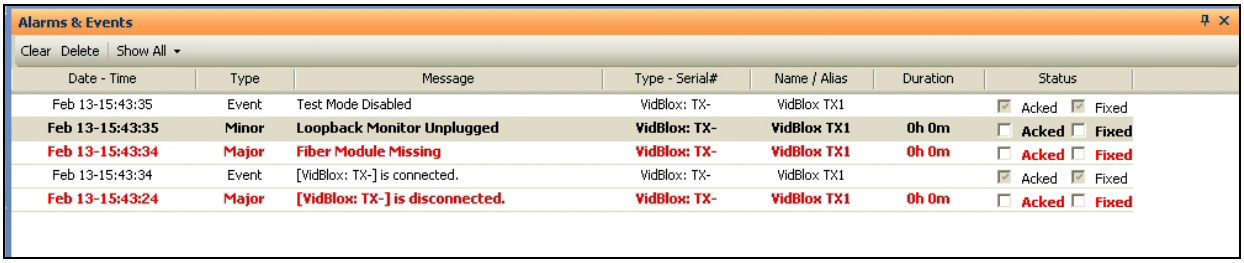


Figure 5-4 Example Alarms and Events Screen

5.7 COUGAR3 VIDEO ROUTER DEVICE PROPERTIES

When a Cougar3 router with small-scale system controller is discovered on the network, its assigned name is added under the Routers parent header. Expanding the menu entry reveals entries for the main circuit board in the router (denoted as I/O Board) and the Small Scale System Controller (denoted as SSC3), Figure 5-5.

Selecting any of the Cougar3 entries under the parent header displays command or status menus available for the assembly under the Menu Tree window area; and also displays operational properties for the selected assembly in the Device Properties Window area. Figure 5-5 illustrates example Device Properties display for the Cougar3 Router (left figure) and the I/O Board (right figure). All entries are data display only and can not be modified from the window.

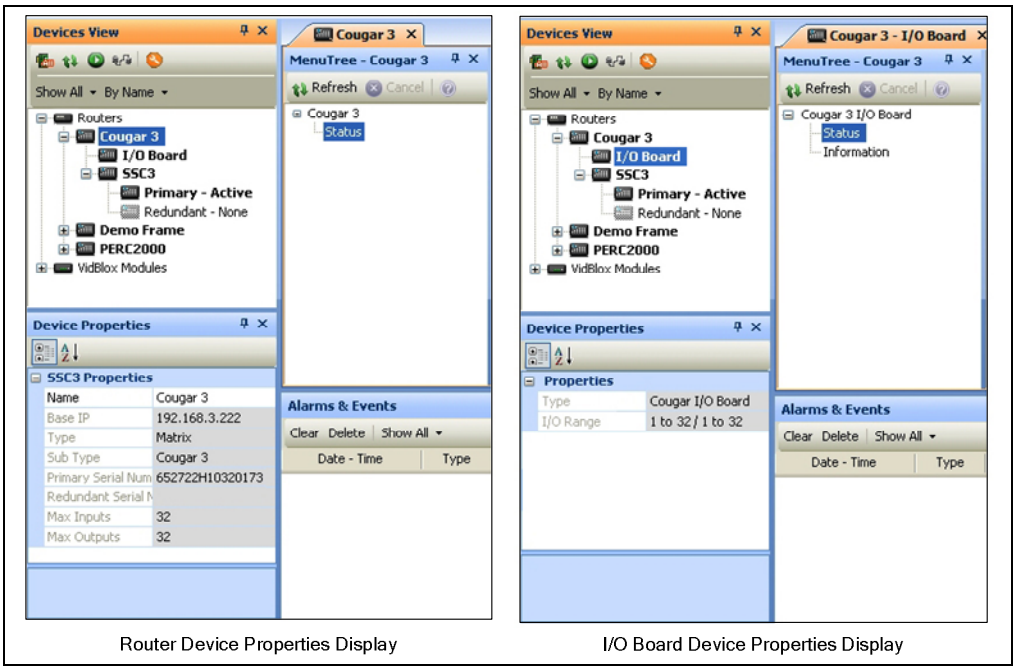


Figure 5-5 Example Device Properties Display

5.8 SSC3 CONTROLLER DEVICE PROPERTIES DISPLAY

With the top-level SSC3 entry selected, the Device Properties window, Figure 5-6, displays controller type and network communication parameters for the internal controller device(s): The upper area of the window, labeled SSC3 Properties, is shown with muted fields and displays current status of components of the small scale controller system. Entries in this field cannot be modified.

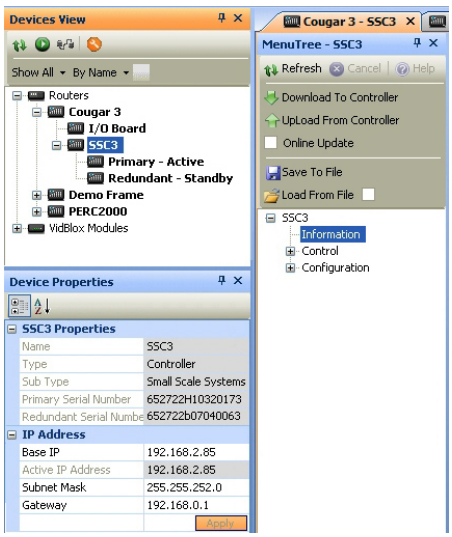


Figure 5-6 Example System Controller Device Properties Display

5.8.1 SETTING SSC3 CONTROLLER NETWORK PARAMETERS

The lower area of the Device Properties Display, labeled IP Address, displays current network parameters for the system controller. The SSSC3 device does not support DHCP protocol, and the factory configured parameters are static until changed.

Factory configured IP address for the system controller:

- **SSC3 installed in primary controller slot - 192.168.1.203**
- **SSC3 installed in secondary controller slot – 192.168.1.204**

From the Devices Properties Display area you may enter new network parameters, including a new Base IP Address for the controller devices by entering the new parameters in the active display fields. The newly entered base IP address becomes the assigned address of the primary controller and the secondary controller is assigned the address of Base IP+1. Click on Apply to apply the changes.

When you expand the SSC3 entry of the Devices View tree, a listing appears that identifies the active or standby status of the Primary and Redundant controller devices, as shown by Figure 5-7. If a redundant controller is present, the current active or standby status of each device is indicated. If no controller device is installed in the redundant slot, the entry is muted and the status is shown as none. When you select either of the device entries, operational parameters for that particular device are shown in the Device Properties display area.

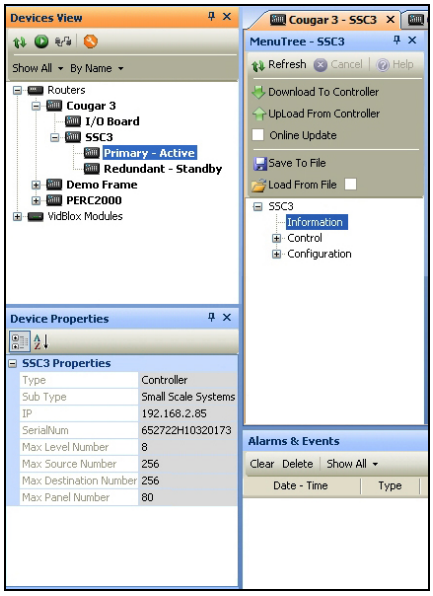


Figure 5-7 System Controller Device Properties

5.9 COUGAR3 STATUS DISPLAY

Selecting the top level Cougar3 entry in the Devices View window displays the Status Overview text boxes as shown in Figure 5-8. The chassis graphic is included on the screen to identify primary and redundant controller module locations.

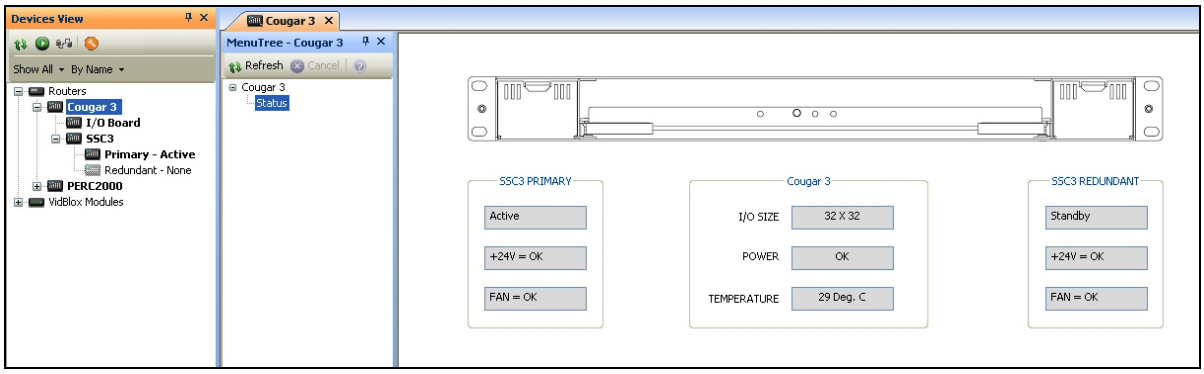


Figure 5-8 Status Display Text Boxes

- **SSC3 Primary -** Displays following status information for primary SSSC device installed in the primary controller slot:
  - Active/Standby status of controller installed in primary slot
  - OK/Error status of 24V power output from module
  - OK/Error status of controller cooling fan

- **Cougar3 -** Displays real-time status information for the Cougar3 router:
  - Matrix size of router in syntax of number of inputs x number of outputs
  - OK/Error status of power feed to main board
  - Measured temperature of surface of main board

- **SSC3 Redundant -** Displays following status information for secondary SSSC device, if second module is installed in the redundant controller slot:
  - Active/Standby status of controller installed in redundant slot
  - OK/Error status of 24V power output from module
  - OK/Error status of controller cooling fan

5.10 I/O BOARD MENUS

Commands and screens contained under the I/O Board parent header in the Devices View Window provide additional and more detailed information of the current operating status of the router main board.

5.10.1 STATUS

The I/O Board Status Screen, Figure 5-9, provides real-time display of the following matrix board parameters:

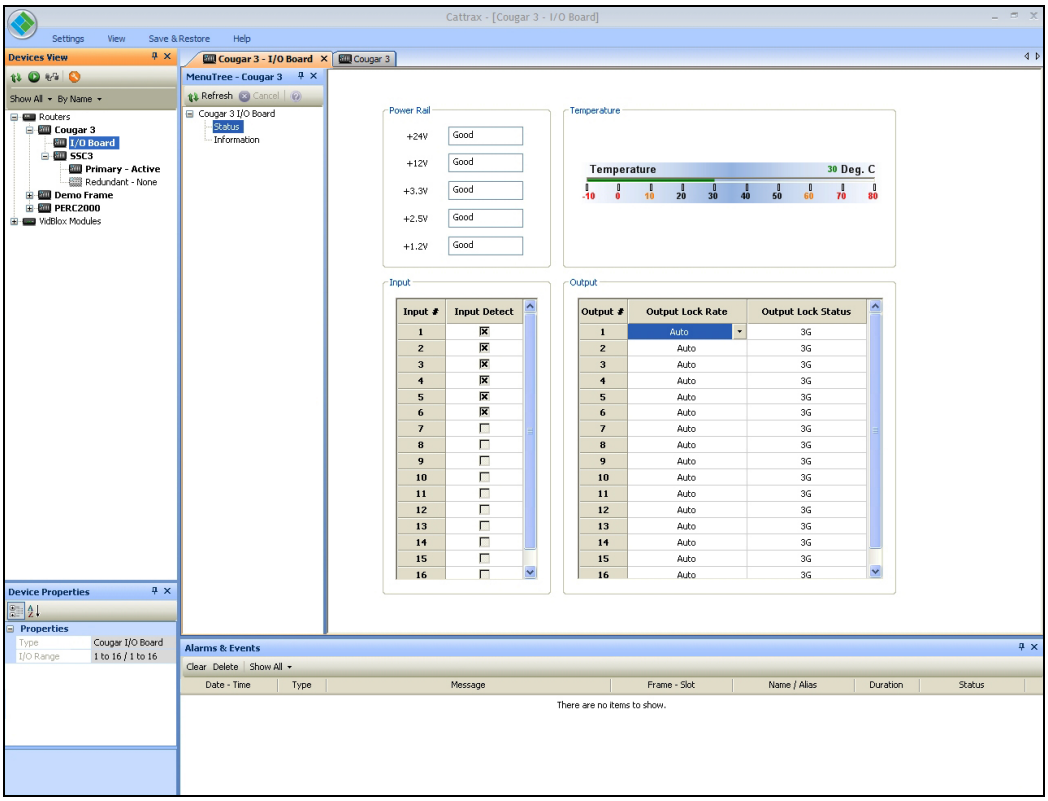


Figure 5-9 Router Configuration Tree Commands

- **Power Rail -** Displays the real-time Good/Bad status of each voltage rail present on the main router board.

- **Temperature -** Meter display provides a direct analog readout of current surface temperature of main router board.

- **Input -** The Input box displays current status of physical signal input ports to the router. The left-hand column labeled *Input #* lists, by port number, physical inputs available on the router. The right-hand column, labeled *Input Detect*, identifies whether a video signal is currently connected to the physical input. An X in the box associated with a particular input indicates presence of a video signal to the input port.

- **Output -** The Output box displays current status of video output signals from the router. The left-hand column labeled *Output #* lists, by port number, physical outputs of the router. The right-hand column, labeled *Output Lock Status*, displays the re-clocked data rate of the video signal at the output port. The middle column labeled *Output Lock Rate*, opens a pull-down selection box, Figure 5-10, that allows you to specify a data rate for the output signal; select automatic (Auto) rate selection; or Bypass the output re-clocker devices.

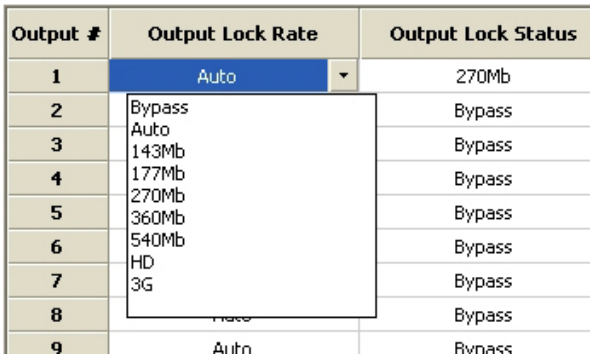


Figure 5-10 Output Lock Rate Pulldown

5.10.2 INFORMATION

The I/O Board Information Screen, Figure 5-11, provides real-time display of matrix board configuration data.

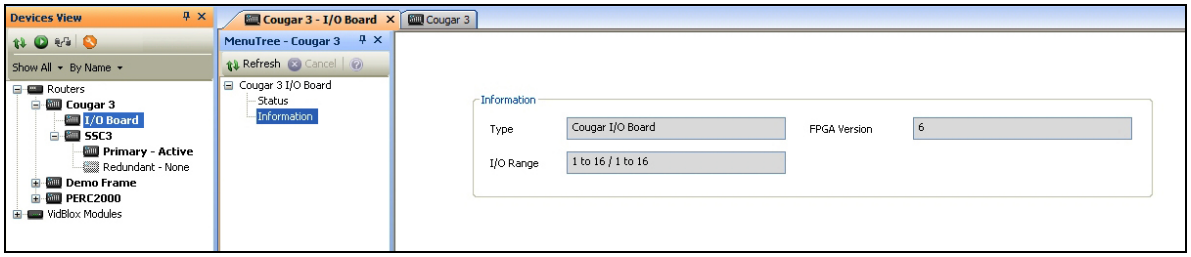


Figure 5-11 Router Configuration Tree Commands

- **Information -**
  - **Type** – Identifies the device as a Cougar I/O Board.
  - **I/O Range** – Displays the numerical range of the input and output ports of the router.
  - **FPGA Version** – Identifies the version number of firmware code loaded into the on-board FPGA device.

5.11 SMALL-SCALE CONTROLLER (SSC3) MENUS

Commands and screens contained under the **SSC3** header in the Devices View Window, Figure 5-12, allow you to obtain status of and monitor functions of the small scale system controller module internal to the Cougar3 video router frame; as well as create, modify or save router configuration files for the controller.

