CHEETAH VIEWPORT SOFTWARE MANUAL

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Revision History:

10-14-2003 – Initial Revision

Introduction

The Cheetah ViewPort is a Windows based application that provides a detailed insight into the operation of your Cheetah matrix frame. The Cheetah ViewPort provides a detailing of what cards are loaded into the Cheetah frame, how those cards are operating, and allows you to take switches and perform diagnostic procedures on the matrix. It provides an in-depth and complete picture as to what is occurring on your Cheetah matrix frame.

Installation

The Cheetah ViewPort is a Microsoft Windows based application. You can install it by running the Cheetah ViewPort installation program. The installation program leads you through the installation asking you where the application should be installed and what start menu heading to place the program shortcuts.

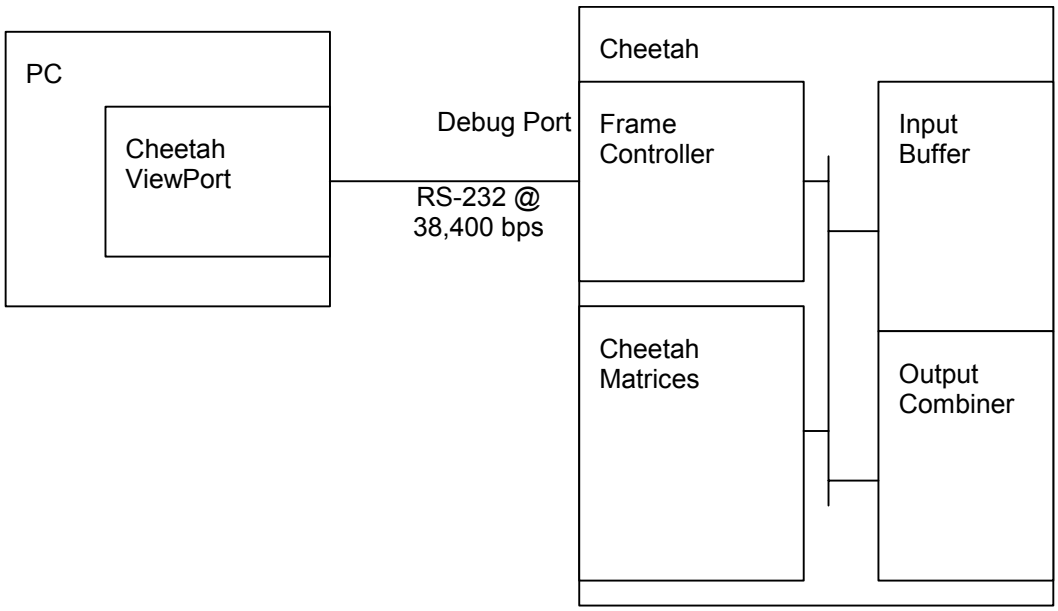
The Cheetah ViewPort runs on Windows XP, Windows 2000, and Windows 98. It requires at least 10 MB of hard drive space and should run on a minimum of a 400 MHz PC with 64 MB of RAM.

Connection

The Cheetah ViewPort can connect to the Cheetah matrix frame in one of two manners: RS-232 serial link or a 10/100BaseT network.

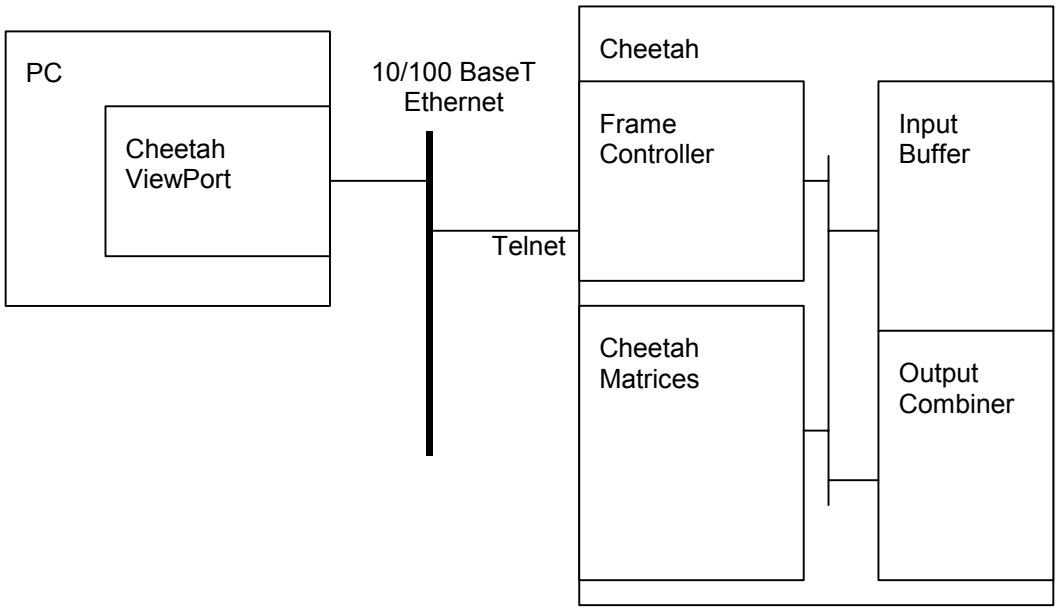
RS-232 Connection

The serial connection is made through the debug port on the front of the Cheetah frame controller. It connects via a NULL Modem RS-232 cable.



Ethernet Connection

The network connection uses the Telnet port on the Cheetah frame controller Ethernet interface. The network interface with has to be enabled on the Cheetah along with its Telnet interface. (See The Cheetah manual for more information.)



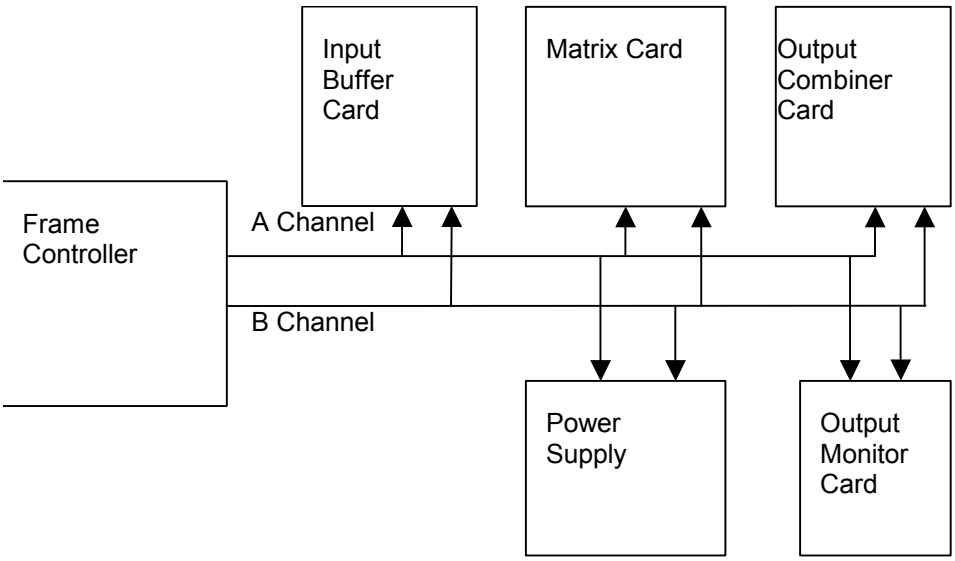
Redundant Frame Controller Issues

The Cheetah frame is equipped with redundant frame controllers. The Cheetah ViewPort communicates with only one of the frame controllers. To get valid status about all the cards in the system, the Cheetah ViewPort must communicate with the PMFC that is currently active.

Internal Frame Communications

The frame controllers are the brains of the Cheetah matrix. They control each card in the system via an internal serial communications bus.

The actual bus consists of two independent channels, the “A” leg and the “B” leg. All commands are sent over both legs of the internal bus. The receiving card verifies the incoming messages and acts on them accordingly. CRC’s and message length counters are used to verify the integrity of the data on all internal messages.



The frame controller sends crosspoint and configuration commands to each card in the system. It polls each card for operational status. This status is used to set alarm parameters as well as be reported back through the Cheetah ViewPort.

Menu Commands

There are a number of menu commands in the Cheetah ViewPort.

FILE

Exit

This exits the application.

Settings

Connection

This allows you to select the serial port or network connection used to communicate to the frame controller on the Cheetah frame.

Reinitialize

This forces the application to re-query the Cheetah frame to find out its card inventory and to refresh all card status.

Output Reclock Rates

This allows the user to manually force the output reclock rates for a set of outputs on the Cheetah matrix.

HD to SD Converter Options

This sets the HD->SD options for a set of outputs that are equipped with the HD->SD option card.

Window

Lists all the pages currently opened in the application.

