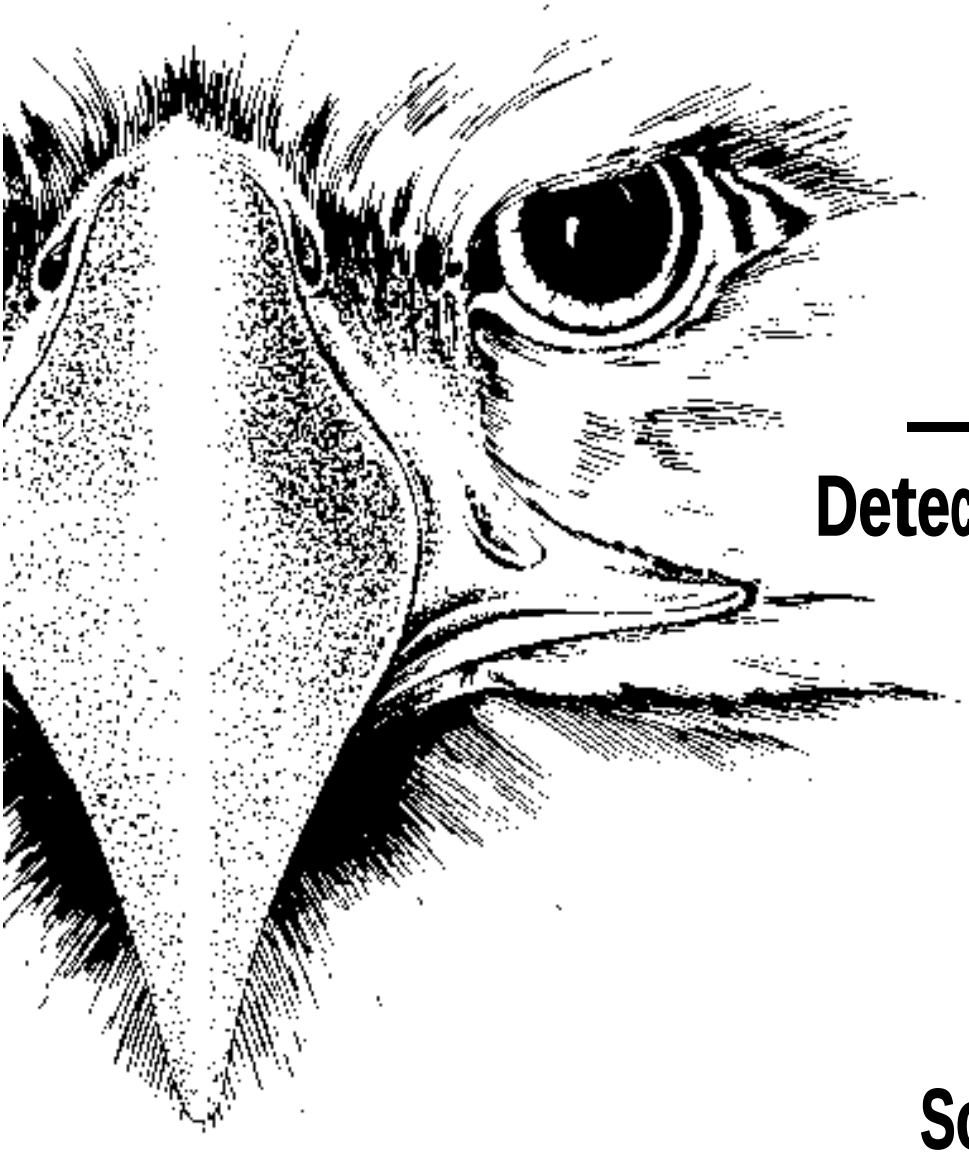

EAGLE 2000™

— a new level of Detection Monitoring

EagleVision™ 2 Software Manual

DET TRONICS

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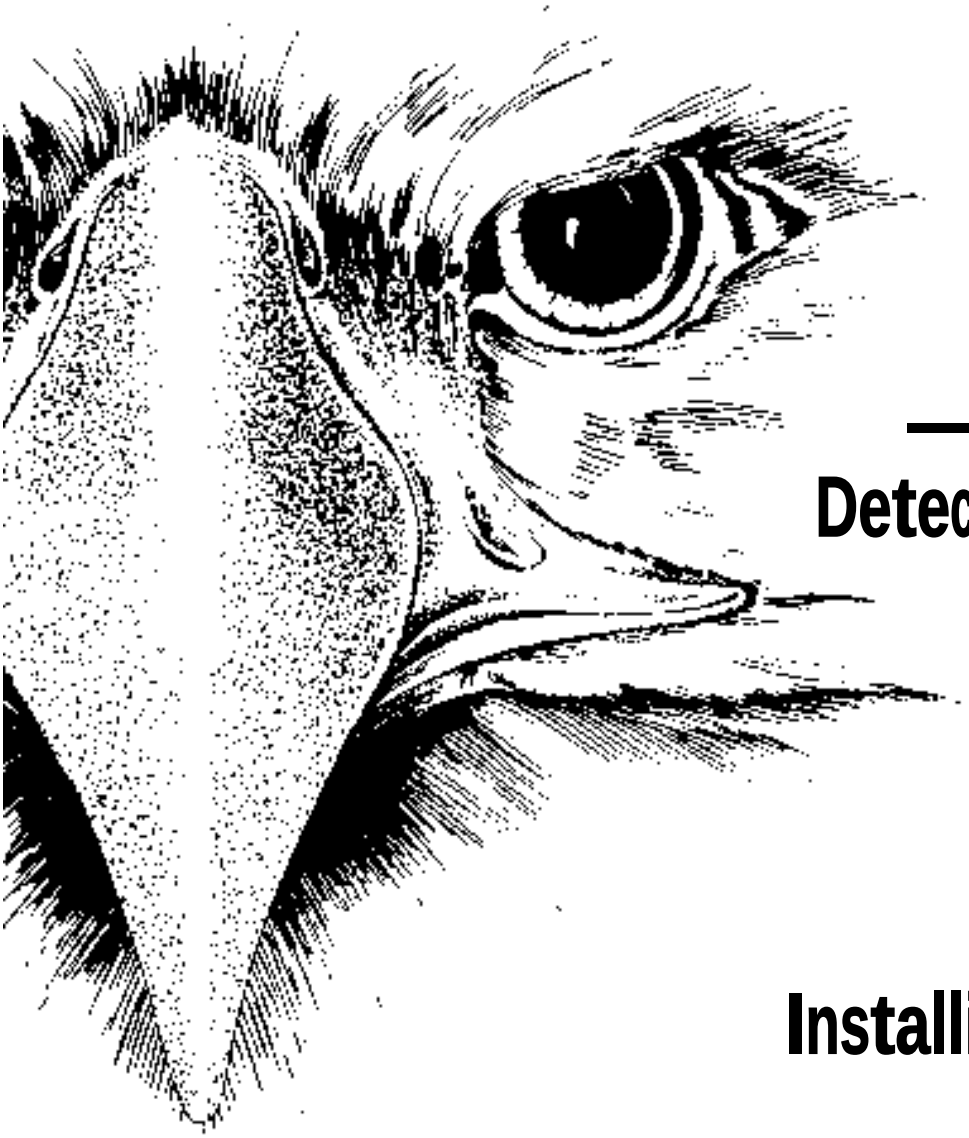

EAGLE 2000™
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Section 1
Installing EagleVision™

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EagleVision Software Package

1.1

The EagleVision Software Package includes:

1. Several disks containing EagleVision Software. This includes EagleVision and its utility programs, online help for Eagle products, an Adobe Acrobat Reader Installer, and Acrobat files providing viewable and printable versions of the documentation.
2. Manuals for all Eagle hardware and software.
3. One ADB hardware key.

SYSTEM REQUIREMENTS

EagleVision requires the following system components:

- Macintosh or compatible computer (OIS)
- Color monitor (640 x 480 minimum) with at least 256 colors
- MacOS 7.0 or greater
- 16 megabytes (MB) of RAM minimum. EagleVision requires 5 MB of free RAM to run, an additional 3 MB of RAM are required by EventsActive or EventHistory.
- Hard drive

1.2

Installing EagleVision Software

1. Rename the Macintosh hard disk drive “Detector.”
2. Insert EagleVision Disk 1 (P/N 006141-001) into the floppy drive and double-click on the “Installer” icon.
3. Follow the onscreen directions.

Detector Electronics’ EagleVision software allows any Apple Macintosh or compatible computer running under MacOS 7.0 or later to access the Eagle 2000 system and provide configuration and data acquisition services via the Eagle communication gateway. This system can also read and write from a programmable device that supports Modbus RTU protocol. The Macintosh computer is referred to as the Operator Interface Station (OIS). The gateway provides communication between the Eagle 2000 system and the OIS.