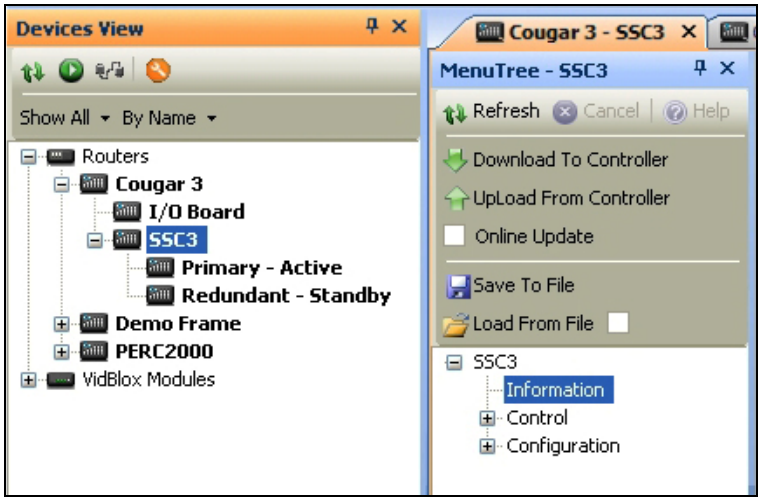


Figure 5-12 System Controller Menu Tree Commands

5.11.1 SSC3 FILE COMMANDS

Anytime the SSC3 menu entry is selected from the Devices View window, a shaded box containing commands that are specific to the router configuration file is displayed as the top item of the Menu Tree, as shown by Figure 5-13.

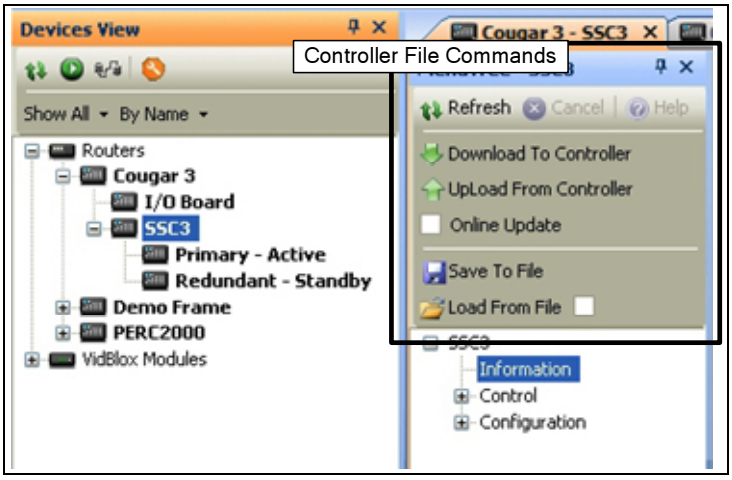


Figure 5-13 Controller File Commands

- **Refresh** – Refreshes currently displayed menu.
- **Cancel** – Cancels a requested action.
- **Help** – Access help files.
- **Download To Controller** – Downloads the currently open configuration to the system controller. The currently active controller configuration will be deleted from controller memory and replaced with the downloaded file.
- **Upload From Controller** – Reads and opens the configuration file currently stored in system controller memory.

- **Online Update** – If the GUI is actively connected to the system controller, checking this selection activates the online update function. Refer to Paragraph 5.17 of this User Guide.
- **Save To File** - Saves the current configuration under a filename of your choosing.
- **Load From File** – Allows you to load a saved configuration file from media such as a hard drive or thumb drive for review or modification. Anytime a saved file is loaded as the currently displayed configuration file, a check mark appears in the small box beside the Load from File command entry as a visual indication that the displayed file is not the currently active controller file.

5.11.2 SSC3 INFORMATION SCREEN

When the SSC3 Information entry is selected from the menu tree, the screen shown by Figure 5-14 displays the following status information for controllers present in the video frame.

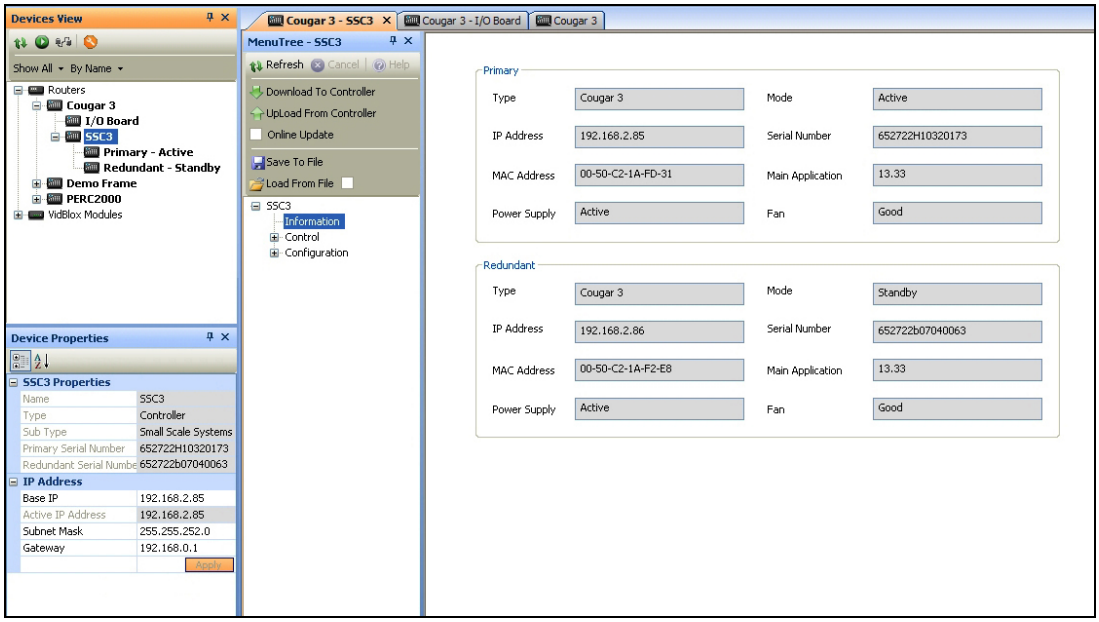


Figure 5-14 Example Information Display Screen

- **Type** – Identifies the controller as a small-scale controller device for a Cougar3 router frame.
- **Mode** – If a redundant controller is installed, this entry identifies whether the indicated controller device is currently functioning as the active or standby device for the frame.
- **IP Address** – Displays the IP address assigned to the indicated small scale controller device. The Primary controller assumes the base IP address assigned to the router and the Redundant controller, if present, assumes the IP address of base IP + 1.
- **Serial Number** – Displays the serial number of the controller device installed in the indicated position.

- **MAC Address** – Identifies assigned MAC address for module.
- **Main Application** – Indicates revision level of main program firmware loaded into controller.
- **Power Supply** – Displays the status of the power supply device contained on the indicated controller module.
- **Fan** – Indicates current status of cooling fan on-board the indicated controller module.

5.12 SSC3 CONTROL MENU

Commands and screens contained under the SSC3 Control parent header in the Menu Tree allow you to monitor status and issue direct control commands to certain functions of the system controller. When any menu entry under the Control header is selected, Cattrax reads current status of the system controller and displays pertinent data in each menu screen.

5.12.1 MATRIX PRESET

The Matrix Preset screen, Figure 5-15, allows you to preset switches for any valid destination and source pairing in the system. Preset switches can be taken simultaneously, or selectively, directly from this menu screen.

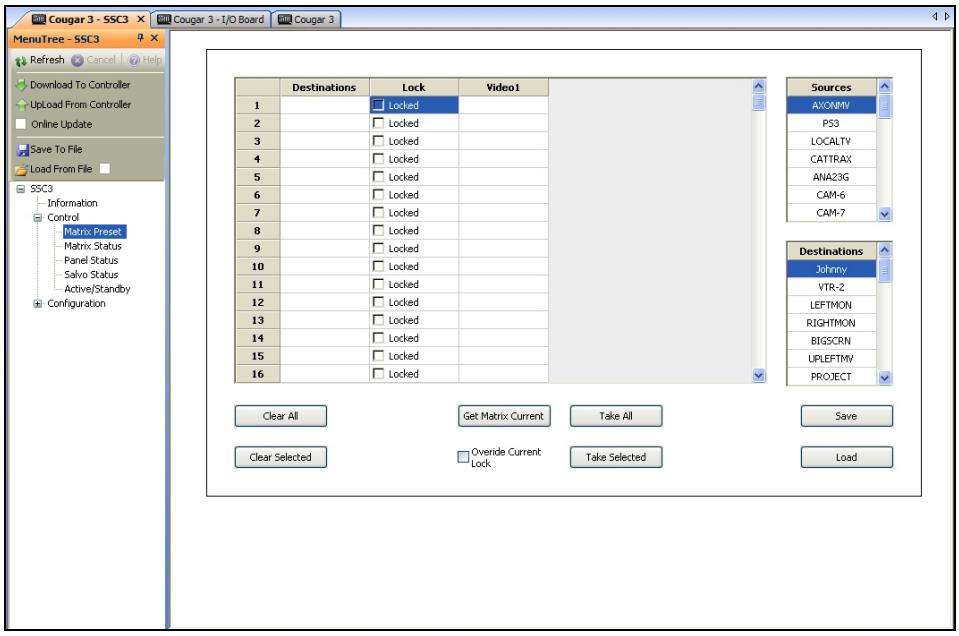


Figure 5-15 Matrix Preset Display

- **To Preset a Switch:**
  - Move the cursor to a clear cell under the Destinations column and click to highlight the cell. Locate the desired destination for the switch in the destinations scroll box and double click the entry. The selected destination name displays in the cell.
  - If you wish to lock the destination once the switch is made, click the box in the Lock column.
  - Move the cursor to the cell under the column of the level on which you wish the switch to occur and click to highlight the cell. Locate the desired Source for the switch in the Sources scroll box and double click the entry to paste the selection in the cell. Repeat this procedure for all switching levels on which you wish the switch to occur.
  - Repeat the previous steps to define other destinations, sources and levels on which you wish to take a switch.
  - Pressing the Take All button causes all the preset switches to occur simultaneously.
  - Switches can be selectively chosen by highlighting one or more destination cells and pressing the Take Selected button.
- **Clear All** - Clears all preset entries from the screen.
- **Clear Selected** - Clears only highlighted presets from the list.
- **Get Matrix Current** - Polls the controller device and displays current status of the switch matrix.
- **Override Current Lock** – If you have preset a switch combination that will modify a currently locked switch, checking this box will temporarily override the lock, allow the preset switch and re-lock the path.
- **Take All** – Clicking this button will execute all switches entered on the matrix preset screen.
- **Take Selected** – Clicking this button will execute only switches that are highlighted on the matrix preset screen.
- **Save** – Saves the current preset matrix screen for future use.
- **Load** – Loads a saved preset matrix file.

5.12.2 MATRIX STATUS

The Matrix Status screen, Figure 5-16, allows you to monitor current status of the entire switching matrix, presented in a spreadsheet format of rows and columns. For each listed destination the spreadsheet columns provide the following information:

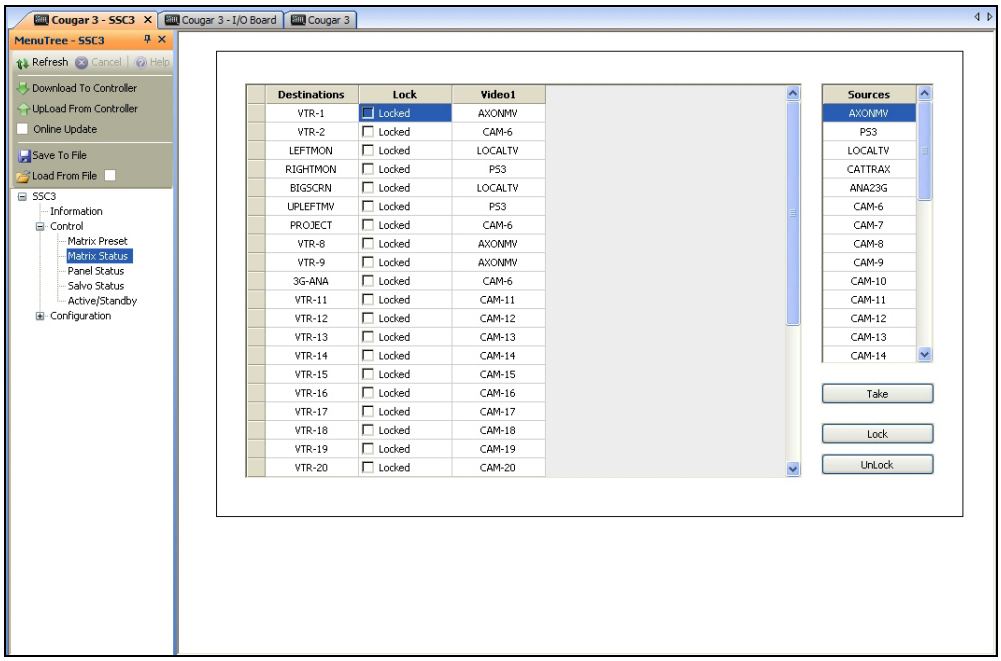


Figure 5-16 Matrix Status Display

- **Destinations** – This column is a listing, by name, of every destination in the system as assigned by the Destinations Configuration Screen.
- **Lock** – If a check mark appears in the box, the destination is locked. Destinations can be locked from system remote control panels or from this status screen.
- **Switching Levels** – There is a column for each switching level as assigned by the Levels Configuration Screen.

For each destination, the lock status is displayed and the source switched to it is identified by switching level(s). For example, looking at Figure 5-16, the destination named VTR-2 is currently in an unlocked status and the source named CAM-6 is switched to VTR-2 on the VIDEO1 level. If any cell in a switching level column is blank, there is no active switch for the indicated level.

A scroll box on the right-hand side of the screen contains a list of all sources by name as assigned by the Sources Configuration Screen. Three click buttons labeled Take, Lock and Unlock are located beneath the scroll box. Using the source list and the click buttons you can make on the fly changes to the matrix configuration. Suppose that while monitoring the matrix status screen, you have a need to change the source of destination VTR-1 from AXONMV to CAM-6 on the VIDEO1 level:

Click the cursor in the cell on VTR-1 row under the VIDEO1 column – the cell will highlight.

Locate CAM-6 in the Sources scroll list and click in the cell – it will highlight.

The switch may be taken in one of two ways: you may double click on the source entry or click on the Take button. Once the switch is taken, the destination status cell for A VIDEO will reflect the new source selection.

Lock and Unlock buttons allow you to lock or unlock a destination. Move the cursor to the cell under the Lock column of the destination you wish to lock or unlock. If the destination is currently unlocked, clicking the lock button will lock it; if the destination is currently locked, clicking the unlock button will unlock it.

5.12.3 PANEL STATUS

The Panel Status screen, Figure 5-17, displays the current status of all PNet control panels in the router system. Each entry in the spreadsheet is described below:

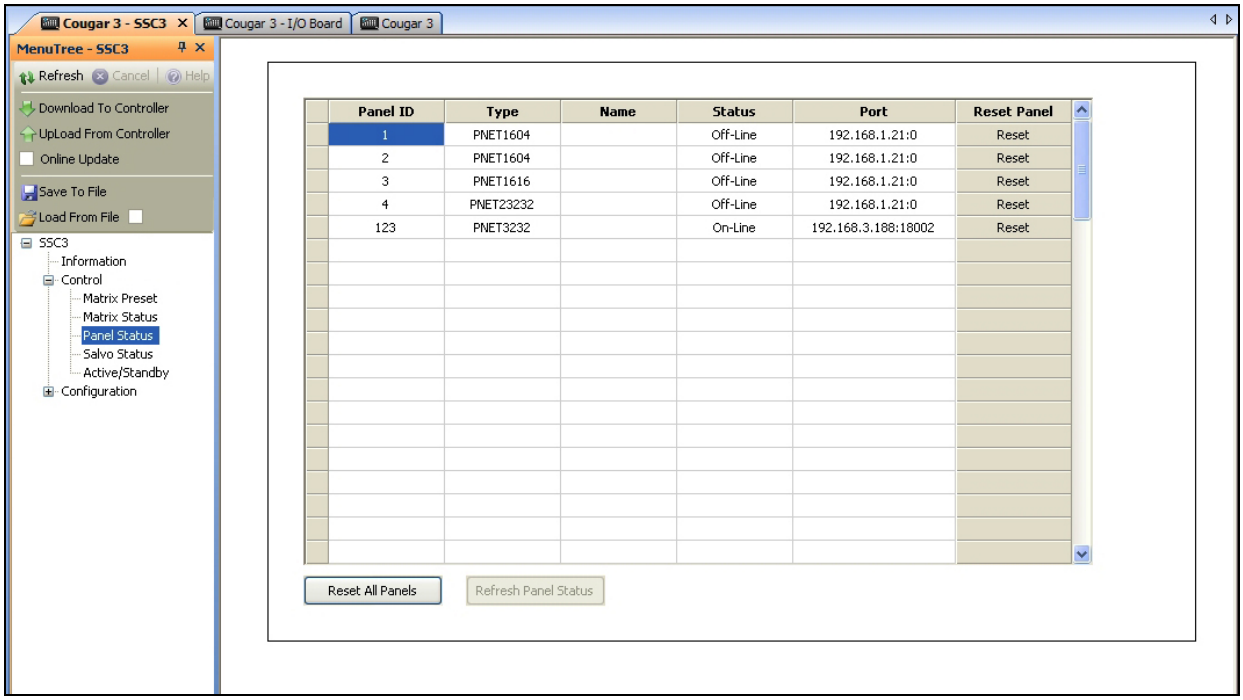


Figure 5-17 Panel Status Display

- **Panel ID** – Displays the active hardware ID setting of the panel.
- **Type** – Indicates the panel type
- **Name** – Displays the name assigned to the panel through the Panels screens.
- **Status** – Indicates whether the panel is currently online and communicating with the system controller or offline.
- **Port** – Indicates to which port link the panel is attached.
- **Reset Panel** – Clicking this button performs a hardware reset on the indicated panel.
- **Reset All Panels** – Clicking this button issues a hardware reset command to all panels in the router system.
- **Refresh Panel Status** – Clicking this button causes the GUI application to re-poll the status of all remote control panels.