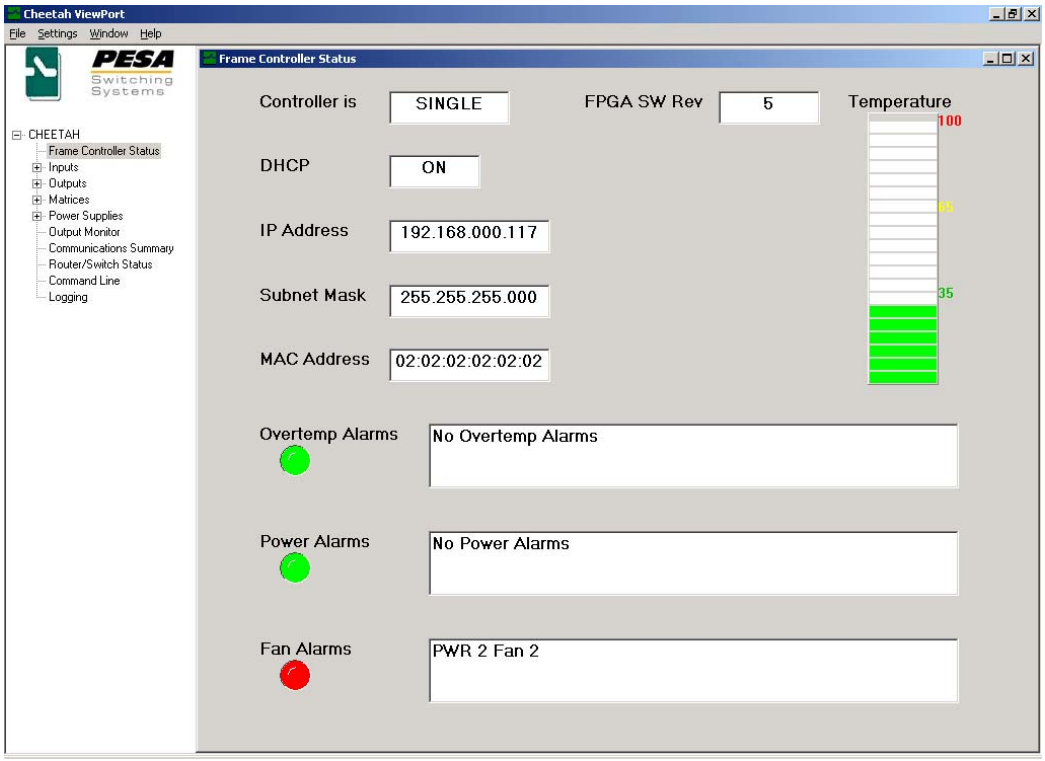
Help

About

Shows the current revision of the Cheetah ViewPort application.

Application Layout

The Cheetah ViewPort is laid out using an explorer-like interface. The left side panel presents a tree structure that the user can expand and collapse to access the different information available. The Cheetah ViewPort has different pages to display the information returned from the frame controller. These pages correspond to entries in the tree on the left hand side of the Cheetah ViewPort display.



Frame Controller Card

The frame controller status page shows data specific to the frame controller operation.

Active Status

The frame controller page indicates whether the frame controller is:

- **Single** – The frame controller is running alone. There is no other frame controller detected in the matrix frame.
- **Active** – The frame controller is in a redundant configuration and has control over all cards in the system.
- **Standby**– The frame controller is in a redundant configuration and is subordinate to the other card.

If the frame controller is in standby mode, the information it reports from the other cards in the system is not valid. A frame controller must be in “single” or “active” mode to report back accurate card status.

Network Addressing

Frame controller shows the configuration of its TCP/IP over Ethernet interface.

DHCP

This indicates whether the frame controller’s IP address is resolved via DHCP or via a fixed IP address.

IP Address

This is IP address that the frame controller responds to.

Subnet Mask

Identifies the subnet on which the frame controller resides. This is used to facilitate piecing together small networks into a larger integrated network.

MAC Address

MAC (Media Access Control) address is used to uniquely identify the frame controller on the Ethernet network.

Alarms

The frame controller determines a number of alarm conditions from the data it reads back from the different boards in the system.

Over Temperature

This alarm is thrown when a card or power supply in the system reports back that its temperature is in excess of 70˚ Celsius.

When this alarm is active, it reports the cards that are reporting temperature alarms.

Power

Power alarms are set when the frame controller detects a problem with the 28V bus rail that is distributed among the matrix backplanes.

Fan

The fan alarms are activated when background testing determines that a power supply is no longer capable of driving a fan. The frame controller tests each power supply’s fan voltage and current and uses this information to set an alarm.

When this alarm is active, the Cheetah ViewPort lists the power supply and the associated fan that fails.

Board Parameters

In addition to the system wide data, the Cheetah ViewPort reports a number of board specific parameters about the frame controller.

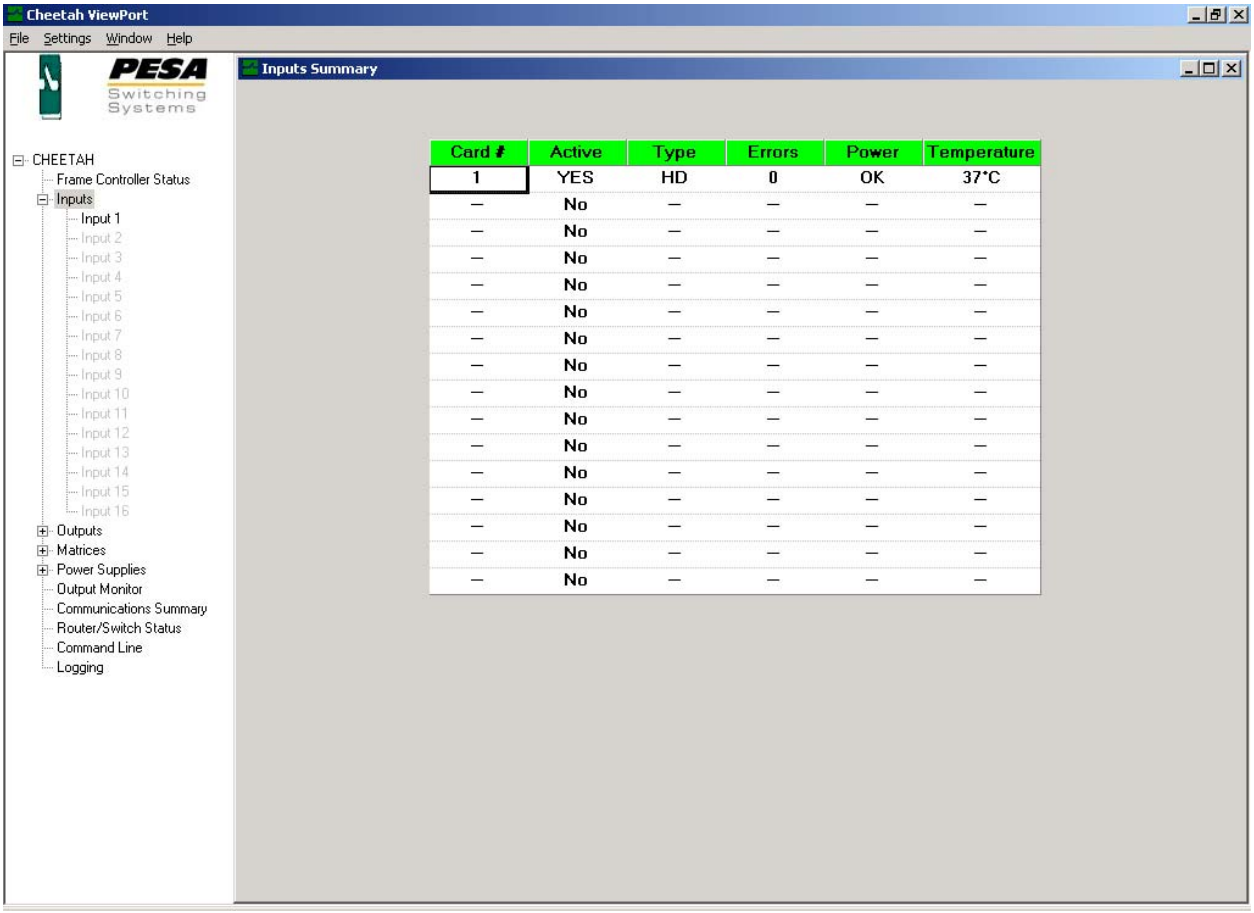
Temperature

This is the temperature in Celsius detected by the temperature sensor on the card.