EagleVision acts as a Modbus master and can communicate with up to four gateways by means of serial link(s) utilizing the Modbus RTU protocol. If the OIS is connected to a single gateway, the connection is by serial link from the OIS modem port to the gateway. Multiple gateways will require a multiport serial board or a Modbus multiplexer.

EagleVision	This is the core application program, which handles all communication, data acquisition, logging and system configuration. 
Configuration	This file includes: datatable configurations, serial port settings, printer settings, etc. 
EventsToMonitor	This file contains up to 5000 event configurations and is created by EagleVision. 
Point Types	This file is the Detector Electronics product matrix, which EagleVision uses for point configuration. As new products are released this file will be updated. The end user must never modify this file. 
ZonesToMonitor	This file contains the zone configuration information as configured in EagleVision. On startup, EagleVision reads this file to determine the last saved zone configuration information. When the zone configuration is changed within EagleVision and then saved, it is stored in this file. 
DocumentatorEV	DocumentatorEV is a stand-alone program that allows printing of EagleVision system configuration information, point configurations, and past event logs. 
EventHistoryEV	EventHistoryEV is a stand-alone program that allows viewing of daily event log file(s). A daily event log file includes all the events that occur in a twenty-four hour period. Events configured for logging to the hard drive, events programmed using SuperCard or HyperCard, or any message generated by EagleVision reporting an error are included in the daily event log. 
EventsActiveEV	EventsActiveEV is a stand-alone program that allows viewing of real-time status of all the events that are currently active. 

Periodic backup of all EagleVision files is highly recommended! 

1.4

Installing EagleVision Software

EAGLEVISION CAPABILITES

Acquire data from the gateway(s)

Data, in the form of 16-bit status words, can be acquired from up to four gateways that are connected to the OIS. To speed up operation, the OIS should be configured to look at only the tables of interest. The two areas most likely to be of interest are those containing the process variable and the device status. See the section on Datatables.

Process variable word	A 16-bit word that represents the analog signal of a device.
Status word	A 16-bit word that provides 16 pieces of discrete status information for a single point. See the section on Point Configuration.

Acquire data from a programmable device

EagleVision can acquire the contents of Modbus memory registers, 0xxxx, 1xxxx, 3xxxx, 4xxxx, from a programmable device.

Write data to a programmable device

EagleVision can write data to the Modbus memory registers, 0xxxx, 1xxxx, 3xxxx, 4xxxx, of a programmable device.

Write data to the gateway(s)

EagleVision can write (set) individual "bits" or whole "words" to any gateway or other Modbus RTU slave device that is connected to the OIS. This can initiate sequences (commands) or set analog setpoints, timer presets, etc., within the gateway.

Event logging

Changes in the data being monitored by EagleVision from any of its attached slave devices (Eagle gateways, PLC's, etc.) can be used to trigger an "event." Up to 5000 of these "events" can be configured for monitoring. An event can be logged to any or all of the following places:

- The three line event window at the bottom of the OIS screen
- The daily event log file (stored on the hard drive)
- The printer (printed in a variety of color formats).

Graphic displays

The EagleVision program allows any Macintosh application that uses external commands (XCMD's) and external functions (XFCN's) to communicate with any gateway or programmable device connected to the OIS. This allows creation of custom graphic screens to display system status. Sample SuperCard and HyperCard stacks are included, which contain the XCMD and XFCN library. To use the XCMD's and XFCN's with another program, contact Det-Tronics.

Menu Overview

1.5

EagleVision contains menus that are used to navigate through the application and access various features.

File Menu

The file menu allows the operator to:

"Save" events, zone configurations and point settings to the hard drive.

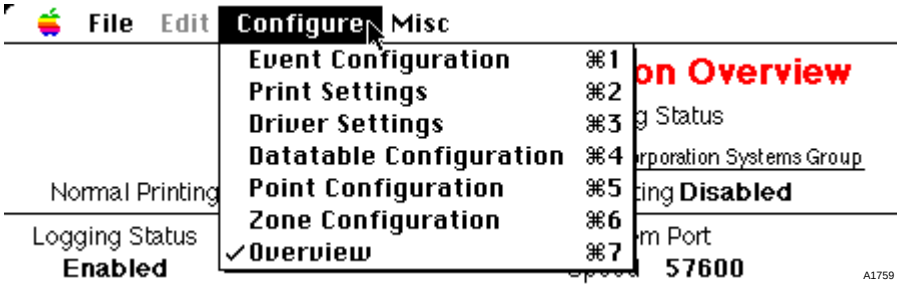
"Quit" the EagleVision application.