5.12.4 SALVO STATUS

The Salvo Status screen, Figure 5-18, displays the current status of all salvo groups in the router system.

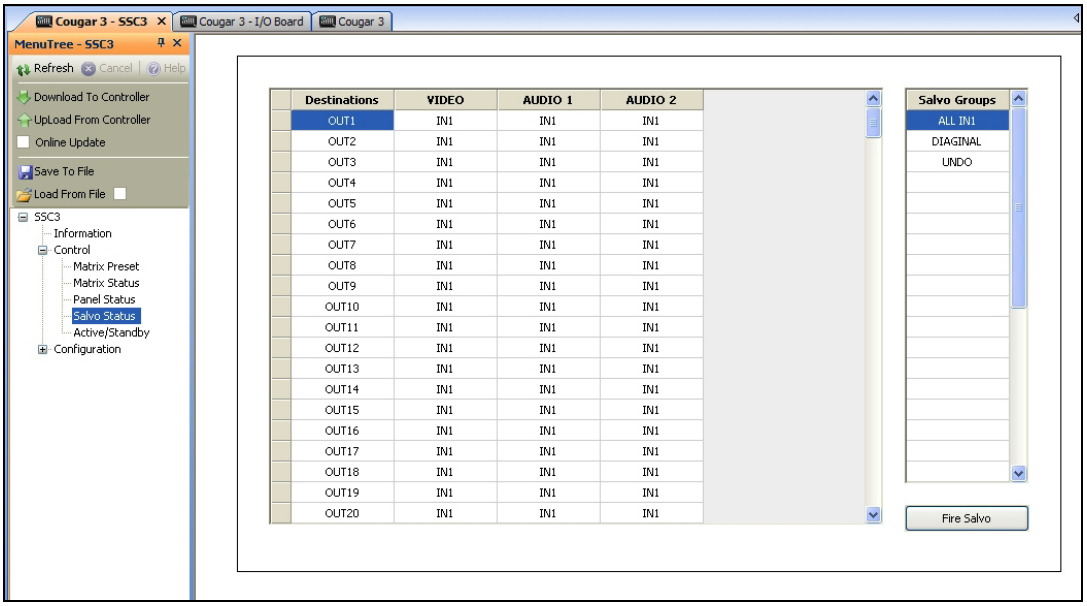


Figure 5-18 Salvo Status Display

Selecting an entry in the Salvo Groups listing displays the destinations and sources, by switching level, contained in the salvo group. You may immediately "take" the salvo group by clicking the Fire Salvo button.

5.12.5 ACTIVE/STANDBY

For both the Primary and Redundant SSC3 controller in the frame, the Active/Standby status screen, Figure 5-19, displays the IP address and current operating mode. If the router is not equipped with a redundant controller module, the IP address of the primary module is displayed and the mode box indicates that the module is the *single* controller for the router. If the router contains a redundant controller, the *active* or *standby* status of each module is displayed along with a pair of radio buttons that allow you to swap the active controller. You may use either Set Mode button set to initiate the status toggle. A pop-up prompts you to verify the action before the status toggle is implemented.

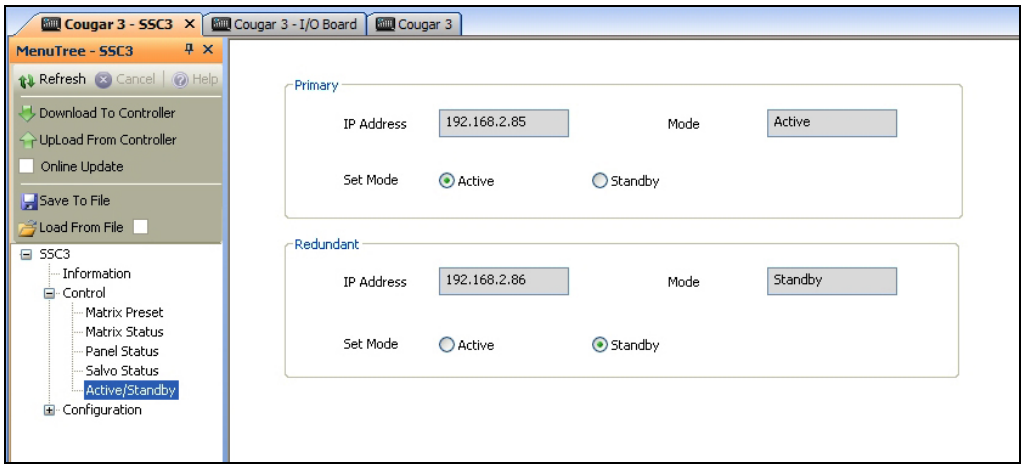


Figure 5-19 Active/Standby Menu Screen

5.13 SSC3 ROUTER CONFIGURATION

Designing and configuring a routing system requires working knowledge of the hardware components and the router operational modes and functions. The configuration capabilities available through Cattrax and presented in the following paragraphs assume the user has working knowledge of switching functions and terminologies required to configure a system. Be aware that system changes you can make through the commands and screens discussed in the following paragraphs configure virtually all operational aspects of the system.

Mistakes or erroneous entries made in many of the following configuration steps can cause serious problems ranging from incorrect sources being switched to total shutdown of the entire system. Be sure you know exactly what you want to do before you make changes to the system configuration.

Controller configuration commands available through Cattrax are shown by Figure 5-20. Each command is discussed in the following paragraphs.

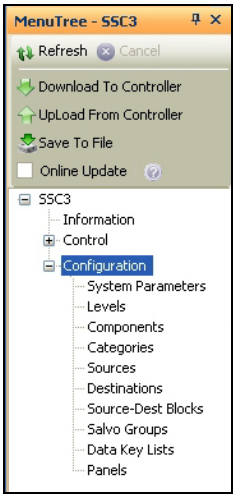


Figure 5-20 Controller Configuration Commands

When any SSC3 Configuration command or menu is first accessed, there is no configuration file data loaded into Cattrax program memory. You have two options from which to select the type of configuration operation you wish to perform, either option allows you to view or modify an existing configuration file.

1. Load an existing configuration file from a previously saved and stored file.
2. Upload the currently active configuration file stored in system controller flash memory. This action requires that the host PC and the Cougar3 video frame be connected via an Ethernet interface.

In order to view or modify the currently active configuration file loaded into the SSC3 controller, you must upload the configuration file from the active system controller by one of two methods:

- Select the *Upload from Controller* command from the System Controller File commands menu as shown in Figure 5-13.
- Select any command from the SSC3 Configuration menu trees and you will be prompted with a decision box giving you the option to upload the current configuration file from the SSC3 modules flash memory.

Until you have performed one of these two actions, there is no “working” file data loaded into Cattrax, and every time you select any configuration menu item, with no configuration file loaded, you will be prompted with a decision box to upload the current configuration file from the controller.

As most configuration data is entered or modified through Cattrax menu commands, it is stored on the host PC – and only on the host PC. Changes entered do not get saved to a file, written to the system controller, or become active, until the operator issues a command through Cattrax to either save or download the configuration data. Once a configuration file is created or modified, use the *Download to Controller* command in the SSC3 File Commands menu to immediately download the file to the system controller hardware and activate the configuration changes.

In order to download a configuration, upload the current configuration file from the controller or to perform any status monitoring or maintenance/diagnostics procedures the host PC must have a viable communication interface with the video frame.

Each configuration file will be different to satisfy a specific system requirement. However, the following are some basic steps that are common to building each router configuration file.

- Assign System Operating Parameters.
- Set up Levels and Components for the application.
- Define and assign Sources and Destinations for each level that correspond to external equipment connected to the router.
- Define special application functions such as Source-to-Destination Blocks and Salvo Groups.
- Configure PNet Control Panels and define specific application functions to configurable control panel keys.

5.14 SSC3 CONFIGURATION SCREENS – RIGHT MOUSE CLICK FUNCTIONS

As with most other applications based on the Microsoft Windows® operating system, Cattrax contains several application-specific functions for various configuration command or data entry operations that are accessed by clicking the right mouse button and selecting the desired operation. Functions and commands presented on the right click menu vary greatly between screens and data entry cells or fields. The example shown by Figure 5-21 illustrates a typical menu for Cougar3 specific data entry editing and short-cut functions. Not all commands shown below will appear on every right-click menu.

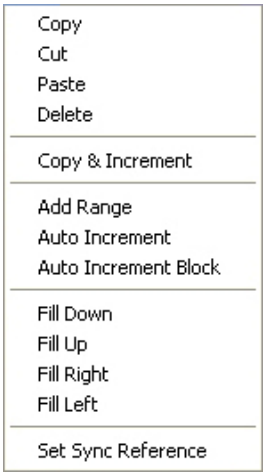


Figure 5-21 Typical Right-Click Mouse Commands

5.14.1 COPY, CUT, PASTE, DELETE

The Copy, Cut, Paste and Delete Commands in Cattrax function exactly as the standard Windows® functions.

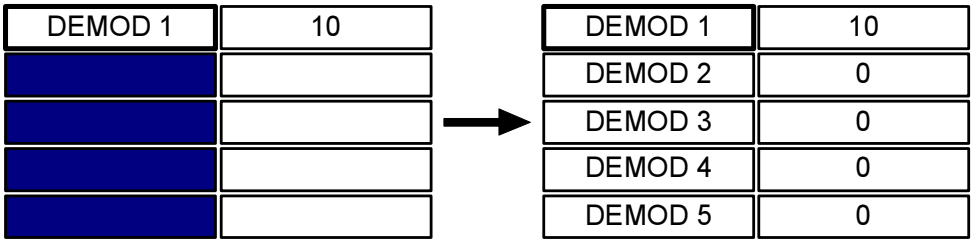
5.14.2 QUICK DATA ENTRY TOOLS

For many data entry operations, such as source and destination spreadsheets, that require you to enter repetitive information, such as Inputs, Outputs, etc., there are additional commands available from the right mouse click menu. Commands vary depending on the system screen and grid column you are working with:

Copy & Increment

Copy & Increment allows you to quickly fill fields of a configuration grid by duplicating the text and incrementing the numerical value of a starting entry into fields selected by a user-defined data block. Copy & increment always fills in all valid fields of the data grid lines within the selected block, but it behaves differently depending on where from the grid you select the starting values fields.

If you choose a starting field from any of the name columns of the grid, and do not include any of the numerical entry fields in the switching level columns when defining the size of the fill block, as shown by the diagram below, the text entry of the name will be duplicated in each field of the defined block, and the numerical value associated with the name fields only will be incremented by one in each successive field of the fill block. All of the numerical values in the switching level columns will be filled with zeros, as shown.

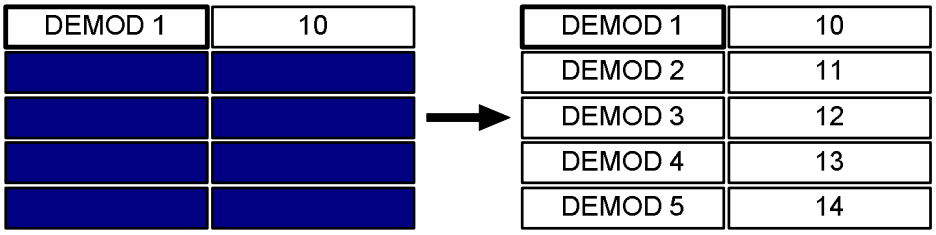


Copy and Increment Example 1

If you choose a starting field from the name columns of the grid, and you do include numerical entry fields under the switching level columns when defining the fill block, as shown below, the text entry of the name will be duplicated in each field of the defined block, and the numerical value associated with the name will be incremented by one in each successive field of the fill block. All of the numerical values in the switching level columns included in the data block will be incremented by one in each successive field, as shown. Numerical fields NOT included in the defined data block will be filled with zeros.

There are a couple of rules you need to be aware of when using the copy and increment function:

- The fill block you define with the mouse must include at least one of the name columns, and the name entry in the starting field must end in a numerical value, such as DEMOD1, DEMOD2, etc.
- Numerical values under any of the switching level columns will be incremented by one up to the maximum number of physical inputs or outputs defined for the level. If the fill block contains additional lines after any level column reaches the maximum number, any successive fields in that column will be filled with zeros.

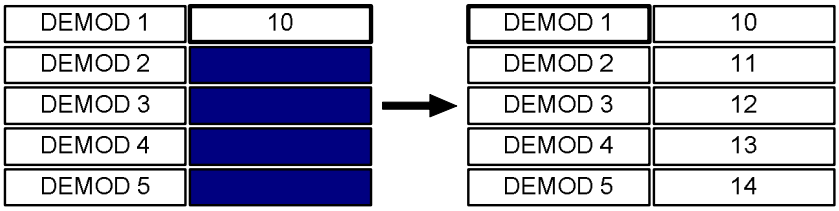


Copy and Increment Example 2

Auto Increment

The Auto Increment function increments the numerical value of a starting entry into the fields of a user-defined fill block located below and in the same column as the starting entry. You must choose a starting field from a numerical entry field in any of the switching level columns when defining the fill block, as shown by the diagram below. Numerical values in the selected column will be incremented by one in each successive field, as shown. The Auto Increment function will only add numerical values if every line of the fill block already has a name, such as assigned to a source or destination, associated with the level.

Numerical values under the selected switching level column will be incremented by one up to the maximum number of physical inputs or outputs defined for the level. If the fill block contains additional lines after any switching level column reaches the maximum number, any successive fields in that column will be filled with zeros.

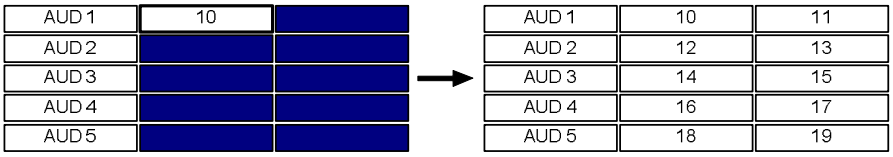


Auto Increment Function

Auto Increment Block

Auto Increment Block is very similar to the Auto Increment function, the difference being that it allows the fill block to consist of multiple switching level columns, as shown by the diagram. Auto increment block always uses the field in the upper left corner of the fill block as the starting value entry, and fills successive fields with numerical values, incremented by a value of one, from left to right and top to bottom. The Auto Increment Block function will only add numerical values if every line of the fill block already has a name, such as assigned to a source or destination, associated with the level.

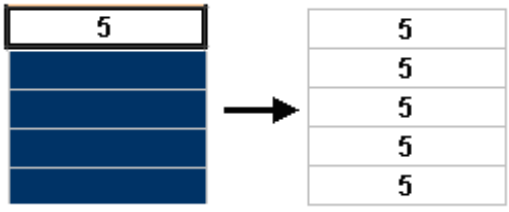
Numerical values filled in the switching level columns will be incremented by one up to the maximum number of physical inputs or outputs defined for the level in the starting entry field. If the fill block contains additional fields after any field in the block reaches the maximum number, any successive fields in the remainder of the fill block will be filled with zeros.