FPGA SW Rev

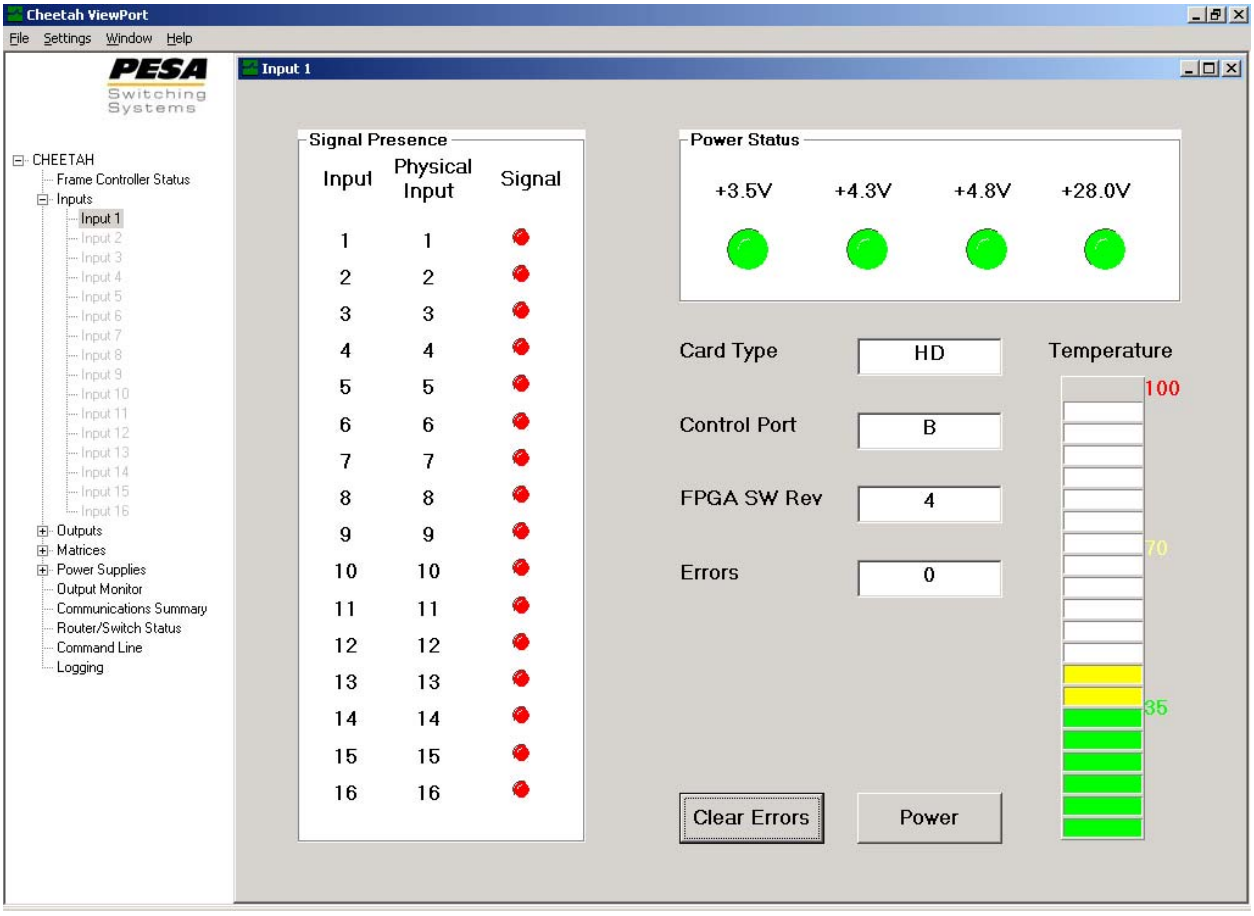
This is the numeric version of the revision of the software resident on the FPGA of the frame controller. This FPGA is used to master the internal communications bus as well as detect vertical trigger reference.

Input Buffer Card Summary



The Input Buffer Card Summary page provides a synopsis of the information on all the input cards presently reporting back in the system. These same parameters are available on each individual input buffer card page.

Input Buffer Cards



The input buffer card page shows the type of input card as well as the status of each individual input.

Input Data

The page shows the input number relative to the card as well as the input from a system perspective.

For each input, the following can be found:

Signal Presence Detection

Each input on the input card has the ability to detect that a signal is present. This LED shows green when it detects an input signal is present.

Board Parameters

In addition to the individual input data, the Cheetah ViewPort reports a number of board specific parameters about the each input buffer card.

Power Status

This provides LED indicators indicating whether the power rails on the card are in proper working order.

Temperature

This is the temperature in Celsius detected by the temperature sensor on the card.

Control Port

This is the leg of the internal control port that the card is using to listen to commands.

FPGA SW Rev

This is the numeric version of the revision of the software resident on the FPGA of the input card. This software is responsible for returning all the card status back to the frame controller.

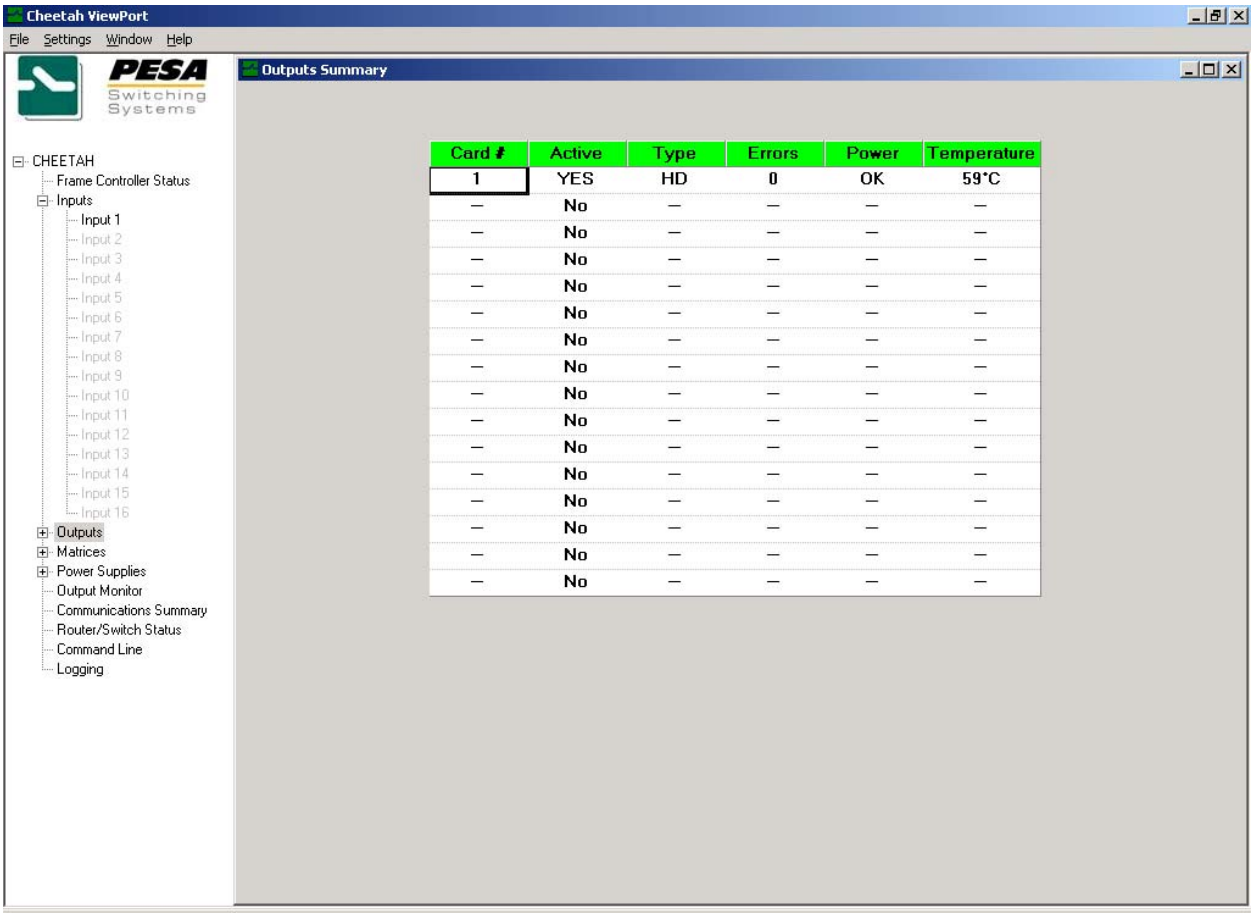
Errors

This indicates the number of errors detected on the internal control bus. Clicking the “Clear Errors” button can clear this number.

Power Button

The card’s internal power supply may be shutdown via a software control. Clicking the “Power” button turns the card on and off.

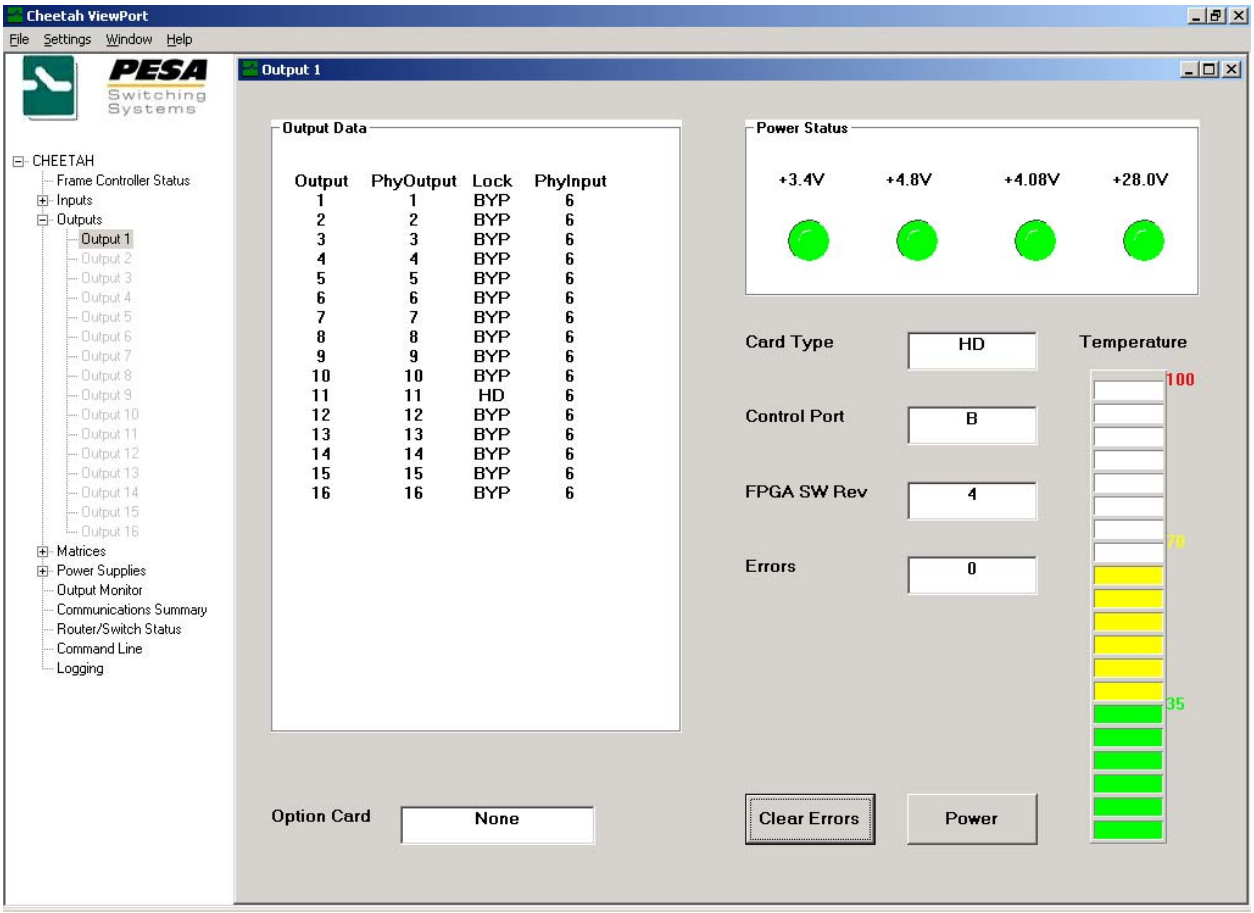
Output Combiner Summary



The output summary page provides a synopsis of the information on all the output cards presently reporting back in the system. These same parameters are available on each individual output page.