Edit Menu

This menu contains the standard "cut,'' "copy," "paste" and "clear" selections that can be used anywhere text entry is allowed throughout the application.

Configure Menu

This menu allows access to any of the seven sections of the application by either direct menu selection or command key equivalent.



Event Configuration (⌘1)

This screen allows the operator to configure and modify any of the up to 5000 possible "events" that will be monitored and can be routed to the event window, daily event log file, or to the printer.

Print Settings (⌘2)

This screen controls all aspects of printing (all types of supported printing can be enabled or disabled):

- Page title setting
- Page length setting
- Page "top of form" setting
- Form feed
- Reset printer
- Clear buffer.

Driver Settings (⌘3)

- Highway polling can be enabled or disabled.
- The last Modbus highway error (if any) is shown and can be cleared.
- Counters are displayed showing a variety of communication related information.
- The data highway watchdog timer can be enabled, disabled or have its dropout time modified.
- Communication port parameters can be adjusted.
- The Modbus station address for the OIS can be modified.

Datatable Configuration (⌘4)

A “datatable” is defined as a contiguous area of memory in a slave device from which the OIS is configured to read.

The “Datatable Configuration” screen allows the operator to configure up to 255 different datatables to be read from any of the attached Modus slaves. It also allows the operator to quickly enable or disable the reading of any configured datatables.

Point Configuration (⌘5)

Points for each gateway can be configured. A “point“ is defined as a gateway or a sensing device and its communication module. Each gateway supports up to 250 points across up to four loops (LON A, B, C, D).

Zone Configuration (⌘6)

Up to 256 logical “zones” can be constructed, each consisting of up to 64 nodes, for purposes of fault and alarm tracking.

Overview (⌘7)

This screen displays an overview of the EagleVision configuration and is the first screen displayed when EagleVision is launched.

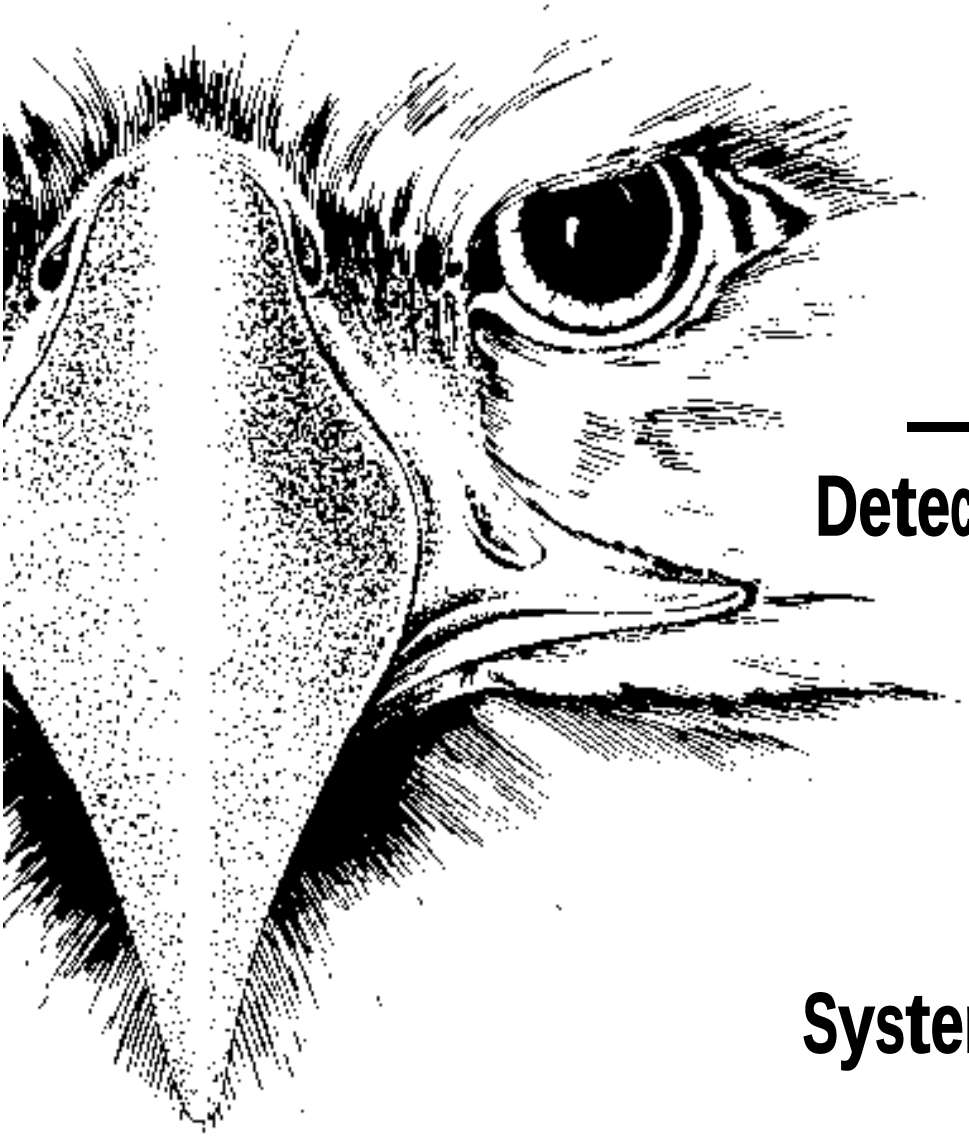
This screen displays a synopsis of the overall EagleVision configuration including serial port settings, logging status, address information, watchdog timer settings and datatable configuration.