Auto Increment Block Function

Fill-Down

Fill-Down fills in the fields below a selected field with the selected number. First, select the field with the number you want to duplicate and then, select the fields below it. Right-click and select Fill-Down to fill in the fields with the selected number, as shown.



Fill-Down Command

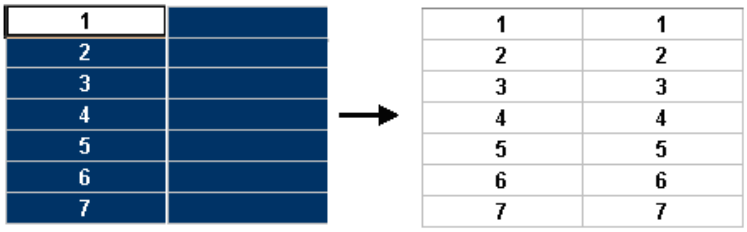
Fill-Up

Fill-Up fills in fields above a selected field with the same information. First, select the field with the number you want to duplicate and then, select the fields above it. Right-click and select Fill-Up to fill in the fields with the selected information, as shown by the diagram.

Fill-Up Command

Fill-Right

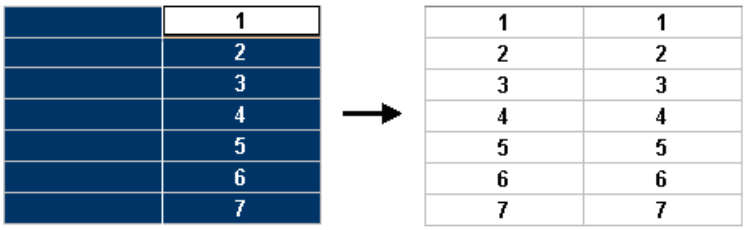
Fill-Right fills in the fields to the right of a selected field with the selected number(s). First, select the fields with the numbers you want to duplicate and then, select the fields to the right. Right-click and select Fill-Right to fill in the fields with the selected numbers. You can select either one field or several fields with this function, as shown.



Fill-Right Command

Fill-Left

Fill-Left fills in the fields to the left of a selected field with the selected number(s). First, select the fields with the numbers you want to duplicate and then, select the fields to the left. Right-click and select Fill-Left to fill in the fields with the selected numbers. You can select either one field or several fields with this function, as shown by the diagram



Fill-Left Command

5.15 SSC3 CONFIGURATION COMMANDS

Each command contained under the SSC3 Configuration parent header in the Menu Tree window is discussed in the following paragraphs.

5.15.1 SYSTEM PARAMETERS

The system parameters screen is the top level configuration screen and identifies the currently loaded configuration data by name and initial operating parameters as shown by Figure 5-22.

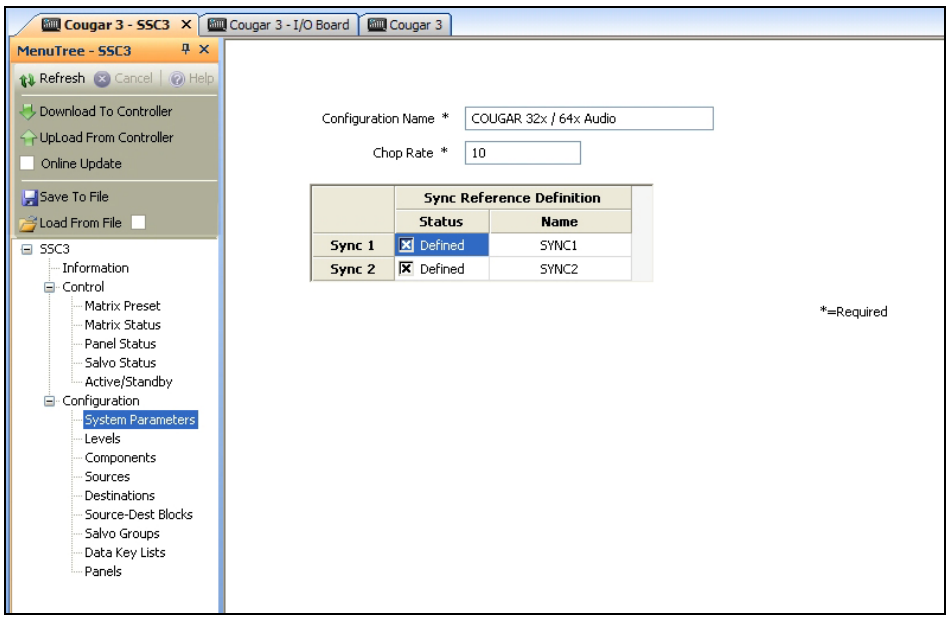


Figure 5-22 System Parameters Screen

- **Configuration Name -** This field allows you to name the configuration file. Type the desired name in the Configuration Name box. Configuration names may have up to 32 alphanumeric characters. You can query this name from the SSC3 Controller.
- **Chop Rate -** Chop Rate indicates the frame rate of switches used by the Chop mode of operation. To change the chop rate, enter the desired value in the Chop Rate box. Any desired Chop Rate between 1 and 255 frames is supported by the SSC3. Default value of this parameter is 10 frames.
- **Sync Reference Definition -** Your Cougar3 video frame allows input of up to two sources of external Sync Reference signals for synchronizing switching times and destination output signals. The cells in this field allow you to define the sync sources.
  - **Status –** When a sync source is attached to the indicated input and the source is defined in the configuration, click in the Defined box. An X in the box indicates that the synce source is defined.
  - **Name –** Enter an alphanumeric string in each cell to assign a name to the sync source.

5.15.2 LEVELS CONFIGURATION

When the **Levels** menu entry is selected, the Levels Configuration Screen, Figure 5-23, is displayed. From this screen you can assign and enter operational parameters for up to 8 system switching levels. The box labeled *Levels* on the left side of the display window contains a listing of all the assigned switching levels in the router, by nickname; and the box labeled *Information* on the right side contains the data entry cells used to create new or modify existing switching levels.

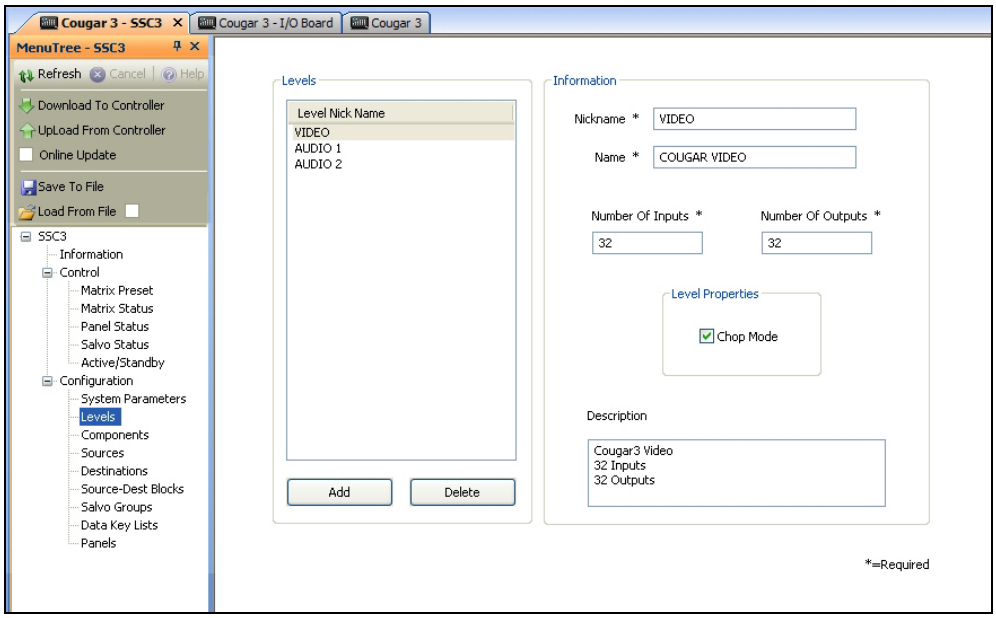


Figure 5-23 Levels Configuration Screen

- **Adding a Level** – SSC3 allows a maximum of 8 switching levels. To add a level, click the **Add** button at the bottom of the Levels box to access a blank set-up screen in the Information box.
- **Deleting a Level -** To delete a level, locate the nickname of the level you wish to delete in the Levels box and click on the name to select it. Click "**Delete**" at the bottom of the box.
- **Nickname** – The assigned Nickname is a label associated with the level and is the character string displayed on status display screens for the defined switching level. In order to assign the level a nickname, click the cursor in the Nickname field and enter the nickname label text.

  Once nickname text is assigned to a level, the nickname character string is displayed as a sub-entry in the Levels box. Any time you wish to return to the set-up screen for a particular level, simply click on the nickname sub-entry under the Level Nick Name header.
- **Name -** The Name field allows a longer and more descriptive name for the level. Generally, this field is used to assign a name to the level that more accurately identifies its function.

  Generally, when assigning names and nicknames, the NAME field is a longer more precise description of the defined level and the NICKNAME field is a shortened acronym or mnemonic used to identify the level on display devices or screens.

- **Number of Inputs** – Enter the number of input sources associated with the defined level.
- **Number of Outputs** – Enter the number of output signals associated with the defined level.
- **Chop Mode** - When this box is checked it indicates the level is "chop enabled" and may be included in a chop function.
- **Description -** Description is a free text field where you can enter a full description of the switching level or add notes or information as desired. This field is solely for discretionary use and has no effect on the defined level characteristics.

5.15.3 COMPONENTS CONFIGURATION

When the **Components** menu entry is selected, the Components Configuration Screen, Figure 5-24, is displayed. From this screen you can assign and enter operational parameters for various system components. The box labeled *Components* on the left side of the display window contains a listing of all the assigned switching levels in the router, by nickname; and the box labeled *Information* on the right side contains the data entry cells used to create new or modify existing switching levels.

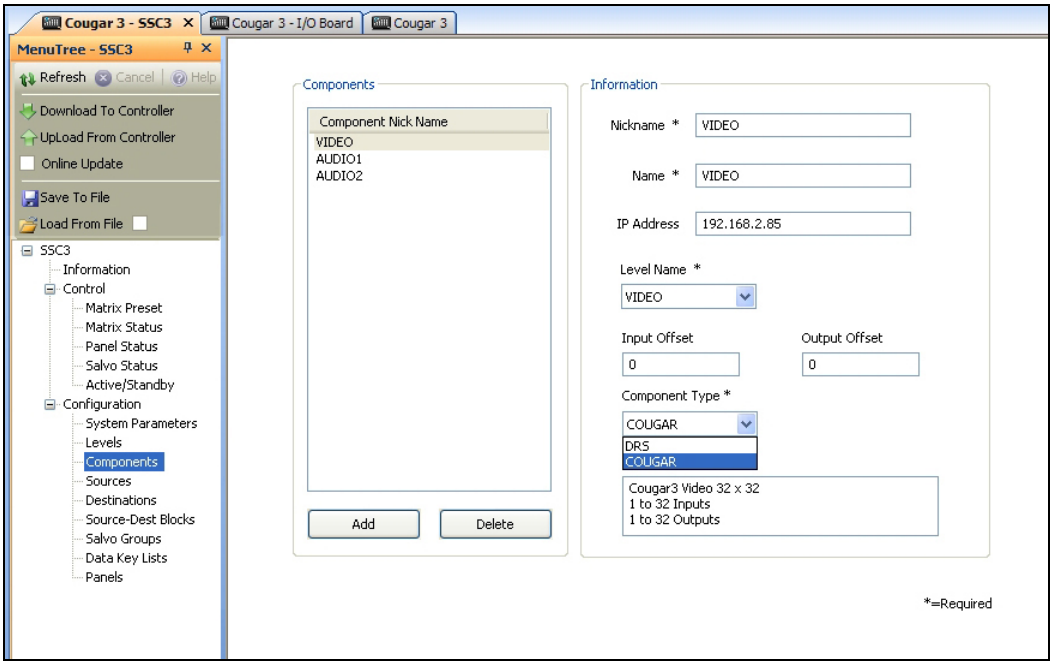


Figure 5-24 Components Configuration Screen

- **Adding a Component** – SSC3 allows a maximum of 64 components. To add a component, click the Add button at the bottom of the Components box to access a blank set-up screen in the Information box.
- **Deleting a Component -** To delete a component, locate the nickname of the component you wish to delete in the Components box and click on the name to select it. Click "Delete" at the bottom of the box.

- **Nickname** – The assigned Nickname is a label (up to 8 characters) associated with the component and is the character string displayed in the Component Nick Name listing area. In order to assign the component a nickname, click the cursor in the Nickname field and enter the nickname label text.

  Once nickname text is assigned to a component, the nickname character string is displayed as a sub-entry in the Components box. Any time you wish to return to the set-up screen for a particular component, click on the nickname sub-entry under the Components Nick Name header.

- **Name -** The Name field is where a longer, more descriptive name is defined for the component. Generally, when assigning names and nicknames, the NAME field is a more precise description of the defined component and the NICKNAME field is a shortened acronym or mnemonic.

- **IP Address -** Enter the IP address of the router frame in which the component sources reside.

- **Level Name -** Level Name is a pull-down menu list containing the nickname of the levels defined for the system. Highlight and select the level name from the list to which the component being defined is a subset. You must have already created the level you want to use before you can select the name in this field.

- **Input and Output Offset -** Offset defines the numerical difference between the physical input or output number and the level input or output number for a given source or destination.

- **Component Type -** Component Type is a pull-down menu list containing the types of hardware devices controlled by the SSC3 controller in the Cougar3 application from the following options:

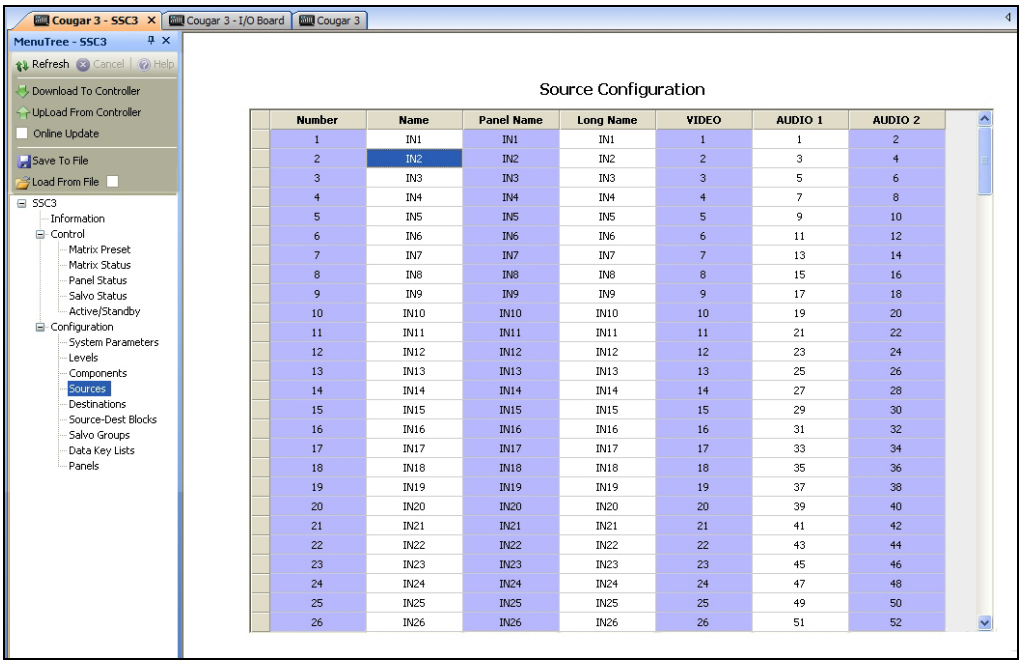
  - **DRS** – Identifies that the component you are configuring is tied to a switching level routed through the DRS audio frame of the Cougar3 system.

  - **COUGAR** – Identifies that the component you are configuring is tied to a switching level routed through the Cougar3 video frame.

- **Description -** Description is a free text field where you can enter a full description of the switching component or add notes or information as desired. This field is solely for discretionary use and has no effect on the defined component characteristics.

5.15.4 SOURCES

Click the **Sources** entry under the Configuration Menu Tree to access the Source Configuration Screen, Figure 5-25. This screen allows you to define source groups in the router configuration. Note the Sources Screen is in the form of a database spreadsheet with data entries for each source group made on individual rows from left to right. Each source group is assigned a name, and the physical inputs to the router you wish to associate with the source group are assigned by switching level. In router terminology, this screen essentially maps each physical source (input) to the router to its logical input by switching level and source group nomenclature. Individual physical inputs to the Cougar3 router may be assigned to multiple source groups.