Output Combiner Cards

The Output Combiner Card pages show information on each output combiners card state and on each individual output in the matrix.



Card Type

The page shows the output combiner's card type. These include Digital Standard Definition, HD Multi-rate and Analog.

Individual Output Data

Each output on the combiner card has a number of parameters that are reported on this page. The Cheetah ViewPort display shows the output relative to the card as well as relative to the whole frame.

Reclocking Rate

For digital output cards, the reclocking rate for each output is also reported. Included is an indication of whether the reclocking rate was manually set or was detected via the card's auto-reclocking circuit.

Physical Input

This is the input connected to the associated output.

Option Cards

The Cheetah matrix allows for option cards to be attached to the output combiner cards to allow for a format conversion of each output signal.

Present option cards are:

Second Output

Provides a second output to go along with the primary output resident on the combiner card.

Fiber Output

Translates digital video signal to a Fiber output.

SD Video to Analog Converter

Converts standard definition video to a composite analog signal.

HD to SD Converter

Converts HD Video signals to SD signals

Clicking the converter options button can access the parameters for the HD to SD card.

The settings for the HD to SD cards are:

- 4:3 versus 16:9 aspect ratio
- Turning the graticule on to show the safe area of the video
- Allow for side cropping
- Enable the focus mode

These parameters can be set on an output-by-output basis.

Output Combiner Board Parameters

In addition to the output data, the Cheetah ViewPort reports a number of board specific parameters about the each output combiner card.

Power Status

This provides LED indicators indicating whether the power rails on the card are in proper working order.

Temperature

This is the temperature in Celsius detected by the temperature sensor on the card.

Control Port

This is the preferred leg of the internal control bus used for interpreting commands.

FPGA SW Rev

This is the numeric version of the revision of the software resident on the FPGA on the output combiner card. The FPGA is responsible for returning all the card status back to the frame controller.

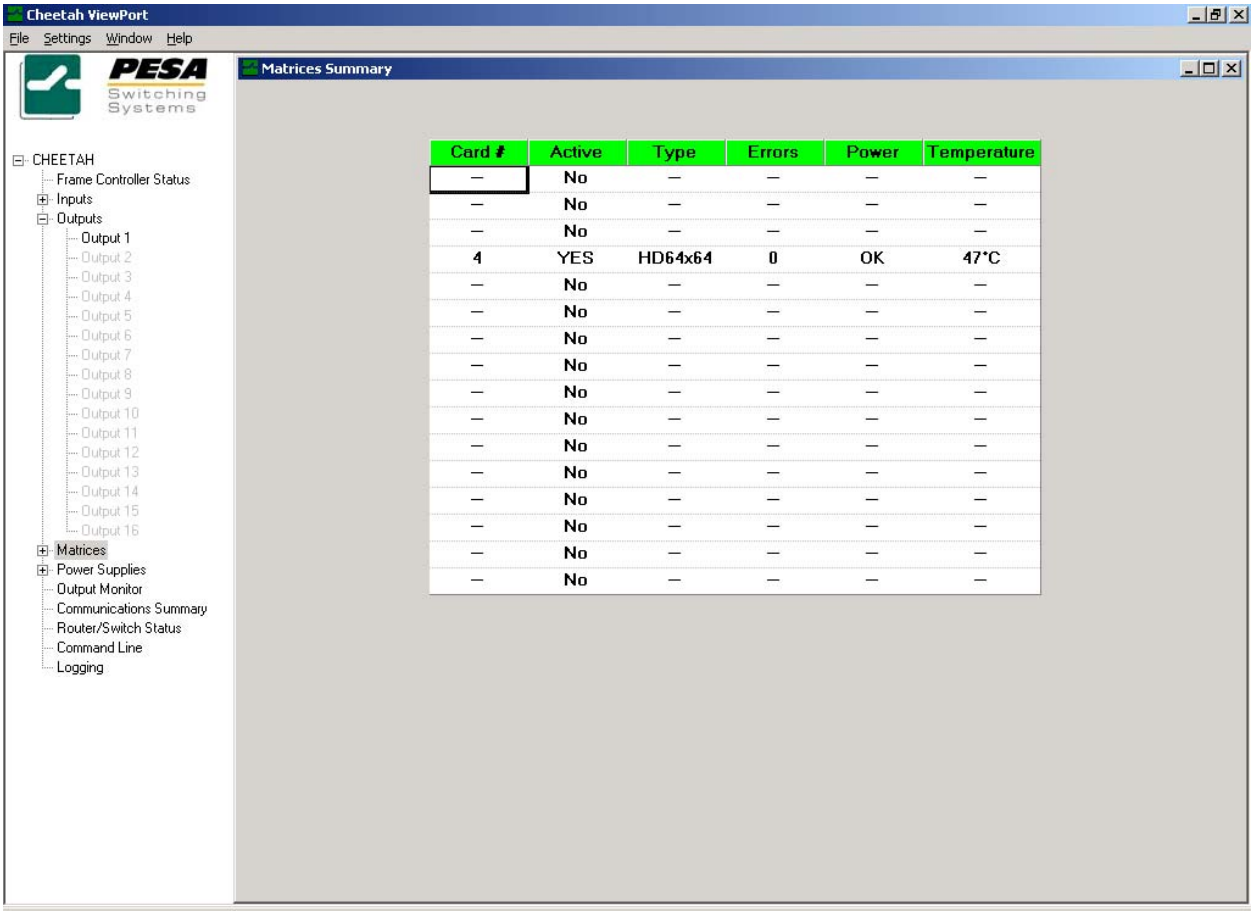
Errors

This indicates the number of errors detected on the internal control bus. Clicking the “Clear Errors” button clears this number to 0.

Power Button

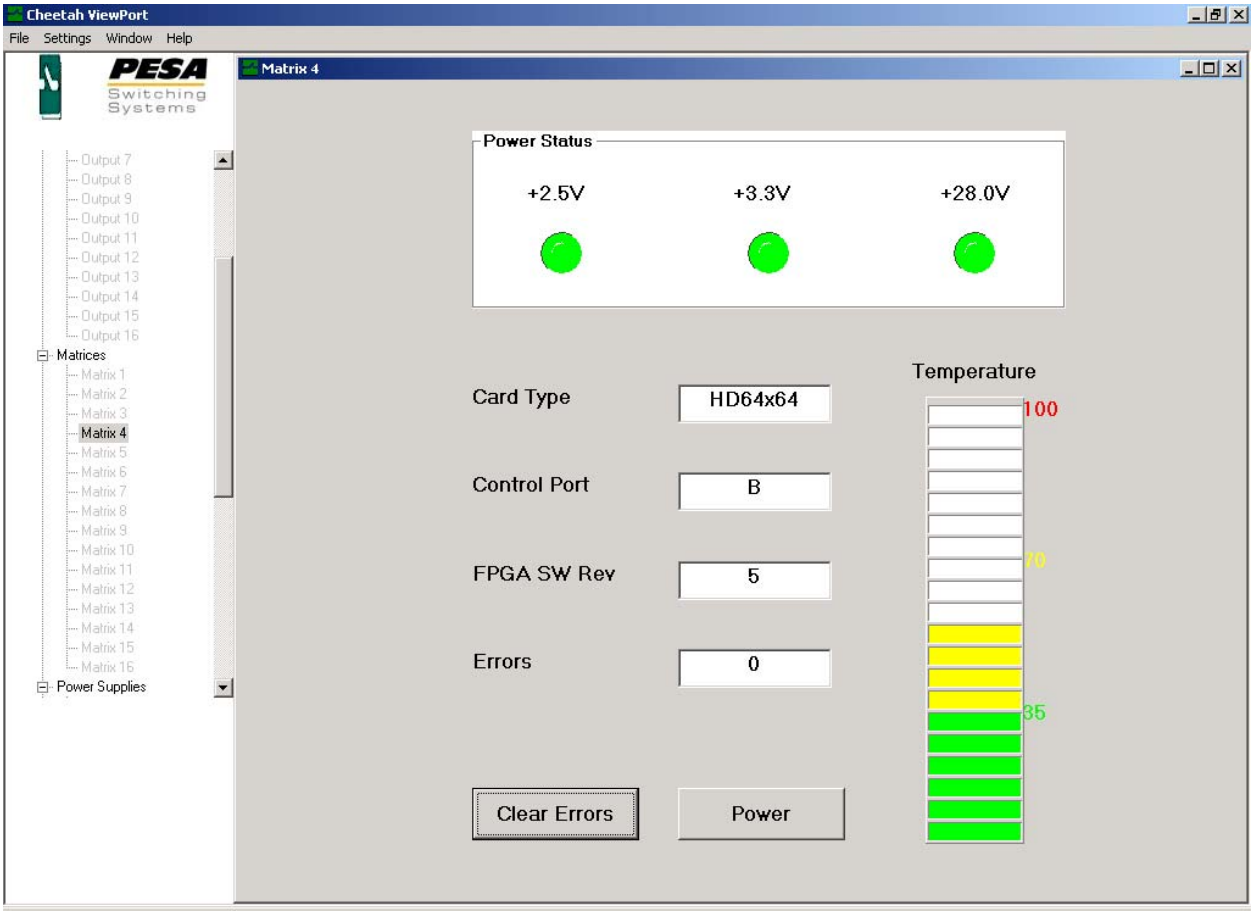
The card's internal power supply may be shutdown via a software control. Clicking the "Power" button turns the card on and off.