To have access to the menu bar and any of the other screens the operator must first enter the correct password. The password dialog box is presented as soon as the user clicks anywhere within the boundaries of the overview screen.

MISC MENU

The Misc menu includes the following selections:

Address Check	Allows the operator to get a variety of information on a particular address.
Hide/Show Event Window	"Hide" removes the event window from the OIS display.
	"Show" displays the event window on the OIS display.
Modify Password	Allows the operator to change the password.
Restore Password Protection	Allows the operator to reactivate password protection.
Collect Module Logs	Allows the targeted retrieval of alarm information from the nonvolatile memory of the field devices.
Preferences	Where certain program parameters are set.
EventsActive™	Launches this "helper application" displaying out of tolerance events.
EventHistory™	Launches this "helper application" displaying the daily log of events.



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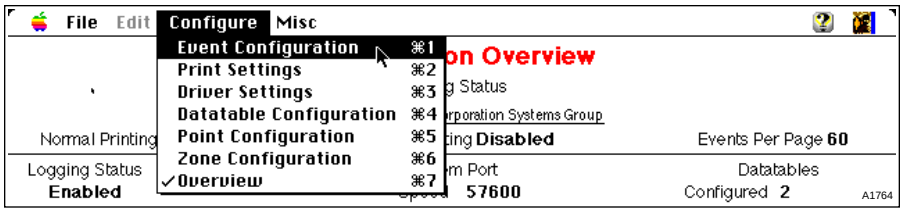
Section 2
System Configuration

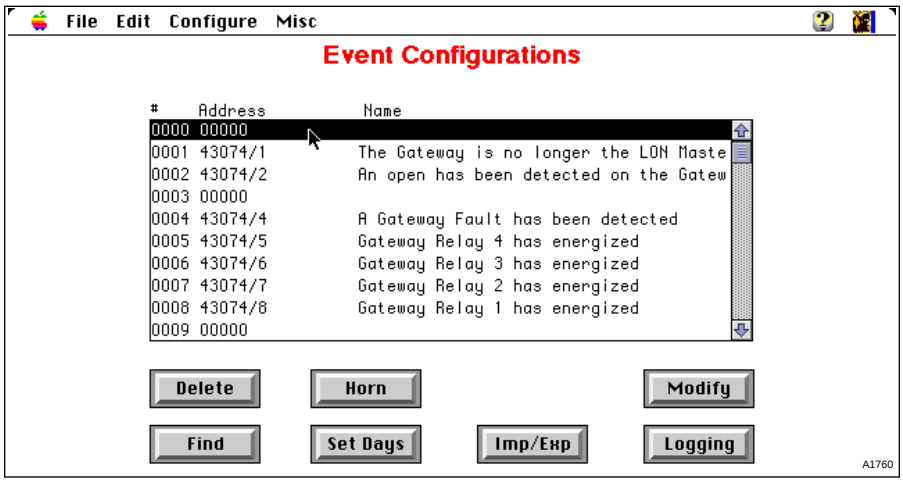
DET TRONICS

Event Configuration Screen (⌘1)

Selecting “Event Configuration (⌘1)” from the “Configure” menu will display the “Event Configurations” screen.