Number	Name	Panel Name	Long Name	VIDEO	AUDIO 1	AUDIO 2
1	IN1	IN1	IN1	1	1	2
2	IN2	IN2	IN2	2	3	4
3	IN3	IN3	IN3	3	5	6
4	IN4	IN4	IN4	4	7	8
5	IN5	IN5	IN5	5	9	10
6	IN6	IN6	IN6	6	11	12
7	IN7	IN7	IN7	7	13	14
8	IN8	IN8	IN8	8	15	16
9	IN9	IN9	IN9	9	17	18
10	IN10	IN10	IN10	10	19	20
11	IN11	IN11	IN11	11	21	22
12	IN12	IN12	IN12	12	23	24
13	IN13	IN13	IN13	13	25	26
14	IN14	IN14	IN14	14	27	28
15	IN15	IN15	IN15	15	29	30
16	IN16	IN16	IN16	16	31	32
17	IN17	IN17	IN17	17	33	34
18	IN18	IN18	IN18	18	35	36
19	IN19	IN19	IN19	19	37	38
20	IN20	IN20	IN20	20	39	40
21	IN21	IN21	IN21	21	41	42
22	IN22	IN22	IN22	22	43	44
23	IN23	IN23	IN23	23	45	46
24	IN24	IN24	IN24	24	47	48
25	IN25	IN25	IN25	25	49	50
26	IN26	IN26	IN26	26	51	52

Figure 5-25 Sources Configuration Screen

- **Number -** The left-most column is labeled **NUMBER,** is numerically sequential and automatically filled in as source groups are added. You can not change the entry in the Number column.
- **Name, Panel Name and Long Name -** The next three columns allow you to assign identifying names and/or acronyms to each source group according to the following formats:
  - **Name –** Any combination of up to 8 alphanumeric characters may be used to identify the source group.
  - **Panel Name -** Any combination of up to 8 alphanumeric characters may be used to identify the group. The entry made in this column is the text string that will appear in the switching level columns on the Matrix Status display screen.
  - **Long Name –** This column is essentially a free text space where you may enter a name up to 32 characters in length for the source. This name is only displayed on this configuration screen and may be used to more clearly identify an external device or system.
- **Switching Levels -** To the right side of the three name columns you will see columns corresponding to each system switching level. The numerical entry in the columns on each row assigns the physical input to the router associated with the source group for that switching level.

  For example, look at entry number 2 in Figure 5-25 labeled IN2. Notice that the numeric entry for IN2 in the VIDEO column is a 2. This entry tells the system controller that the video signal associated with the source group identified as IN2 will be present at physical input (BNC) number 2 of the Cougar3 video router.

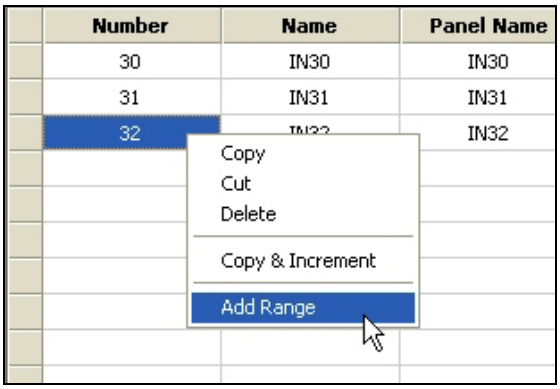
The numeric entries for source group IN2 in the columns corresponding to switching level AUDIO 1 and AUDIO 2 are 3 and 4, respectively. In this case, the numeric entries indicate that the audio signal associated with switching level AUDIO 1 is the signal present at physical input number 3 of the DRS audio router frame, and the signal associated with AUDIO 2 is physically present at input 4 of the audio router.

When you select source group IN2 as the source for a router destination, the physical inputs for all switching levels associated with the source group are switched simultaneously to the physical outputs for all switching levels associated with the destination group.

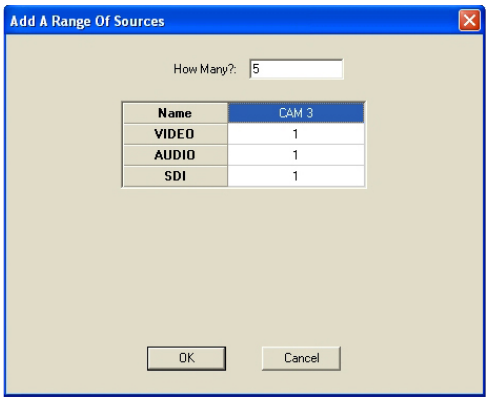
Only one source entry per switching level is allowed. A level may be left undefined on a source group entry. Inputs may be shared between different source groups.

For reference, the Source Configuration screen shown in Figure 5-25 displays the source groups and level source assignments programmed into the controller configuration file supplied with Cattrax.

- **Navigating the Sources Spreadsheet -** From the Sources Configuration screen, you may view all assigned source groups, add a single source group or a range of groups to the configuration, delete a source or modify parameters of an existing source group.
  - **Add Source** – If you wish to add a single source group entry, use the scroll bar and move the display to the empty row beneath the last source entry in the spreadsheet. Click the cursor in the Name cell on the empty row and begin typing the name of the source group you wish to add. Press enter, and the next sequential index number is automatically assigned to the source entry and the name you entered is copied in all three of the name entry cells. If you wish to change any of the name entries, such as panel name or long name, click the cursor in the cell you wish to modify and enter the changes, followed by enter. Once the new source is entered, you may click the cursor in a switching level cell and enter the physical router input you wish to assign to the source for that level. You may continue adding single sources in this manner up to the maximum number of allowable sources for the controller.
  - **Delete Source** – If you wish to remove a source group entry from the configuration spreadsheet, move the cursor to the number column of the source row you wish to delete and right click. Select delete from the right click menu. You will be prompted to verify the action before the source is removed.
  - **Spreadsheet Right Mouse Click Functions** - When you right-click on any cell in the Source Configuration Spreadsheet, a pop-up menu will appear providing command options for the cell, as shown below. Command items appearing in the pop-up menu will vary depending on which commands are pertinent for data entered in the selected cell. Paragraph 5-14 discusses the function of common commands available from the pop-up menu. Remember that all commands listed and discussed below may or may not appear in the pop-up menu for a specific cell.

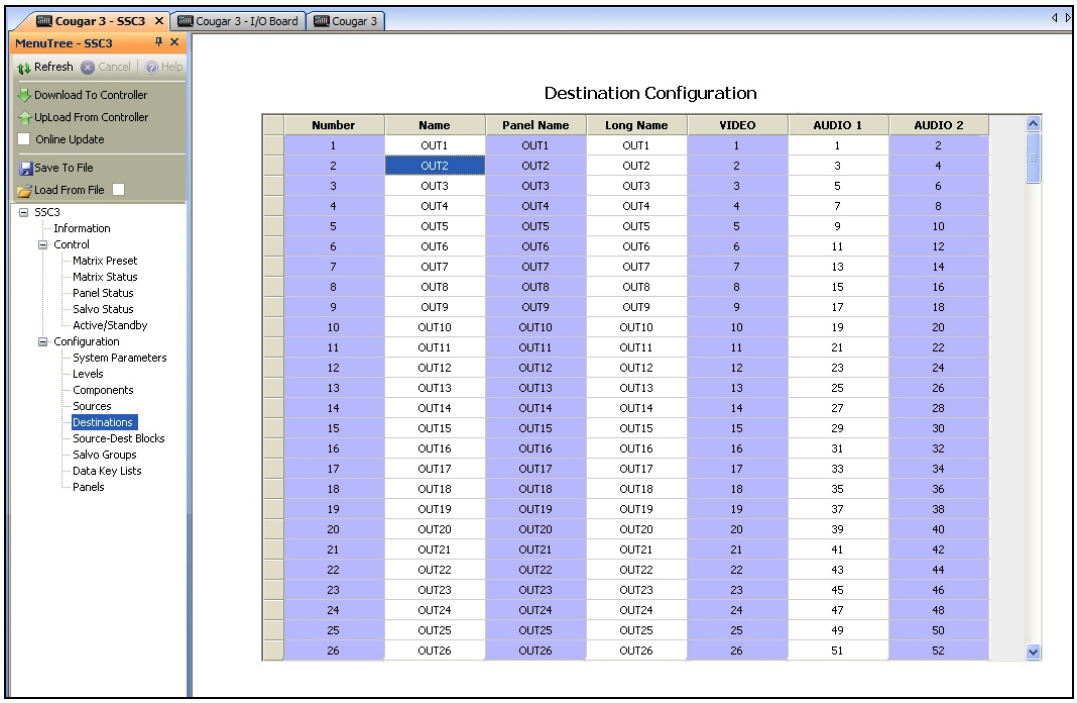


- **Add Range** – Adds a range of sources using a category index type of naming scheme, as shown by the diagram below. You define the base name, such as "CAM," the starting index - such as 3 and the number of sources to create – such as 5. This example would create sources "CAM 3:" to "CAM 7."



5.15.5 DESTINATIONS

Click the **Destinations** entry under the Configuration Menu Tree to access the Destination Configuration Screen, Figure 5-26. This screen allows you to define destination groups in the router configuration. Note the Destinations Screen is in the form of a database spreadsheet with data entries for each destination group made on individual rows from left to right. Each destination group is assigned a name, and the physical outputs from the router you wish to associate with the destination group are assigned by switching level. In router terminology, this screen essentially maps each physical destination (output) from the router to its logical output by switching level and destination group nomenclature.



Number	Name	Panel Name	Long Name	VIDEO	AUDIO 1	AUDIO 2
1	OUT1	OUT1	OUT1	1	1	2
2	OUT2	OUT2	OUT2	2	3	4
3	OUT3	OUT3	OUT3	3	5	6
4	OUT4	OUT4	OUT4	4	7	8
5	OUT5	OUT5	OUT5	5	9	10
6	OUT6	OUT6	OUT6	6	11	12
7	OUT7	OUT7	OUT7	7	13	14
8	OUT8	OUT8	OUT8	8	15	16
9	OUT9	OUT9	OUT9	9	17	18
10	OUT10	OUT10	OUT10	10	19	20
11	OUT11	OUT11	OUT11	11	21	22
12	OUT12	OUT12	OUT12	12	23	24
13	OUT13	OUT13	OUT13	13	25	26
14	OUT14	OUT14	OUT14	14	27	28
15	OUT15	OUT15	OUT15	15	29	30
16	OUT16	OUT16	OUT16	16	31	32
17	OUT17	OUT17	OUT17	17	33	34
18	OUT18	OUT18	OUT18	18	35	36
19	OUT19	OUT19	OUT19	19	37	38
20	OUT20	OUT20	OUT20	20	39	40
21	OUT21	OUT21	OUT21	21	41	42
22	OUT22	OUT22	OUT22	22	43	44
23	OUT23	OUT23	OUT23	23	45	46
24	OUT24	OUT24	OUT24	24	47	48
25	OUT25	OUT25	OUT25	25	49	50
26	OUT26	OUT26	OUT26	26	51	52

Figure 5-26 Destinations Configuration Screen

- **Number** - The left-most column is labeled NUMBER, is numerically sequential and automatically filled in as destinations are added. You can not change the entry in the Number column.
- **Name, Panel Name and Long Name** - The next three columns allow you to assign identifying names and/or acronyms to each destination according to the following formats:
  - **Name** – Any combination of alphanumeric characters may be used to identify the destination.
  - **Panel Name** - Any combination of up to 8 alphanumeric characters may be used to identify the destination. The entry made in this column is the text string that will appear in the switching level columns on the Matrix Status display screen.
  - **Long Name** – This column is essentially a free text space where you may enter a name up to 32 characters in length for the destination. This name is only displayed on this configuration screen and may be used to more clearly identify an external device or system.
- **Switching Levels** - To the right side of the three name columns you will see columns corresponding to each system switching level. The numerical entry in the columns on each row assigns the physical output from the router associated with the destination group for that switching level.

  For example, look at entry number 2 in Figure 5-26 labeled OUT2. Notice that the numeric entry for OUT2 in the VIDEO column is a 2. This entry tells the system controller that the video signal associated with the destination group identified as OUT2 will be present at physical output (BNC) number 2 of the Cougar3 video router.

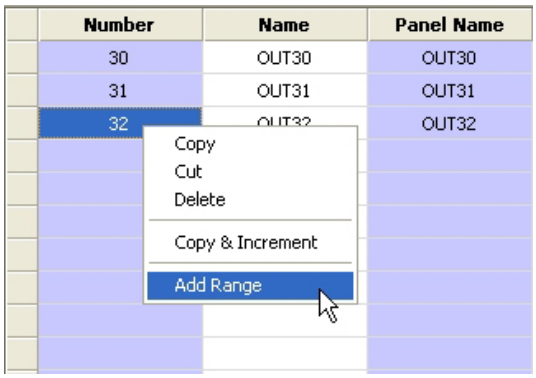
The numeric entries for destination group OUT2 in the columns corresponding to switching level AUDIO 1 and AUDIO 2 are 3 and 4, respectively. In this case, the numeric entries indicate that the output signal associated with switching level AUDIO 1 for destination OUT2 is the signal present at physical output number 3 of the DRS audio router frame, and the signal associated with AUDIO 2 is physically present at output 4 of the audio router.

When you select destination group OUT2 as the output for a selected source group, the physical inputs for all switching levels associated with the source group are switched simultaneously to the physical outputs for all switching levels associated with the destination group.

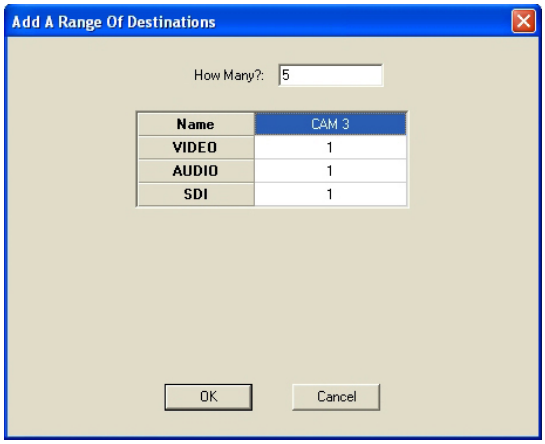
Only one destination entry per switching level is allowed. An entry of 0 (zero) in any of the switching level cells indicates that there is no physical output defined for that switching level for the indicated destination group.

For reference, the Destinations Configuration screen shown in Figure 5-26 displays the destination groups and level output assignments programmed into the controller configuration file supplied with Cattrax.

- **Navigating the Destinations Spreadsheet -** From the configuration screen, you may view all assigned destination groups, add a single destination group or a range of destinations to the configuration, delete a destination or modify parameters of an existing destination group.
  - **Add Destination** – If you wish to add a single destination entry, use the scroll bar and move the display to the empty row beneath the last destination entry in the spreadsheet. Click the cursor in the Name cell on the empty row and begin typing the name of the destination group you wish to add. Press enter, and the next sequential number is automatically assigned to the destination entry and the name you entered is copied in all three of the name entry cells. If you wish to change any of the name entries, such as panel name or long name, click the cursor in the cell you wish to modify and enter the changes, followed by enter. Once the new destination name is entered, you may click the cursor in a switching level cell and enter the physical router output you wish to assign as the destination for that level. You may continue adding single destinations in this manner up to the maximum number allowable for the controller.
  - **Delete Destination –** If you wish to remove a destination group entry from the configuration spreadsheet, move the cursor to the number column of the destination row you wish to delete and right click. Select delete from the right click menu. You will be prompted to verify the action before the destination is removed.
  - **Spreadsheet Right Mouse Click Functions** - When you right-click on any cell in the Destination Configuration Spreadsheet, a pop-up menu appears providing command options for the cell, as shown below. Command items appearing in the pop-up menu will vary depending on which commands are pertinent for data entered in the selected cell. Paragraph 5-14 discusses the function of common commands available from the pop-up menu. Remember that all commands listed and discussed below may or may not appear in the pop-up menu for a specific cell.