Matrix Card Summary



The matrix card summary shows a summary for all the matrix cards reporting back to the frame controller.

Matrix Cards



There is a page for each matrix card that reports back the type of matrix card it is along with a number of board specific parameters.

Board Parameters

The Cheetah ViewPort reports a number of board specific parameters about the each matrix card.

Power Status

This provides LED indicators indicating whether the power rails on the card are in proper working order.

Temperature

This is the temperature in Celsius detected by the temperature sensor on the card.

Control Port

This is the preferred leg of the internal control bus used for interpreting commands.

FPGA SW Rev

This is the numeric version of the revision of the software resident on the FPGA on the matrix card. The FPGA is responsible for returning all the card status back to the frame controller.

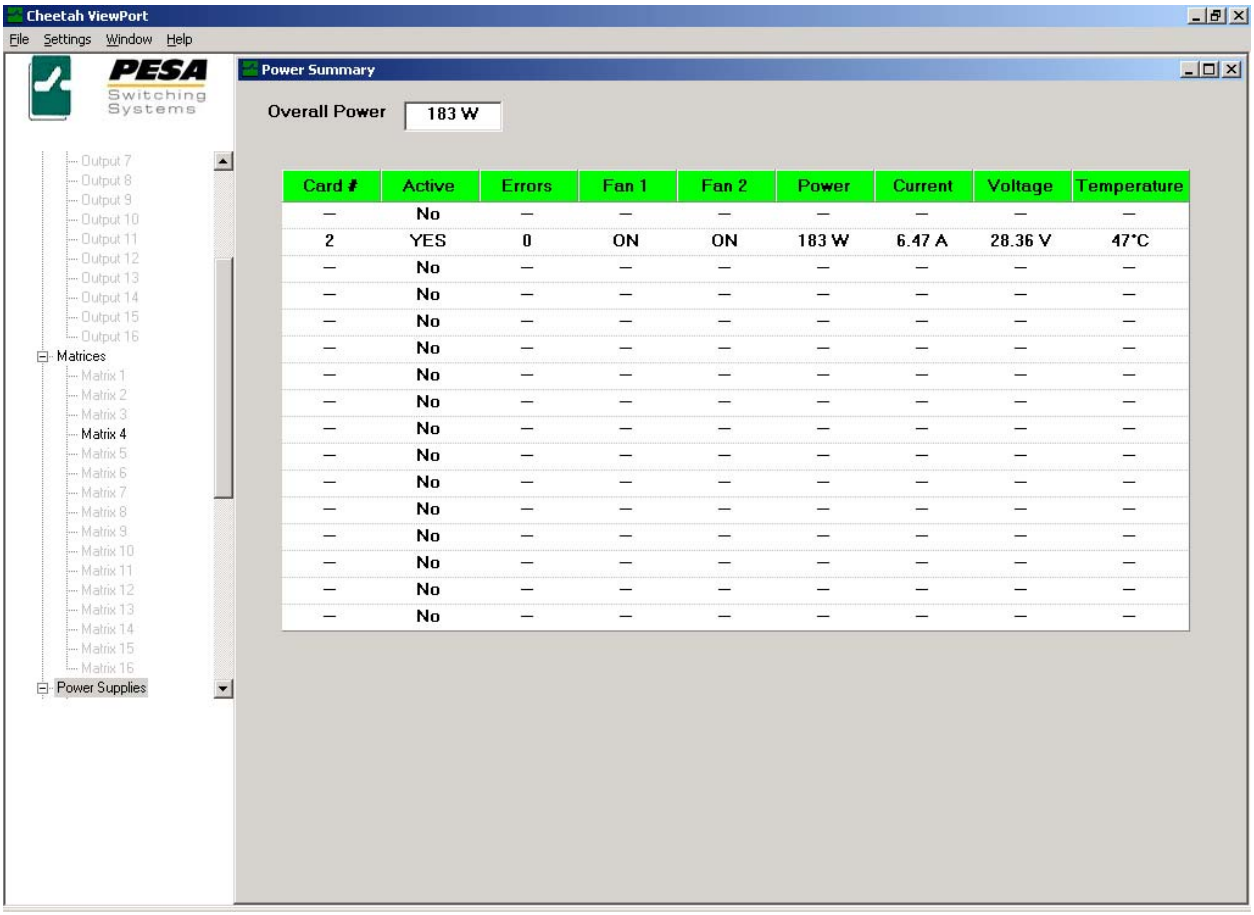
Errors

This indicates the number of errors detected on the internal control bus. Clicking the “Clear Errors” button clears this number to 0.

Power Button

The card’s internal power supply may be shutdown via a software control. Clicking the “Power” button turns the card on and off.

Power Supply Summary



Card #	Active	Errors	Fan 1	Fan 2	Power	Current	Voltage	Temperature
–	No	–	–	–	–	–	–	–
2	YES	0	ON	ON	183 W	6.47 A	28.36 V	47°C
–	No	–	–	–	–	–	–	–
–	No	–	–	–	–	–	–	–
–	No	–	–	–	–	–	–	–
–	No	–	–	–	–	–	–	–
–	No	–	–	–	–	–	–	–
–	No	–	–	–	–	–	–	–
–	No	–	–	–	–	–	–	–
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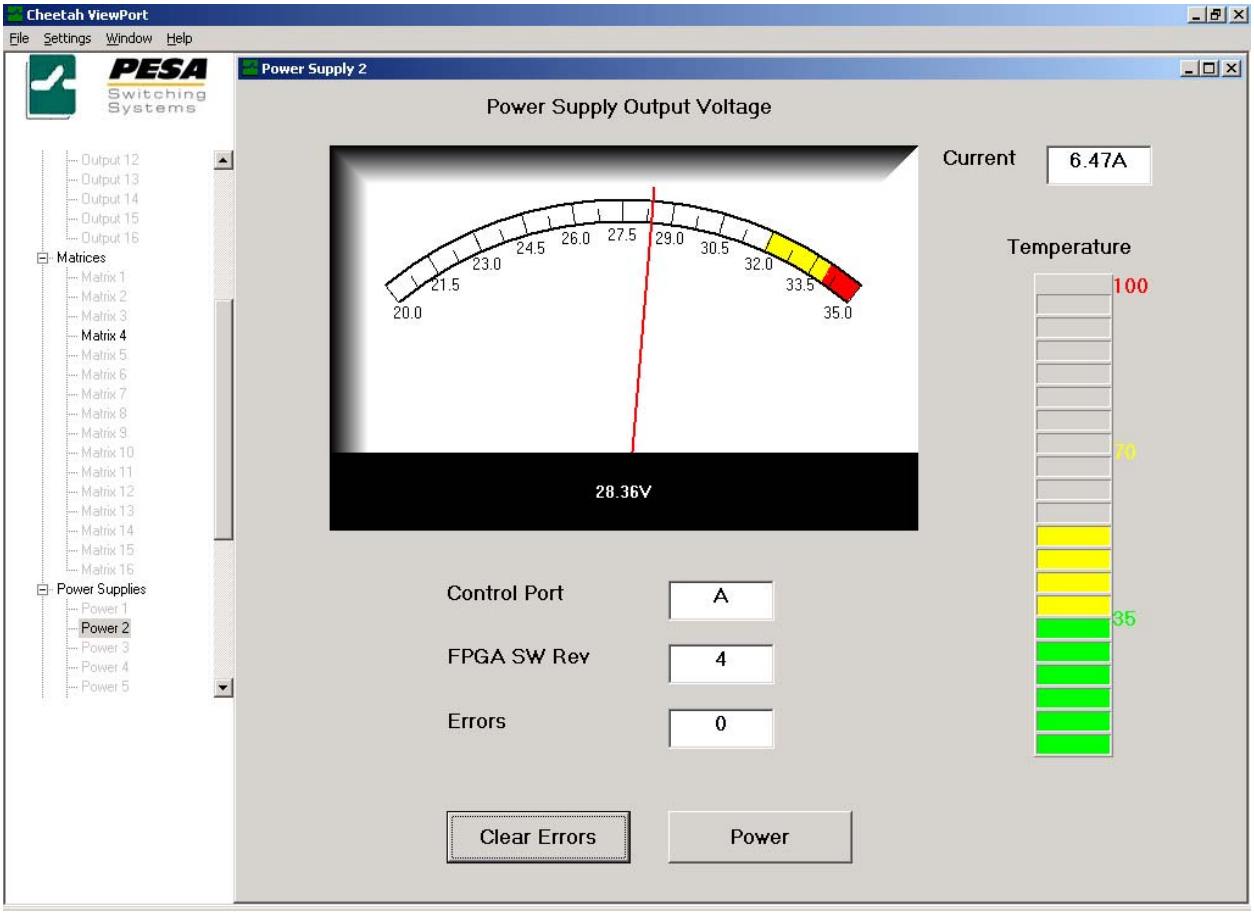
–	No	–	–	–	–	–	–	–
–	No	–	–	–	–	–	–	–
–	No	–	–	–	–	–	–	–
–	No	–	–	–	–	–	–	–
–	No	–	–	–	–	–	–	–

The Power Supply Summary provides a synopsis of the information on all the power supplies presently reporting back to the frame controller.