This screen is used to create events to be monitored. Event configuration defines the information required to track the status of the event and what happens should the event occur. The event configuration database is saved in the “EventsToMonitor” file in the “Detector Folder.”



EagleVision can track up to 5000 events. When going to the Event Configurations screen for the first time, there will be 5000 “blank” or “unconfigured” events.

There are two methods to configure events:

1. Events can be configured in EagleVision via the Event Configuration screen.
2. Events can be imported from another application such as a database, spreadsheet or word processor.

2.2

Event Configuration Screen (⌘1)

EVENT CONFIGURATION SCREEN BUTTONS

There are seven buttons on the "Event Configurations" screen, which perform a variety of functions related to the event monitor. They are described below.

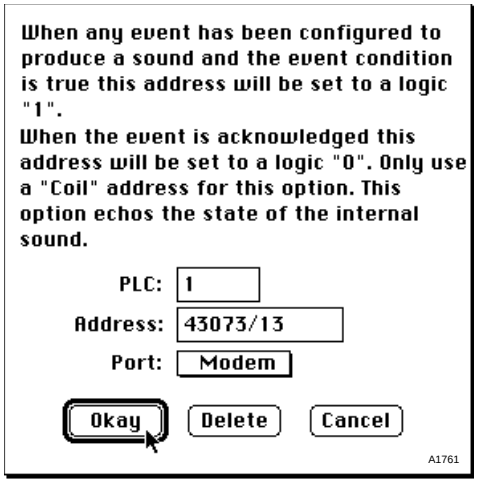
⚠ Any changes to the EventsToMonitor file must be saved by selecting "Save" from the File menu or by typing ⌘S.

Delete

This button removes all configuration information for the selected (highlighted) event number. The program will ask the operator to verify the delete function before erasing the information.

Horn

Select the horn button to display the following dialog box:



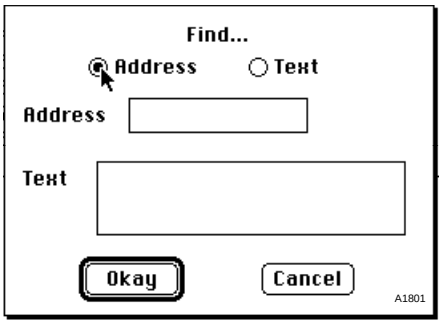
This is used to activate an external alarm/event horn (e.g., a programmable device-controlled horn). Normally alarms/events are determined by logic residing in the gateway or programmable device, and the horn is controlled from the gateway, i.e., one of the programmable fault relays. However, it is possible that the operator may want to activate the horn located in a PLC based on events within the OIS.

Modify

Select Modify (or double-click on an event number or name) to display the Event Modifier screen for the selected highlighted) event. The Event Modifier screen allows configuration of an event (see "Event Configuration Procedure" later in this section for details).

Find

Select the Find button to display the “Find” dialog box. By entering either text or an address in the appropriate box, the program will display the next event that matches the find criteria.



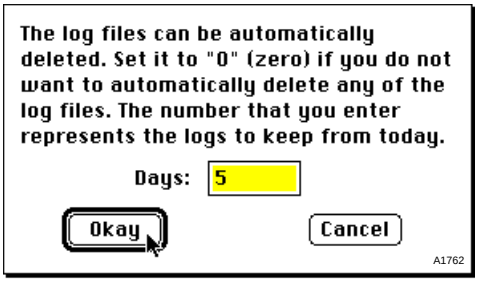
- When searching for text, partial names can be used, the entire event name is not necessary. For example, to search for any event with the word “valve” in it, type in “valve” and select Okay.
- When searching for an address, the complete address must be specified.

The find command only searches forward from the currently selected event number to the last event number. If the address or text being searched for is before the current event, it will not be found!

Set Days

This button allows the user to choose how many ”daily event logs” to retain on the system hard drive. The EventHistoryEV program allows viewing of the daily event log for the current day. The DocumentatorEV program allows viewing and printing of event logs from any previous days.

In the example below, “5” is chosen. This means that the system will have up to five days of event logs, excluding today, on the hard drive. The oldest log will be deleted at midnight of the fifth day.