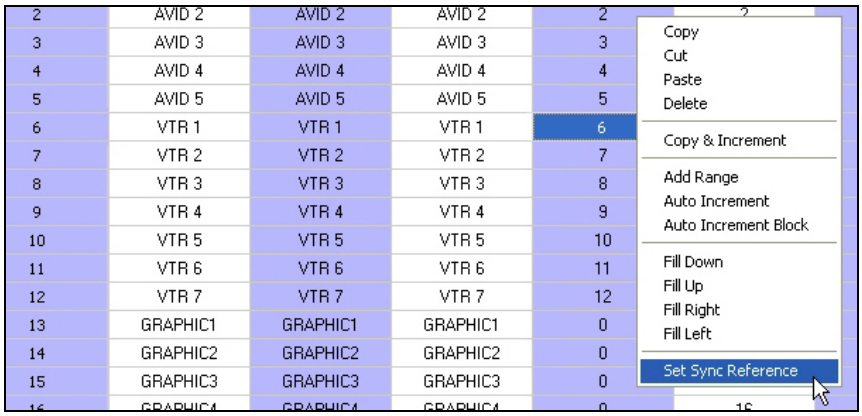


- **Add Range** – Adds a range of destinations using a category index type of naming scheme, as shown by the diagram below. You define the base name, such as "CAM," the starting index - such as 3 and the number of sources to create – such as 5. This example would create sources "CAM 3:" to "CAM 7."



- **Set Sync Reference -** The Cougar3 router accepts up to two sources of external Sync Reference signals for synchronizing switching times and destination output signals. SSC3 allows you to assign either of the sync signals to any single destination or multiple destinations simultaneously.

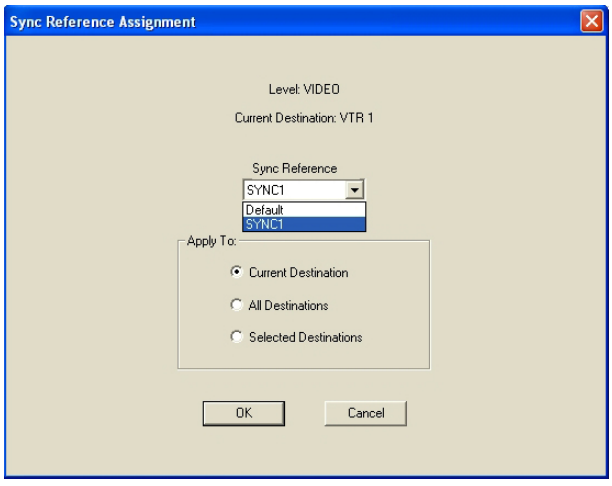
  Destinations are mapped to sync signals using the **Set Sync Reference** command from the right-click command box, as shown below.



Click the cursor in the single cell corresponding to the destination and level, or to selected multiple destination cells you wish to map to a sync reference. Right click and select the "Set Sync Reference" option from the menu. A window, as shown in the diagram below, displays identifying the level and current destination you are configuring at the top. In the middle of the window you assign a sync source to the destination using the pull-down menu boxes.

Three radio buttons allow you to assign the sync source to only the Current Destination, All Destinations or Selected Destinations. Choose the Selected Destinations option when multiple cells have been highlighted.

In the example shown, by selecting "Set Sync Reference" in the spreadsheet cell for VTR 1 on the Video level, the window below appears and shows VTR 1 on the VIDEO level as the current destination. By selecting SYNC1 from the pull-down we have assigned the physical output named VTR 1 on the VIDEO level to synchronize to the reference input named SYNC1 for the current destination only.



5.15.6 SOURCE-DESTINATION (DEST) BLOCKS CONFIGURATION SCREEN

When the Source-Dest Blocks menu entry is selected, the configuration screen, as shown by Figure 5-27, is displayed. From this screen you can selectively block any source group from being switched to a designated destination group. The box labeled Blocks on the left side of the display window contains a listing of destinations with at least one source block assignment; and the box labeled Information on the right side contains the data entry cells used to create new or modify existing source block assignments. Note the Information block has three areas:

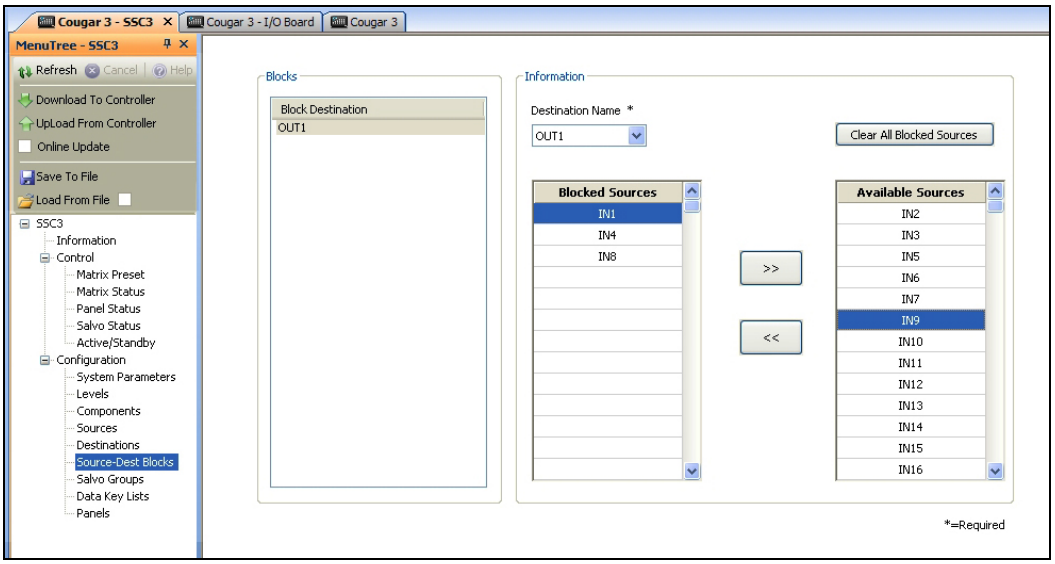
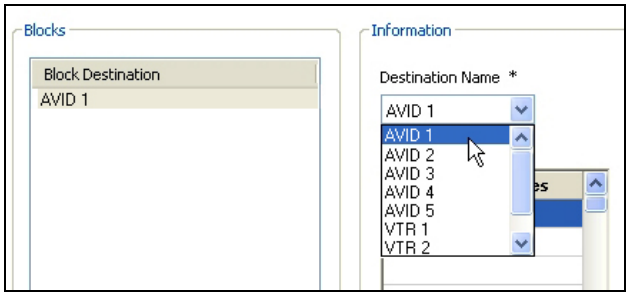


Figure 5-27 Source-Destination Block Display

- **Destination Name** – This is a pull-down listing of all destinations in the configuration, identified by name, as shown in the illustration below. To select a destination to which you wish to apply a source block, open the listing with the arrow icon, and select the destination name from the list.



- **Blocked Sources** – Sources you wish to block from access by the named destination are listed in this column.
- **Available Sources** – This column contains a listing of all the sources which may be switched to the named destination.

In order to assign a source block to a specific destination, locate the desired destination in the Destination Name pull down list and highlight the name.

Initially, all sources are listed in the Available Sources list box. Listed sources are moved between the two list boxes using the two arrows between the boxes. In order to move a source from available to blocked, highlight the source you want to block from access by the destination and click the arrow pointing from the available list to the blocked list. You may list any number of sources you wish to block. In order to unblock a source, highlight and move the source name from the blocked list to the available list using the arrow pointing to the available list.

The Block Destination field contains a listing of all destinations, by name, with at least one blocked source. If you wish to access source block configuration for a specific destination, click on the destination name in the listing. From the configuration screen you may move sources from blocked to available using the arrow keys, or you may clear all source blocks for the destination by clicking the Clear All Blocked Sources key. If all source blocks are removed, the destination name is removed from the Block Destination listing.

5.15.7 SALVO GROUPS CONFIGURATION SCREEN

When the **Salvo Groups** menu entry is selected, the Salvo Configuration Screen, Figure 5-28, is displayed. From this screen you can create and define salvo groups for the router configuration. The box labeled *Salvos* on the left side of the display window contains a listing of all the defined salvo groups in the router configuration, by name; and the box labeled *Information* on the right side contains the data entry cells used to create new or modify existing salvo groups.

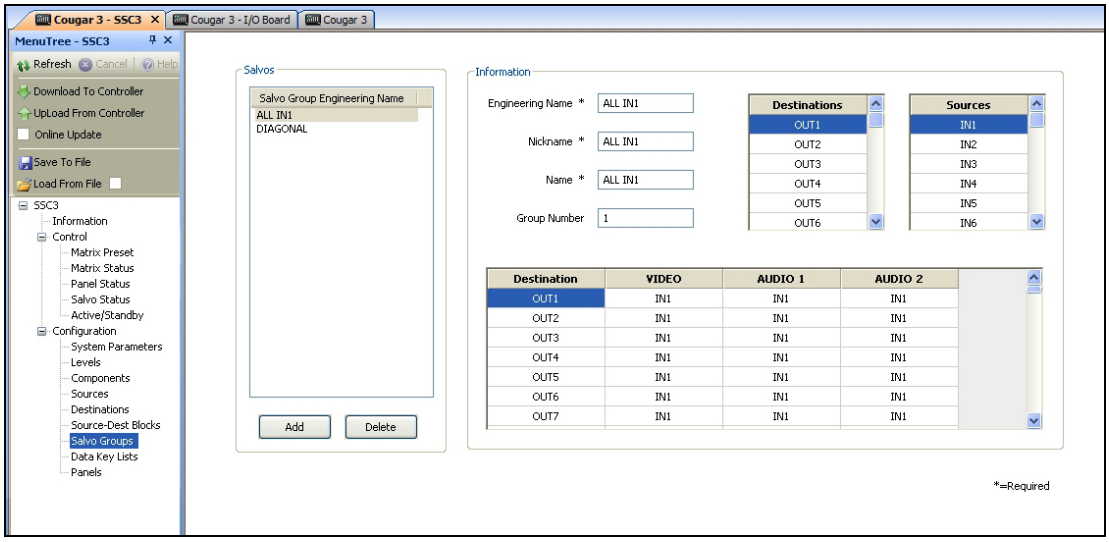


Figure 5-28 Salvo Groups Configuration Screen

The example screen shown in Figure 5-28 illustrates a salvo group named ALL IN1 that, when "fired," switches the source group named IN1 to all defined destination groups. Salvo groups are "fired" from the Salvo Status menu screen (refer to Paragraph 5.12.4) and when executed, all switches defined in the salvo group are simultaneously switched. All switches in a salvo are taken within the same vertical interval.

- **Adding a Salvo Group** – SSC3 allows a maximum of 64 salvo groups. To add a salvo group, click the Add button at the bottom of the Salvos box. A place-holder name is added to the Salvo Engineering Group Name list box and a set-up screen with the name entry fields pre-filled is displayed in the Information box. You may change the name field entries to the descriptive name you would like to use for the salvo group.
- **Deleting a Salvo Group -** To delete a salvo group, locate the name of the group you wish to delete in the Salvo Group Engineering Name list box and click to select it. Click "Delete" at the bottom of the box.
- **Engineering Name, Nickname, Name and Group Number -** Salvo group names may be from one to eight characters in length and constructed using uppercase letters, numbers, and spaces; however, the first character must be a letter. Three fields are provided for naming the salvo group. In the case of the salvo configuration, PESA recommends that you choose a name that is descriptive of the function of the salvo. In this example, the name ALL IN1, signifies a salvo that switches the input signals defined by source group IN1, to the physical outputs associated with every defined destination group. Each of the name fields is discussed below:
  - **Engineering Name** – Up to 8 alphanumeric characters are allowed when assigning the Engineering Name to the salvo group.
  - **Nickname** – Up to 8 alphanumeric characters are allowed when assigning the Nickname to the salvo group.
  - **Name** – This field is essentially a free text space where you may enter a descriptive name, up to 32 characters in length, for the salvo group. This name is only displayed on this configuration screen and may be used to more clearly comment the salvo function.
- **Group Number** – The group number is sequentially assigned by the software and is not user definable.
- **Defining A Salvo Group -** Click the cursor in the top cell of the Destination column. Locate the first destination you wish to assign to the salvo group from the Destinations list at the top of the screen and double-click the entry to copy the destination name into the cell. In like manner, move the cursor to the cells under the various switching level columns and using the entries in the Source list double-click the name of the source you wish to switch to the indicated level of the destination. If desired, you may enter additional destinations and assign sources to them.

5.15.8 DATA KEY LISTS CONFIGURATION SCREEN

The Data Key Lists Configuration Screen, Figure 5-29, allows you to generate one or more named lists which assign specific functions to each configurable key on a PNet Ethernet remote control panel. Multiple panels may share a data key list as long as they are the same panel type. Click the Data Key Lists parent entry in the SSC3 Configuration menu to display the configuration screen.

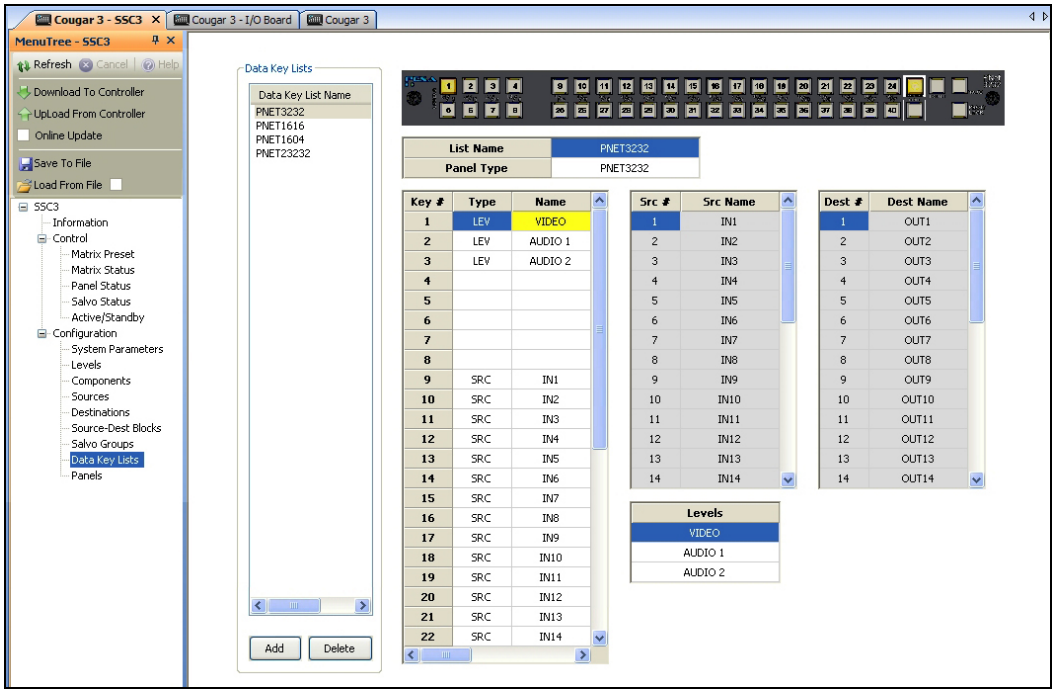
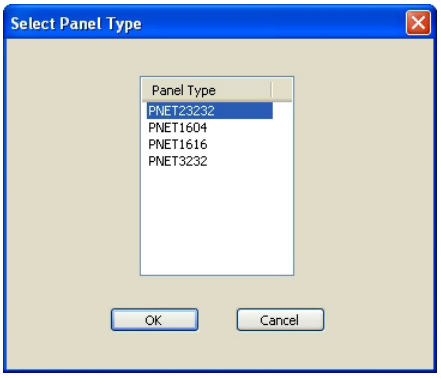


Figure 5-29 Data Key Lists Configuration Screen

- **Adding a Data Key List** –To add a data key list, click the Add button at the bottom of the Data Key Lists box. A place-holder name is added to the list name box and a pop-up box appears with a listing of the panel types you may set up through the system controller, as shown by the diagram below. Select the panel type you are configuring. To make the programming task more straightforward, a visual image of the panel type you have selected is displayed at the top of the configuration screen. The place-holder list name is automatically inserted into the List Name field below the graphic; however, you may change it to the name you would like to use for the data key list.



- **Deleting a Data Key List** - To delete a data key list, locate the name of the list you wish to delete in the Data Key List Name box and click to select it. Click "Delete" at the bottom of the box.
- **Defining List Name and Panel Type -** Note the fields labeled List Name and Panel Type, Figure 5-30. Enter a name for the data key list. PESA recommends you assign a name that is somewhat descriptive of the function of the data key list or the type of panel it controls. In this example we have used the List Name PNET3232 to indicate that this list programs the key functions of a 32 source, 32 destination panel like used as the local control panel for the Cougar3 system. Data Key List names may be structured using uppercase letters, numbers, and spaces. The first character must be a letter.

  The Panel Type field displays the model number of the panel associated with the data key list name.