The Power Supply Summary page also reports back a power figure for the system as a whole. This figure is the power on the 28 V **outputs** of the power supplies. The actual input power figure is dependent upon this figure multiplied by a power supply efficiency factor.

The actual input power consumption is not available on the Cheetah ViewPort.

Power Supply



Each power supply on the Cheetah outputs a 28V voltage that is used to drive the different cards in the Cheetah matrix. This page of the Cheetah ViewPort shows the actual output voltage of the power supply and its current.

NOTE: The power supplies are also responsible for driving the fans in the system. Each power supply can drive up to two fans. (The actual allocation of which power supplies power which fans can be referenced in your Cheetah matrix manual.) This page in the Cheetah ViewPort does not detail any fan parameters. The frame controller does detect fan alarms. These are available in the alarm section of the frame controller status page.

Board Parameters

In addition to the power output, the Cheetah ViewPort reports a number of board specific parameters about the each power supply.

Temperature

This is the temperature in Celsius detected by the temperature sensor on the card.

Control Port

This is the preferred leg of the internal control bus used for interpreting commands.

FPGA SW Rev

This is the numeric version of the revision of the software resident on the FPGA on the power supply. The FPGA is responsible for returning all the card status back to the frame controller.

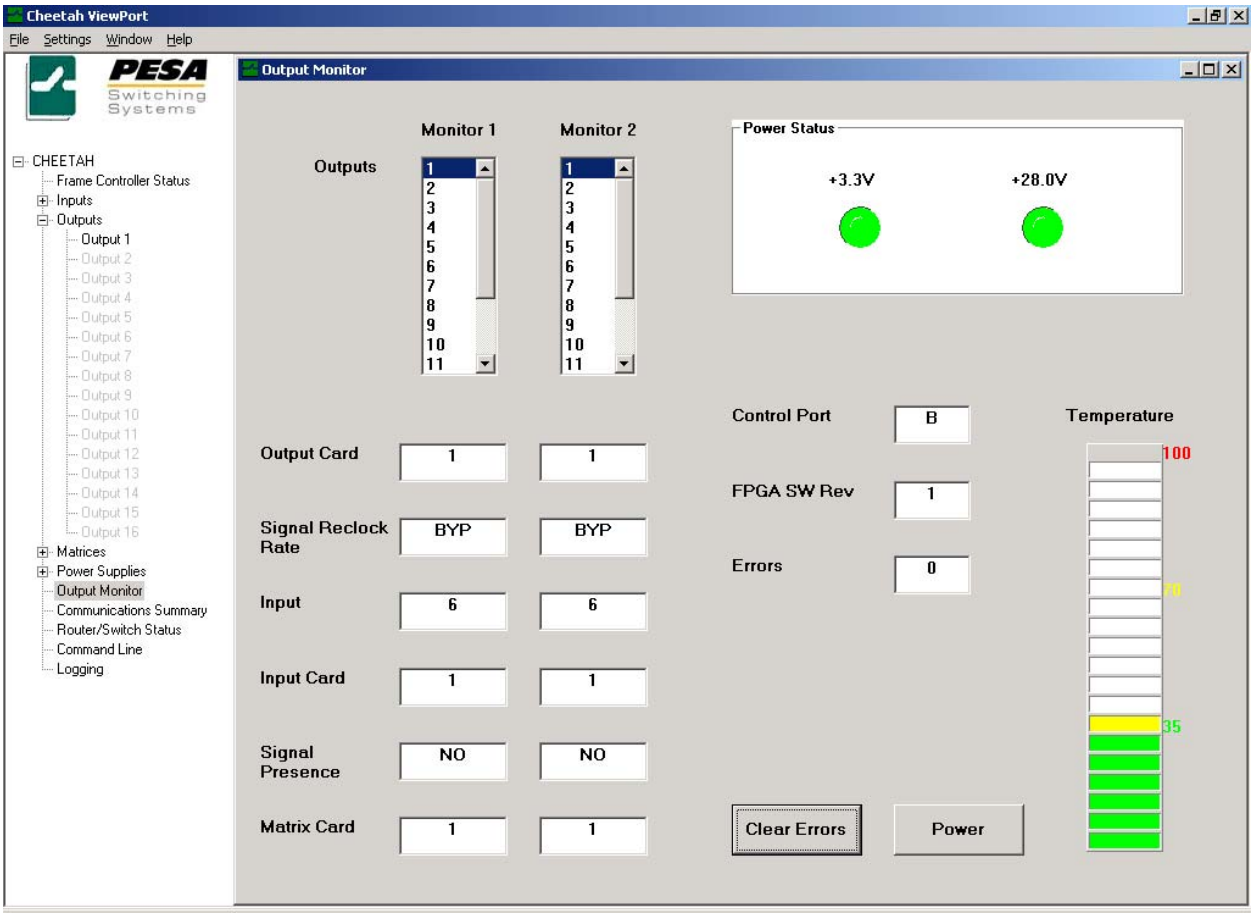
Errors

This indicates the number of errors detected on the internal control bus. Clicking the “Clear Errors” button clears this number to 0.

Power Button

The power supply may be shutdown via a software control. Clicking the “Power” button turns the power supply on and off.

Output Monitor Card



This selection only appears if an output monitor card has been detected in the matrix. This card allows you to directly monitor the signals coming out of the output combiner cards.

Output Monitor cards are only available on digital Cheetah matrices.

Output Signal Monitoring

The output monitor cards have two different outputs that can be used to monitor matrix output signals.

For each monitor output, the user can switch matrix output signals by selecting the signal in the “Outputs” list box. For each signal, the following data is reported:

Output Card

This is the output card on which the selected output resides.

Signal Reclock Rate

This indicates the reclocking rate that the selected output is currently locked to.

Input

This is the physical input that is connected to the selected output.

Input Card

This is the input card on which the selected input resides.

Signal Presence

This indicates whether the input card detects active signal on the input.

Matrix Card

This is the matrix card that the selected signal path is directed through.

Board Parameters

In addition to the output monitoring, the Cheetah ViewPort reports a number of board specific parameters about the output monitor card.

Power Status

This provides LED indicators indicating whether the power rails on the card are in proper working order.

Temperature

This is the temperature in Celsius detected by the temperature sensor on the card.

Control Port

This is the preferred leg of the internal control bus used for interpreting commands.

FPGA SW Rev

This is the numeric version of the revision of the software resident on the FPGA on the output monitor card. This software is responsible for returning all the card status back to the frame controller.

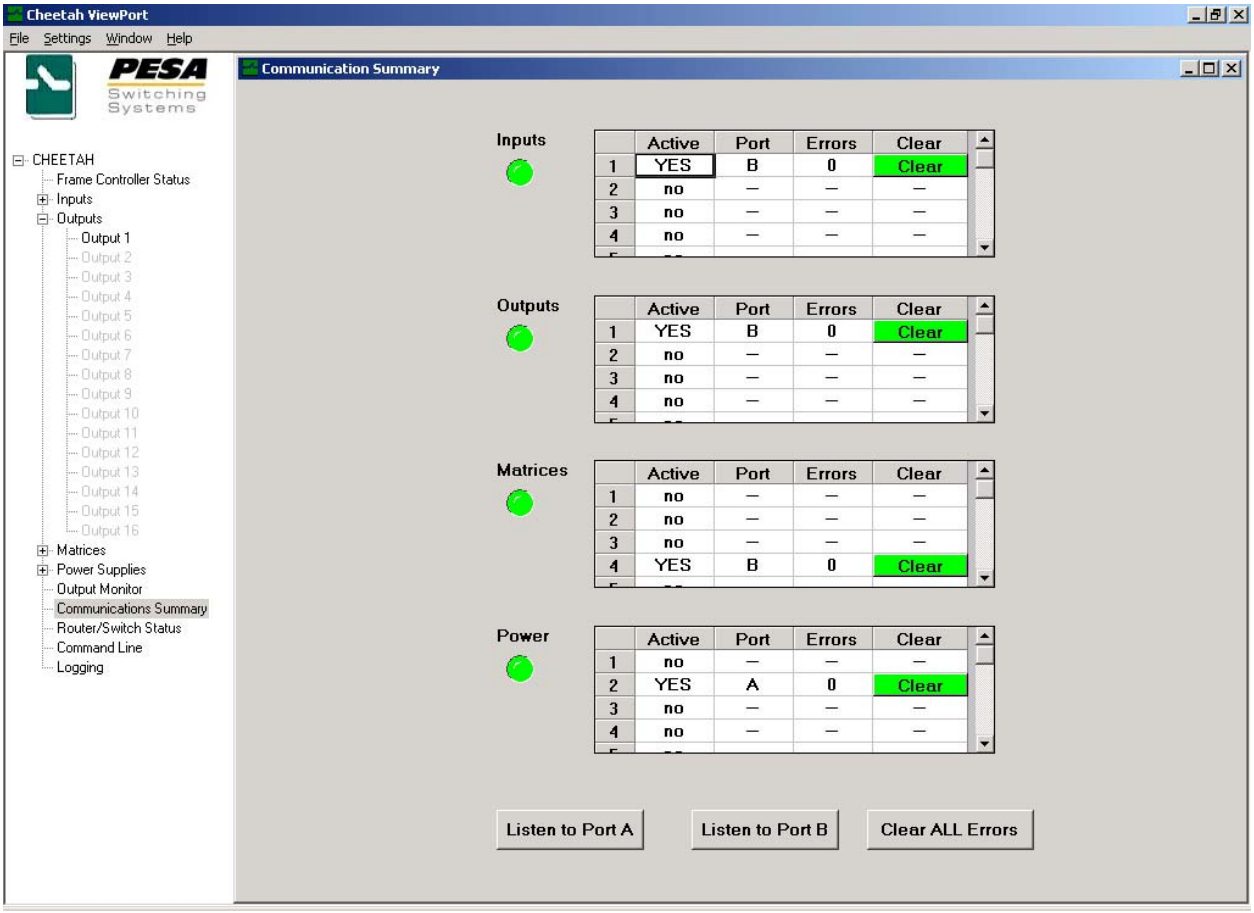
Errors

This indicates the number of errors detected on the internal control bus. Clicking the “Clear Errors” button clears this number to 0.