The number of days to keep on file is up to the operator to decide. The log is a straight text file and the system hard drive size and the number of events on an average day will determine how many logs are practical to keep on file.

2.4

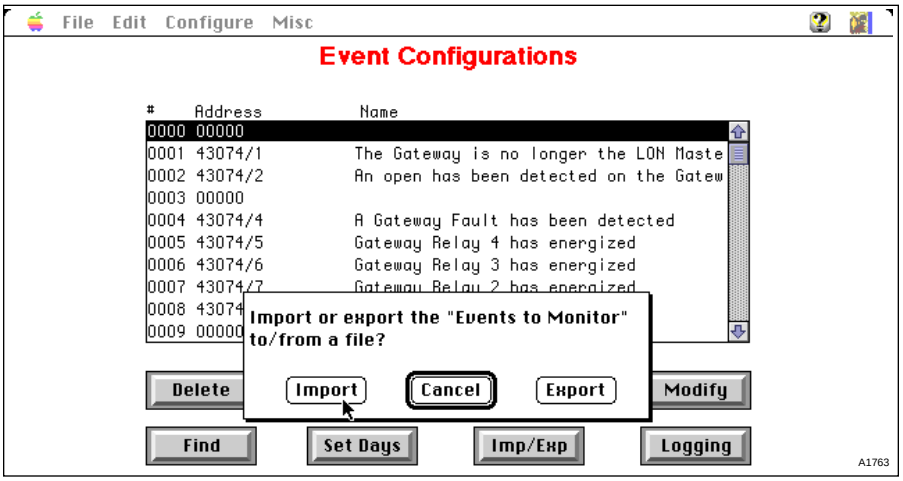
Event Configuration Screen (⌘1)

Imp/Exp

The Imp/Exp (Import/Export) button allows an external file, created in another application, to be read into the system, or a database configured within EagleVision to be exported to a file, which can be used as a template in another application for database development.

This allows the end user to create an “Events to Monitor” database in the application the end user chooses.

The file must be of a text only, comma or tab separated values type with the proper structure. See the section on “Database Event Configuration” (External Database) for more information.



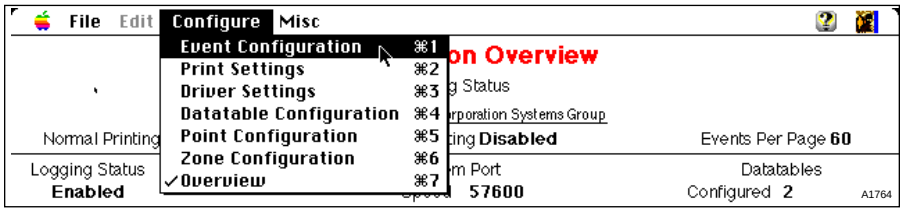
Logging

This button provides global control of event logging:

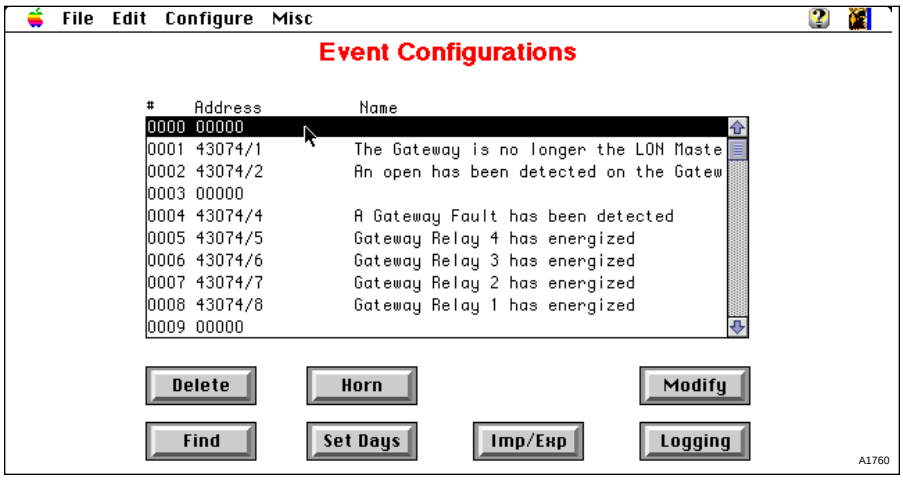
- If “Start” is selected, the program will scan the ”Events To Monitor” database and begin logging (writing to the daily event log file on the hard drive) all the events that were configured for logging.
- If “Stop” is selected, all writing to the daily event log file will cease.