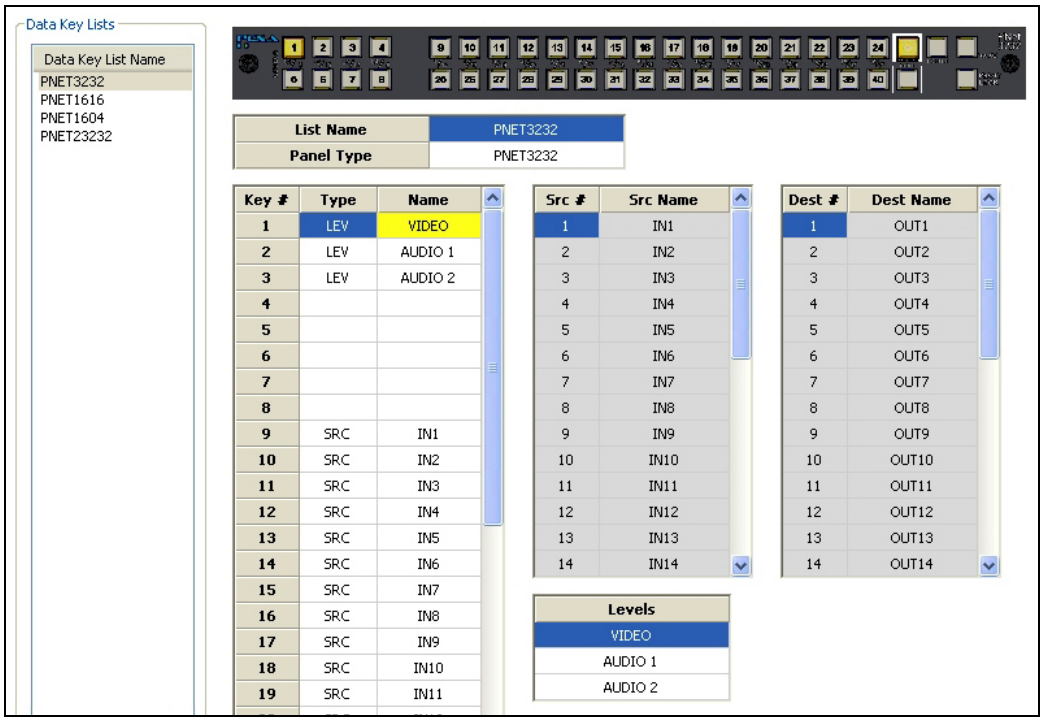


Figure 5-30 Data Key Function Assignment

- **Assigning Data Functions to Configurable Panel Keys -** PNet panel keys are categorized into four distinct sections – Level Keys (always keys 1 thru 8), Source Keys and Destination Keys. The fourth category is the function keys for Take, Preset and Lock/Protect operations; these are fixed on every panel type.

  Below the name and type fields you will see a list field with a column labeled Key # on the left-hand side. The numbers in the key # column correspond to the number assigned to each key of the panel as depicted by the on-screen graphic. You may click in any cell of the key row to highlight the data entry fields.

  On the right-hand side of the screen you will see three scroll lists for Sources, Destinations and Levels. Each Key # entry in the list can be assigned to only one type of function, and when you highlight any key row, only the selection box for the function type that is valid for the selected key will be active, and the remaining two boxes will appear muted with a gray foreground.

  For example, refer to Figure 5-30 and you will see that the row for Key # 1 is highlighted and the entries indicate that this key is assigned to the switching level (LEV) named VIDEO. Notice that with Key# 1 row highlighted, only the selection box for Levels is active and the Source (Src) and Destination (Dest) lists are shown as muted. This indicates that Level is the only valid function for the key, and that neither a source nor destination assignment may be made to it.

  For any key you wish to assign, highlight the key # row. You can do this either by clicking in the cell or by mouse clicking on button number on the graphic image. With the row highlighted, select the entry from the active scroll menu box you wish to associate with the key and double click the entry. The function type and name assigned to the key are automatically entered in the list fields.

5.15.9 PANELS CONFIGURATION SCREEN

The Panels Configuration Screen, Figure 5-31, allows you to add PNet control panels to the system, program the functionality of each panel, and review the configuration of existing panels. Clicking on the Panels parent entry in the SSC3 Configuration menu brings up the panels configuration screen.

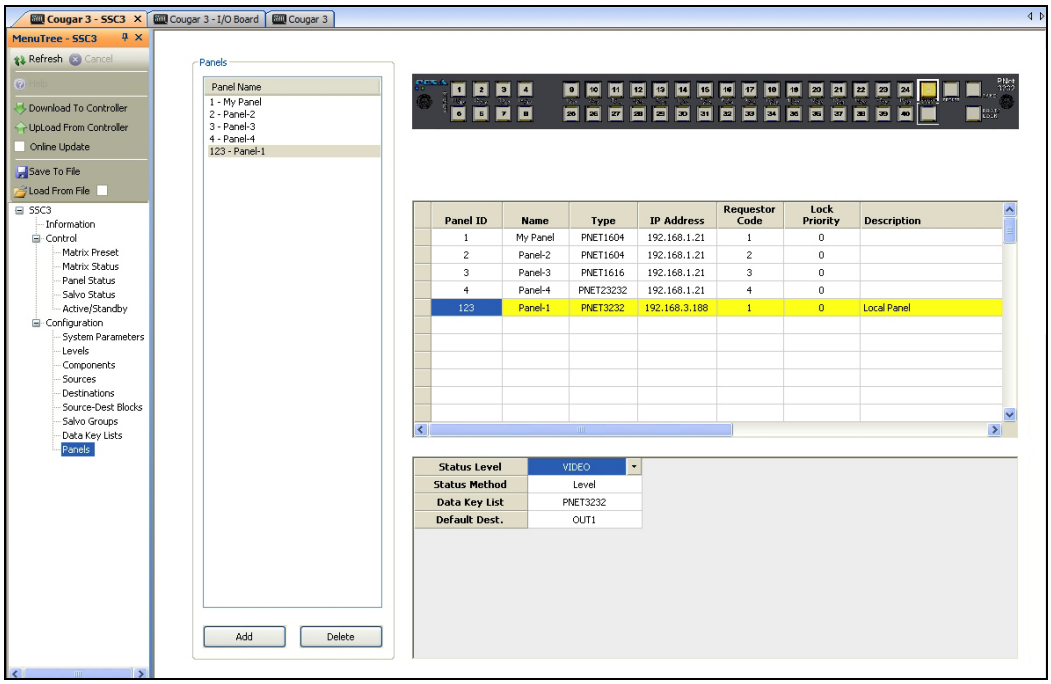


Figure 5-31 Panels Configuration Screen

- **Adding a Control Panel** –To add a PNet control panel, click the Add button at the bottom of the Panel Name list box. A place-holder name is added to the list name box; however, it may be changed through the configuration set-up entries. Choosing the Add function also creates a data entry row in the panel configuration box for you to enter set-up data for the new panel.
- **Deleting a Control Panel -** To delete a control panel, locate the name of the panel you wish to delete in the Panel Name box and click to select it. Click “Delete” at the bottom of the box.
- **Defining a Control Panel -** In the middle of this screen you will see a spreadsheet format table, Figure 5-32, with an entry for each PNet panel in the system. Anytime a panel entry in the listing window is highlighted, a graphic image of that panel type is displayed at the top of the configuration screen. If you are adding a new panel to the listing, the graphic image of the panel is displayed once the panel type parameter is selected. Displaying a graphic image allows you to verify the panel type as well as provide a visual cue of the features and functions of the specific panel.

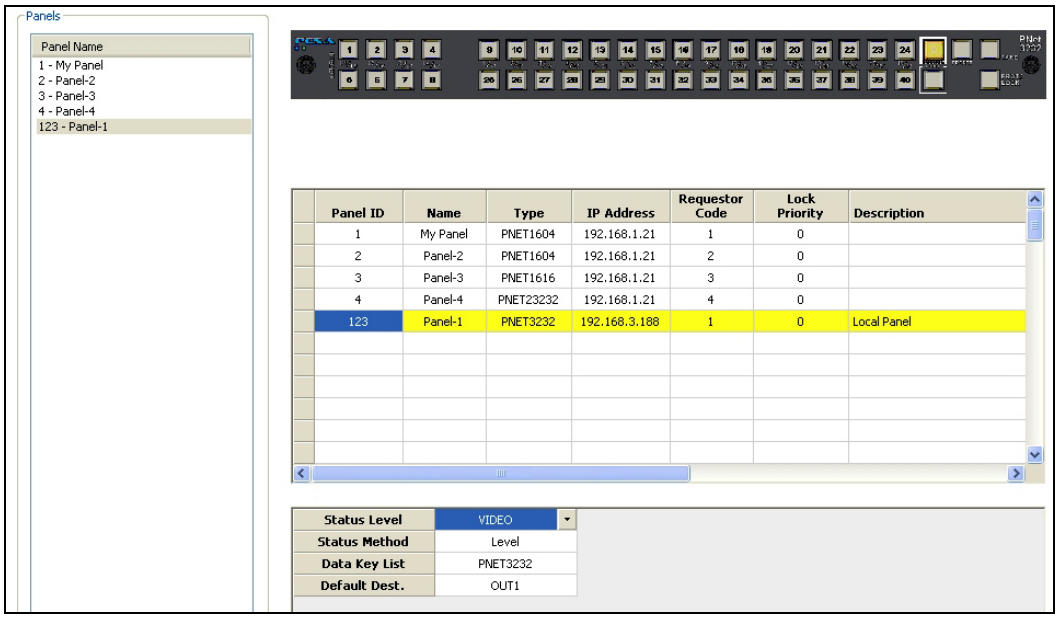


Figure 5-32 Adding a Panel Configuration

- **Enter Panel Configuration Data**
  - **Panel ID** – Enter the hardware ID number assigned to the panel in the Panel ID column. This is a unique number assigned to each remote control panel in the system as set by rotary switches on the rear of each PNet control panel.
  - **Name** – This entry allows you to assign a name to each panel. If you are adding a new panel, the place-holder name entered by Cattrax will initially appear in this column. You may change the name to a more descriptive panel name if you wish. A panel name may consist of a mix of alphanumeric characters. This is the text string displayed in other configuration and status screens to identify the panel.
  - **Type** – This column allows you to select the panel type using a pull-down menu of all PESA PNet panel model numbers. Click in the Type cell and open the pull-down menu. Select the model number of the panel you are installing and click the entry. The model number appears in the cell and a graphic image of the panel is displayed on the configuration screen.
  - **IP Address** – Each PNet panel must be a assigned a valid IP address that is compatible with the facility network. In most cases, IP addresses are issued by the facility network administrator. Enter the IP address of the panel in this column.
  - **Destination Protect and Lock Functions**

    SSC3 provides two similar methods, *Protect* and *Lock*, by which a user can prevent or control another user's ability to make switches on particular, defined destinations (output signals) by assigning codes and priorities to control panels and control ports in the system. Every remote control panel in the system is assigned a code number, called its Requestor Code; and is also assigned a numerical Lock Priority value as part of the Panels Configuration process.

A Protect function may be applied to a destination through any remote control panel with lock/protect capability. Once protect is applied, the protected destination can not be switched to a different source by any panel in the system, unless the panel attempting to switch the protected output meets one of these three criteria:

- The panel originating the protect function can switch the destination.
- Any panel configured with the same requestor code and an equal lock priority.
- Any panel with a higher lock priority.

A Lock function is very similar to protect, and may be applied to a destination through a remote control panel with lock/protect capability. Once a lock is applied, the locked destination can not be switched to a different source by any panel in the system, until the lock is cleared by a panel with the authority to clear it, by meeting one of these criteria:

- The panel originating the lock function can unlock the destination.
- Any panel with a higher lock priority.

The key difference between protect and lock is that when a destination is protected, any panel meeting the criteria to override the protect function operates totally impervious to the protect function and may make switches on the destination just as it would to any other unprotected destination. When a destination is locked, however, no panel may make a switch on the destination until the lock has been cleared from the destination.

- **Requestor Code and Lock Priority Values**

  When panels are configured through Cattrax, each panel in the system is assigned a unique address that identifies that panel, and only that panel, on the RCP bus. Each panel with lock/protect capability is also assigned a requestor code value between 1 and 65535, and a lock priority value between 0 and 1023.

  Typically, and by default, the requestor code is assigned the same value as the panel address. However, there may be certain circumstances of an installation that require an exception to this numbering scheme. If you wish to allow two separate panels identical control over a protected destination, you may assign the same requestor code and lock priority to each panel.

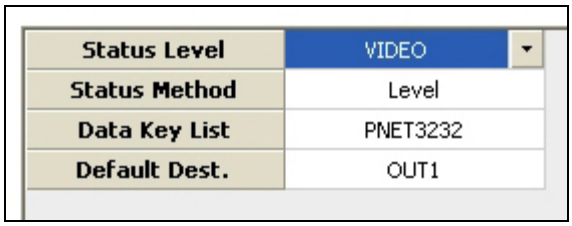
  Lock priority is a numerical value that determines the rights of a panel to place or remove a lock or override a protect function on a destination. Panels with higher lock priority values have greater control over lock/protect functions. Any panel assigned a lock priority of zero (0) has the highest priority.

  Let’s look at an example. Suppose you assign a panel a requestor code of 201 and a lock priority of 2, and assume we issue a protect function to a destination through this panel. Since it is the originating panel, it may continue to switch the destination, but other panels in the system may not switch that destination unless the panel attempting to make the switch also has a requestor code of 201 and lock priority of 2, or unless it has a lock priority of 1 or 0, regardless of its requestor code.

  Now suppose this same panel issues a lock function to a destination. The lock could only be cleared by the originating panel or by a panel with a higher lock priority. A panel with a lock priority of zero (0) can override any protect function or clear any lock function.

- **Description** –The Description column is a free text field where you can enter a description of the panel and its function or any other data you wish to enter concerning this panel.

- **Enter Panel Parameters**
  - Once the panel information is entered, enter the specific operational parameters for the panel in the box located beneath the panel, as shown in the illustration below. Each cell in this table uses a pull-down menu to display the options available. In order to enter or change any selection in the configuration, click in the cell containing the parameter you want to change and click on the pull-down arrow. From the pull-down menu, click on the selection you want to enter for the panel configuration. This table contains the following entries:



  - **Status Level** – Status Level is the default switching level displayed or controlled by the panel. To assign or edit the Status Level click in the cell and change the level selection from the pull-down menu.
  - **Status Method** – The pull-down menu in this cell should always be set to *Level* in the Cougar3 system application.
  - **Data Key List** – This entry determines the function of the configurable panel keys by assigning a Data Key List to the panel. The desired data key list is chosen from the pull-down menu associated with the cell. Only data key lists which are valid for the panel type are included in the pull-down menu.
  - **Default Destination** – This entry assigns the default destination to the panel. In operation, the default destination determines which destination is displayed and controlled on initial panel power-up.

5.16 OPERATION WITH PESA SUPPLIED CONTROLLER CONFIGURATION

Cattrax is equipped with three controller configuration files that allow you to immediately configure the Cougar3 router, and DRS-SA router if the system is equipped with audio routing capability, for basic signal switching operation without the need to generate a custom configuration file for your installation. Loading one of these files into the SSC3 controller allows the router to be fully functional immediately upon installation with no initial operator input or configuration required.

Load one of the supplied configuration files as follows:

- Click the *SSC3* header in the Devices View Window.
- Click the *Load From File* command in the Controller File Command area of the Menu Tree.
- A pop-up asks you if you wish to load configuration from a local file, click the ***Yes*** button to continue.

- Double click the Samples folder in the Config File listing, and select the proper file for your system from the listing:
  - Cougar32x.cfg – for video only system with no DRS-SA audio router.
  - Cougar32x_64xAudio.cfg – for video/audio systems with a single DRS-SA frame providing 64 audio input and 64 audio output channels, for 32x32 stereo audio routing capability.
  - Cougar32x_128xAudio.cfg – for video/audio systems with separate DRS-SA frames for input and output signals, providing 128 input and 128 output signals, configured as 32 inputs and 32 outputs with four audio switching levels per channel.
- A check box appears in the box next to the Load From File entry to indicate that the configuration data currently displayed is taken from a stored file and is not necessarily indicative of the configuration currently loaded into the system controller.
- If this is an initial installation, or if you are *absolutely* sure you want to replace the current configuration file in the system controller with the currently loaded file, click the *Download To Controller* button. If there is a file currently in the controller memory, this action WILL replace that file.