Power Button

The card’s internal power supply may be shutdown via a software control. Clicking the “Power” button turns the card on and off.

Communications Summary



The communications summary page shows the state of the internal control bus within the matrix. It indicates when errors have been detected and allows you to find which cards have errors. (Red LED's indicate that a card type is showing errors.)

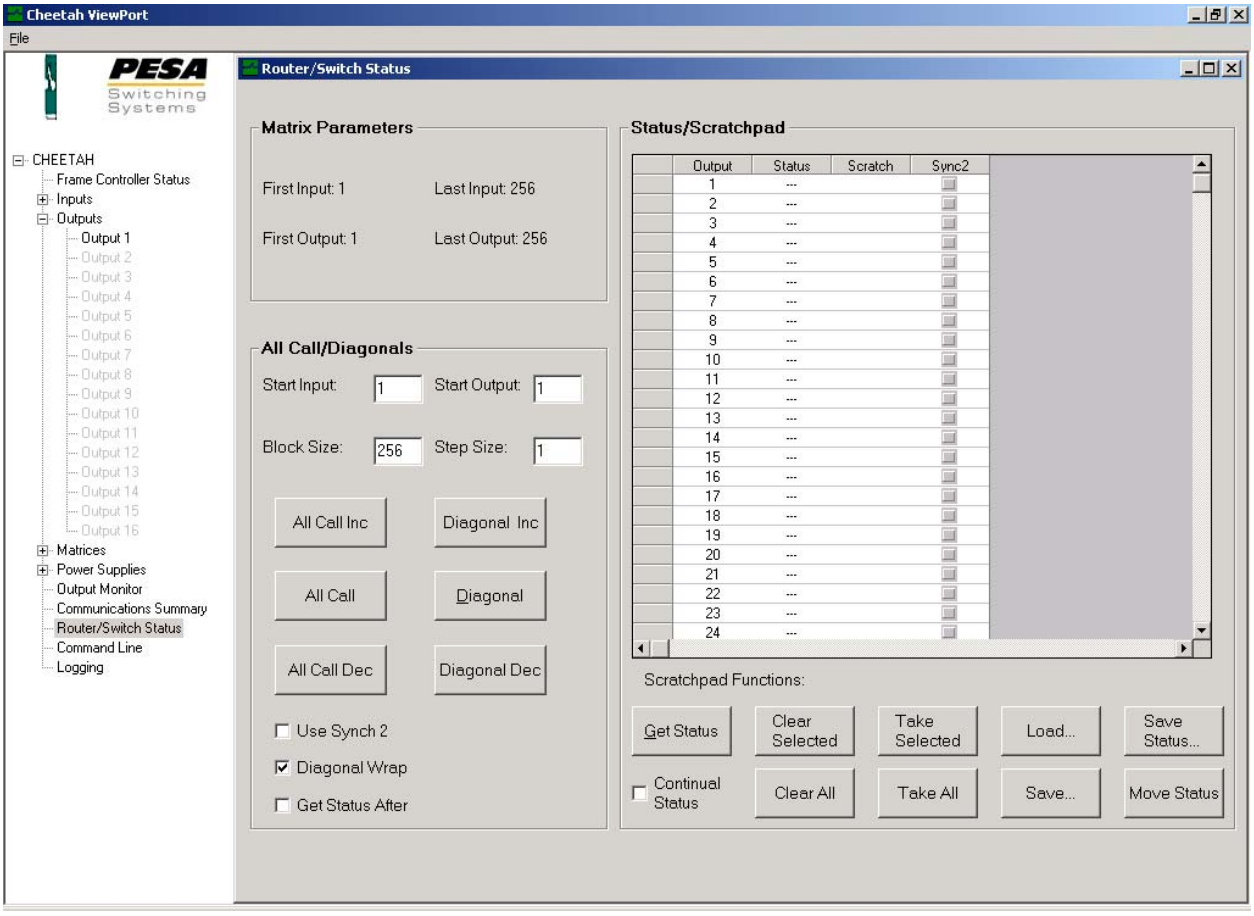
The grid for each type of card shows whether the card is being detected from the frame controller, the internal leg of the communications bus it is listening to, and the number of errors it has detected on that bus.

The screen allows you to clear those errors either on a card-by-card basis or all errors in the system. Clicking on the clear cell for the card in question clears its errors.

All errors can be cleared by clicking the "Clear ALL Errors" button.

The screen also allows you to attempt to force which leg of the internal control bus to listen to. All cards should be able to listen to either bus. The card then attempts to listen to that bus. IF it cannot listen to that bus, it switches to the other leg of the control bus.

Router/Switch Status



The router/switch status screen allows you to read switch status and take switches directly on the matrix. This information is pulled directly from the frame controller and bypasses the 3500Pro system controller. (Your 3500Pro controller will not show status for the switches taken using this page. It should be used for matrix diagnostics only.)

The screen is broken down into three different sections: The Matrix frame, the All Call/Diagonals frame, and the Switch Status/Scratchpad frame.

Matrix Parameters

These settings show the dimensions of the Cheetah matrix. They are used to set bounds for All Call and Diagonal switches as well as set the number of outputs shown in the status grid.

All Calls/Diagonals

This section of the screen provides a means of taking All Calls (a single input to a block of outputs) and Diagonals (a succession of inputs taken to a succession of outputs in a diagonal pattern e.g. input 1 to output 1, input 2 to output 2, etc.) These series of switches can be used to perform quality checks on the router.

Among the parameters that can be set are:

Start Input

The input used for All Call switches or the first input used on a Diagonal switch.

Start Output

This is the first output switched in the All Call and Diagonal.

Block Size

This is the number of outputs switched for each All Call and Diagonal

Step Size

This is the increment size used in the diagonal switch. For example, A step size of 2 may cause a diagonal such as input 1 to output 1, input 3 to output 2, input 5 to output 3, etc.

All Call

This command causes an All Call switch to occur where the “Start Input” input is taken to “Block Size” total outputs starting at “Start Output”.

All Call Inc

This command increments the “Start Input” and then performs the All Call Command.

All Call Dec

This command decrements the “Start Input” and then performs the All Call Command.

Diagonal

This command causes a Diagonal switch to occur where the “Start Input” input is taken to the “Start Output”, “Start Input” plus “Step Size” is taken to the output after “First Output” and so on for “Block Size” outputs.

Diagonal Inc

This command increments the “Start Input” and then performs the Diagonal Command.

Diagonal Dec

This command decrements the “Start Input” and then performs the Diagonal Command.

Use Synch 2

Checking this box causes the Cheetah ViewPort to use Synch Reference 2 when making All Call/Diagonal switches.

Diagonal Wrap

Checking this box causes the diagonal switch to start over at the “Start Input” if the diagonal takes the input beyond the top range of the matrix.

Get Status After

Checking this box causes the status grid to update immediately after performing the All Call or Diagonal.

Current Status/Scratchpad

This frame shows the current status of the matrix as well as allows the user to create a preset image of the router (i.e. the scratchpad) that can be taken onto the matrix.

The status grid has a row for each output in the system. The columns of the grid show the output number, a status column that is the last status reported from the router, the scratchpad which allows the

user to enter a preset input that can be taken on the router, and a sync column that allows the user to specify what synch reference a switch uses.

Areas of the scratchpad area can be selected for manipulation. After selecting an area of the grid, you can right click the mouse on the selection area. This provides a popup menu with the following choices:

- **Load Diagonal** – Loads a diagonal switch into the selected area starting with the input specified in the top selected cell.
- **Fill Up** – Fills the selected area from the bottom cell of the selection.
- **Fill Down** – Fills the selected area from the top cell of the selection.
- **Reverse** – Reverse the cells from top to bottom of the selected area.
- **Delete** – Deletes the contents of the selected grid.
- **Take** – Takes the switches specified in the selected area.

The Status/Scratchpad has a number of command buttons associated with it. These function as follows:

Get status

Pressing this button causes the switch status to be retrieved from the frame controller and displayed in the status grid.

Continual Status

Checking this box causes status to be pulled from the router on a background basis. (The background rate is updates about 4 outputs per second.)

Clear Selected

This button clears the selected area of the grid.

Clear All

This button clears the whole scratchpad and synch 2 columns.

Take Selected

This button takes all the switches specified in the selected area of the scratchpad grid.

Take All

This button takes all the switches specified in the whole scratchpad grid.