With any of the supplied configuration files loaded and active in the system controller, the Cougar3 video router is configured for the following operational characteristics:

- **Video** – 32 inputs and 32 outputs on a single switching level named VIDEO, accessed on the local control panel as Level 1.
- **Sources** - 32 source groups, named IN1 through IN32, each with a physical signal input port for each switching level.
- **Destinations** – 32 destination groups, named OUT1 through OUT32, each with a physical signal output port for each switching level.
- **Source-Dest Blocks** - All sources are available to all destinations.
- **Salvo Groups** - Two pre-defined groups: the first selects input IN1 as the source group for every destination, and the second creates a diagonal where each numerical source is routed to its corresponding numerical destination, e.g., IN1 to OUT1, IN2 to OUT2, etc. Salvos can only be "fired" from the system host PC through the Salvo Status menu screen of the Cattrax software control application.
- **Panels** – A panel configuration is pre-written for every PNet panel type with the following presets:
  - **Switching Level Buttons**

    Panel Button L1 – Switching Level VIDEO
  - **Source Buttons**

    Numbered Buttons 1 thru 32 access Source Groups IN1 thru IN32, respectively.
  - **Destination Buttons**

    Numbered Buttons 1 thru 32 access Destination Groups OUT1 thru OUT32, respectively.

- **Status Level** – Default *Status Level* is switching level VIDEO.
- **Default Destination** – OUT1 is the default destination for the panel configuration.

5.17 INCREMENTAL ADD/EDIT (ON-LINE UPDATE)

Using commands available through Cougar3's On-Line Update feature, you can make limited changes to the controller configuration on-the-fly, without having to upload, modify and re-load the configuration file. Changes you make to the configuration using this feature are written into on-board system controller memory, and become a permanent part of the configuration until modified or until the configuration file is re-loaded.

5.17.1 USING ONLINE UPDATE MODE

In order to use Online Update, the configuration file active in Cattrax must initially be the same file as currently loaded into the SSC3 controller. You may ensure they are the same by uploading the current file from the controller before selecting online update mode. Anytime the host PC and the SSC3 controller are connected and communicating, and the currently active controller file is loaded into Cattrax, you may select the **Online Update** mode by clicking the box in the Controller File Commands menu, as shown by Figure 5-33. When Online Update is active, the Online Update Bar window is displayed beneath the main display window, as shown by Figure 5-34.

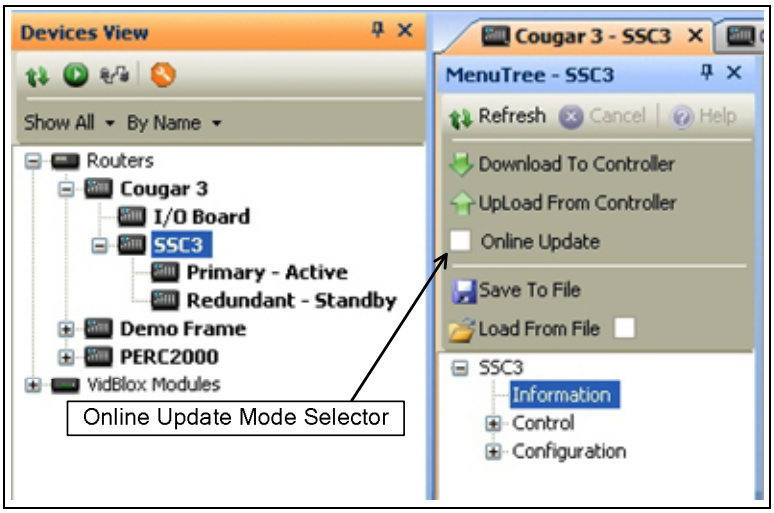


Figure 5-33 Update Mode Selector

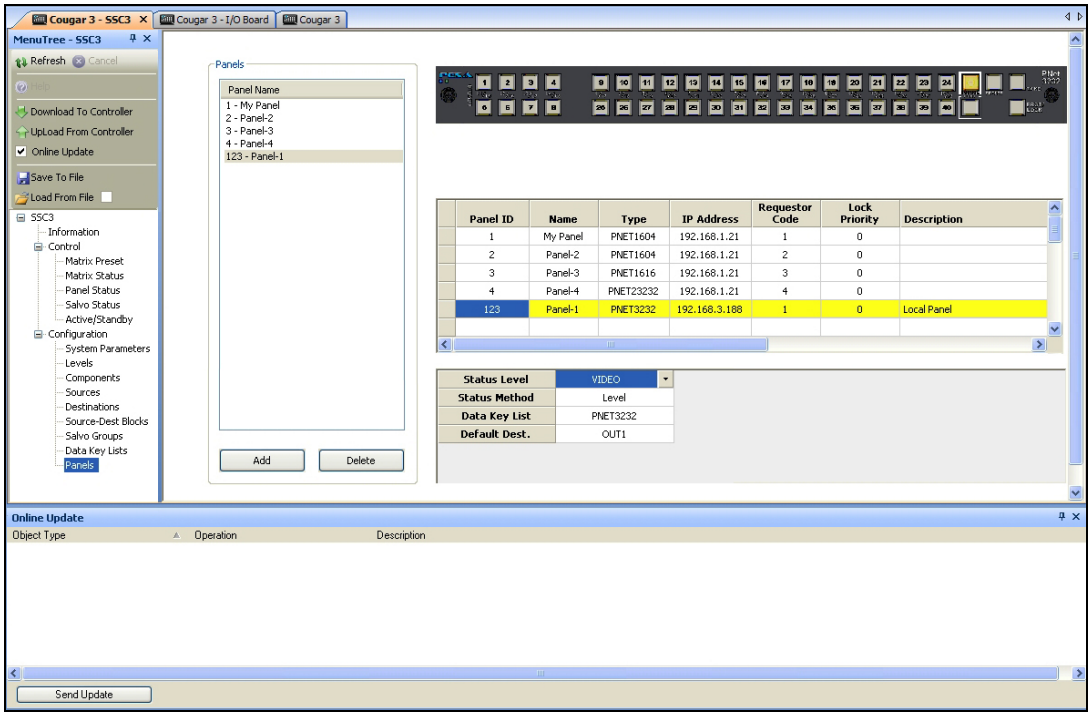


Figure 5-34 Online Update Display Window

Through the online update function, a limited set of configuration commands are available as shown by Table 5-1. As you make additions, modifications or deletions to available configuration parameters, each change you make is listed in the online update bar display area, as shown in Figure 5-35

.

Table 5-1 Available Online Update Commands

Configuration Parameter	Add Data	Delete Data	Modify Data
Configuration Information	N/A	N/A	Yes
Sources	Yes	No	Yes
Destinations	Yes	No	Yes
Source-Destination Blocks	Yes	Yes	N/A
Salvo Groups	No	No	No
Data Key Lists	Yes	No	Yes
Panels	Yes	No	Yes

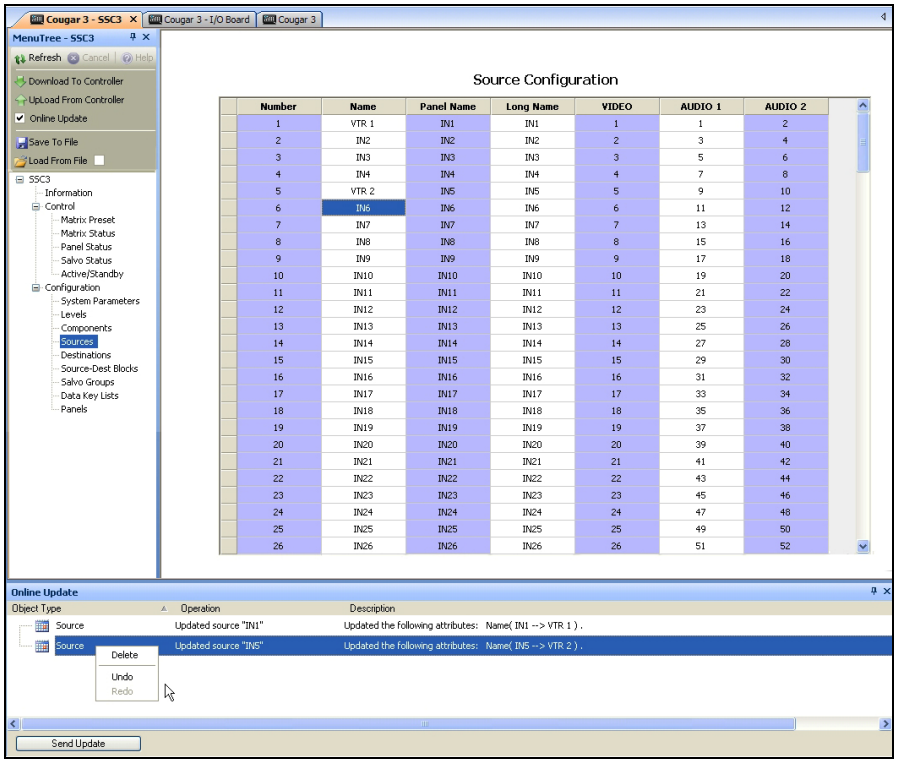


FIGURE 5-35 ONLINE UPDATE DATA ENTRY

In the example shown, we have changed the entry in the Name column for source group number 1 from IN1 to VTR 1, and the entry for source group number 5 from IN5 to VTR 2. These changes appear in the online update display area, as well as the main display grid. Changes you make do NOT become active in the controller until you click the **Send Update** button at the bottom of the update display area.

Highlighting any line in the update display listing selects that line and allows you to use the right-click menu to edit the line using the following options, as shown in Figure 5-35:

- **Delete** – Selecting Delete will permanently remove the item from the update listing. You will be prompted prior to deletion of the item.
- **Undo** – Selecting Undo will immediately remove the item from the listing, however, the Undo command is not immediately permanent, and the item can be retrieved using the Redo command.
- **Redo** – Selecting Redo restores items removed with the Undo command. To use the Redo function, move the cursor into the update display window and right-click. Click on the Redo function and the last item deleted will be restored. You may continue to click the Redo selection to restore previously removed items in the order they were removed using the Undo command.

To exit Online Update mode or to abort configuration modifications you have entered, remove the check from the Online Update box in the Controller File Commands menu, as shown by Figure 5-33. If modifications will be discarded by the action, you will be prompted prior to online update mode being closed.

5.18 OFFLINE CONFIGURATION

Cattrax' Offline Configuration mode allows you to create or modify a controller configuration file whether or not an active system controller is selected in the Devices View listing. To use offline configuration it is not necessary that a system controller be found on the Ethernet communication network; however, the upload from or download to controller functions will not be available. Offline configuration is often used when creating an entirely new configuration file for the router.

Access Offline Configuration mode by clicking either icon as shown by Figure 5-36:

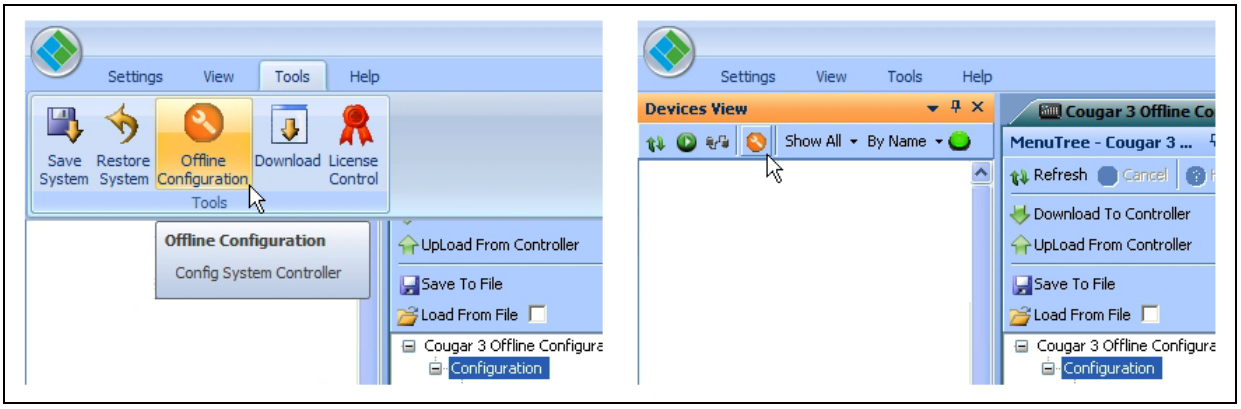


Figure 5-36 Offline Configuration Icon Locations

You will be prompted to select the type of controller device you wish to configure using the pull-down box as shown on the left in Figure 5-37. Once the selection is made, the initial screen is opened, as shown on the right side of the figure.

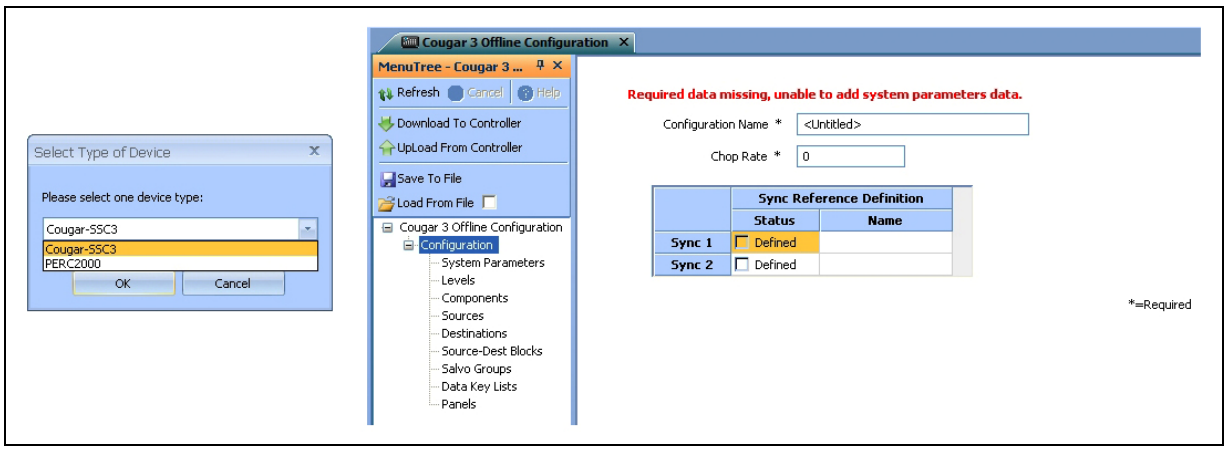


Figure 5-37 Initial Offline Configuration Screen

When this screen is first accessed, there is no configuration file data loaded into Cattrax program memory, and you have three options from which to select the type of configuration operation you wish to perform:

1. Treat the screens as a "clean slate" and generate a new configuration file by entering hardware and router configuration data for download to the controller, or save the "new" file to a storage media such as a hard drive of the host PC or other memory device.
2. Load an existing configuration file from a previously saved and stored file using the *Load From File* command.
3. Upload the currently active configuration file stored in system controller flash memory, if there is an active system controller on the Ethernet, using the *Upload From Controller* command. When you select the upload command a pull-down box appears prompting you to select the system controller you wish to upload from.

Options 2 and 3 allow you to view or modify an existing configuration file.

All menu and command screens discussed in Paragraph 5-15 are available with offline configuration.

As configuration data is entered or modified through Cattrax menu commands, it is stored on the host PC – and only on the host PC. Changes entered do not get saved to a file, written to the system controller, or become active, until the operator issues a command through Cattrax to either save or download the configuration data. Once a configuration file is created or modified, use the *Download To Controller* command in the SSC3 File Commands menu to immediately download the file to the system controller hardware and activate the configuration changes.

Chapter 6 Maintenance and Repair

6.1 PERIODIC MAINTENANCE

No periodic maintenance is required.

6.2 PESA CUSTOMER SERVICE

If you are experiencing any difficulty with your Cougar3 router system, please contact PESA's Customer Service Department. Skilled technicians are available to assist you 24 hours a day, every day of the year.

6.3 REPAIR

Before attempting to repair this equipment, please consult your warranty documents and PESA's Customer Service Department. Unauthorized repairs may void your warranty.

	**PC boards in this equipment contain Surface Mount Technology (SMT) components. Special tools and skills are required to replace these components without causing damage to adjacent areas.** **Failure to consult with Customer Service before attempting to repair these boards may void your warranty.**

6.4 REPLACEMENT PARTS

Only parts of the highest quality are used in the design and manufacture of this equipment. If the inherent stability and reliability are to be maintained, replacement parts must be of the same high quality. Please consult our Customer Service Department before installing any parts not purchased from PESA.

6.5 FACTORY SERVICE

Before returning any equipment to PESA for service or repair, please contact our Customer Service Department for an RMA number.