Load

This button allows you to load the current scratchpad from a scratchpad that has been saved to a file.

Save

This button allows you to save the current scratchpad to a file for later recall. It saves all switch specifications and synch reference specifications for all outputs.

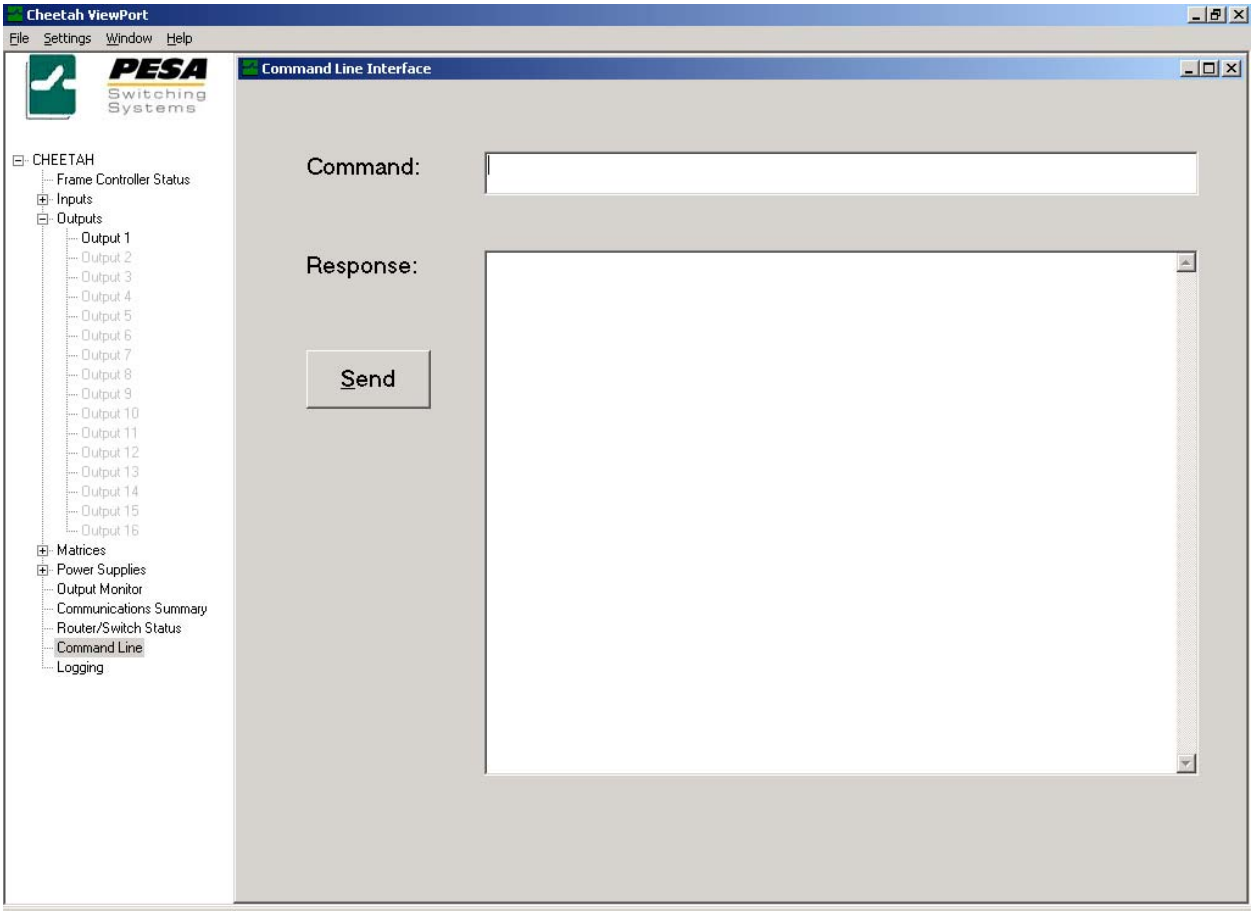
Save Status

This button is the same as the SAVE button but saves the status column information as opposed to the scratchpad column.

Move Status

This button moves the status from the status column into the scratchpad area.

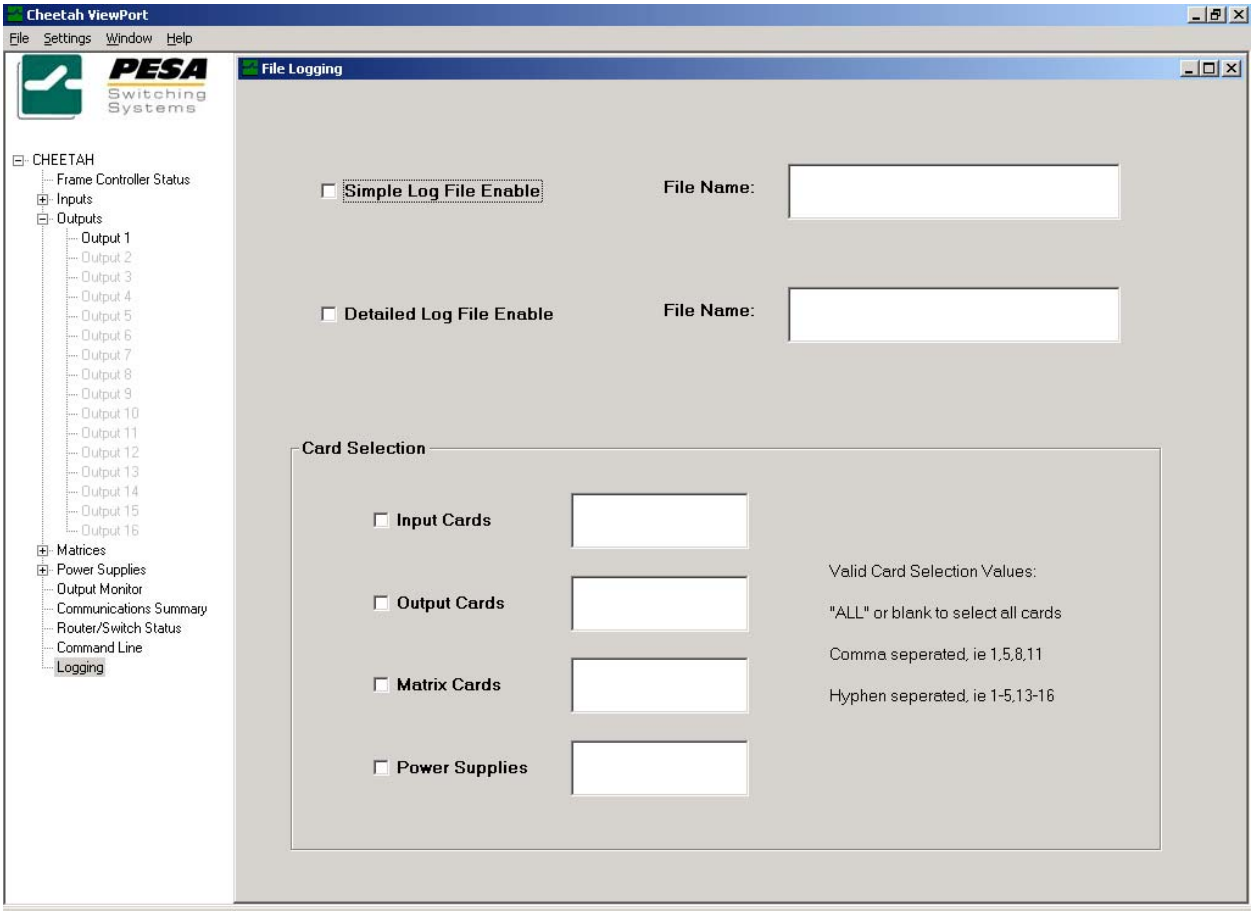
Command Line Interface



The command line interface allows the user access directly to the Cheetah Debug Port interface. The user can type in commands and see the response back from the frame controller.

To get a list of commands, enter **HE** on the command line and then press the **SEND** button (or press the RETURN key.)

Logging Screen



The logging screen allows the user to log activity that is being detected by the Cheetah ViewPort.

There are two modes of logging. The simple logging mode logs events in the system in an easily read format. The data logged is time stamped with the time the event was read from the frame controller. It reports events such as:

- Frame Controller Alarms
- Change in Active Status
- Input, Output, Matrix, Power Supply, and Output Monitor going on or offline.
- Detection of communications errors on the internal control bus

The detailed logging mode logs information anytime the Cheetah ViewPort detects any change in a majority of parameters read from the PMFC. The information logged is in a raw form and is only meaningful to people with a detailed knowledge of the internals of the Cheetah frame protocol.

The detailed logging mode is meant as a means of logging data that can be sent to PESA technical personnel to assist in troubleshooting Cheetah frame problems.

Logging File Selection/Enable

To enable logging, you need to specify the log file name and then select the check box for the desired logging mode. If the file specification is valid, the logging commences.

Selecting and deselecting the logging enable checkbox causes a time stamp to be added to the log file. Logging information is always appended to the log file. It is up to the user to move or delete logging files.

NOTE: All logging settings are remembered each time the program is started except for the actual enable. Logging must be enabled every time the program is started.

Logging Card Selection

Logging always captures events related to the frame controller and output monitor. If the user wants information on individual input cards, output cards, matrix cards, or power supplies, the user must enable them for logging. This is done by selecting the appropriate card type check box.

In addition, you can further discriminate within each card category by enumerating the cards you want to log. You can list the cards using comma and hyphens.

For example, Matrix Cards 1, 3-6 specifies logging of matrix cards 1, 3, 4, 5, and 6.