Event Configuration (EagleVision) (⌘1)

1. Select Event Configurations from the Configuration menu:



2. The Event Configurations screen is displayed:



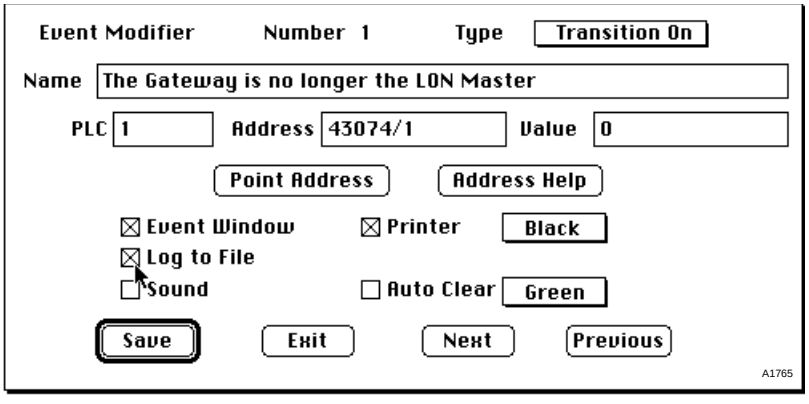
This screen displays the following information:

#	Event number (0 to 4999)
Address	Modbus address of configured event
Name	User-defined event name, up to 48 characters

3. Select an event to modify by either double-clicking on the event number or clicking once on the event and select the Modify button.

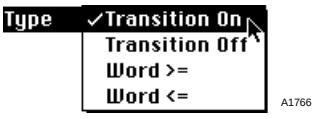
4. The Event Modifier dialog box will appear:

   As events are configured, Save must be selected before selecting Exit, Next or Previous. If save isn't selected first, event configuration will be lost.



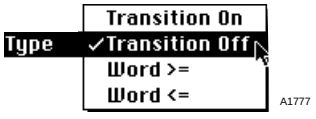
5. Enter the Event Type by means of the Type pop-up menu.

Transition On



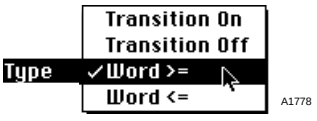
When the discrete bit specified in the PLC and address fields changes state from a 0 to a 1, the event monitor will process the event. Event processing can include sending the event to the configured locations (event window, daily event log, printer) and activating the verbal warning alarm.

Transition Off



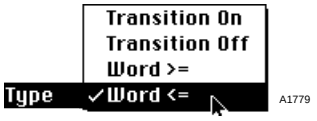
When the discrete bit specified in the PLC and address fields changes state from a 1 to a 0, the event monitor will process the event. Event processing can include sending the event to the configured locations (event window, daily event log, printer) and activating the verbal warning alarm.

Word >=

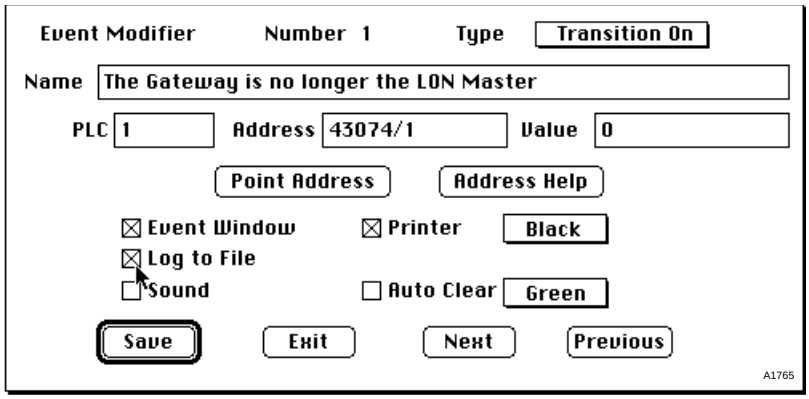


When the value of the integer word specified in the PC and address fields is greater than or equal to its setpoint (specified in the value field) the event monitor will process the event. Event processing can include sending the event to the configured locations (event window, daily event log, printer) and activating the verbal warning alarm.

Word <=



When the value of the integer word specified in the PLC and address fields is less than or equal to its setpoint (specified in the value field) the event monitor will process the event. Event processing can include sending the event to the configured locations (event window, daily event log, printer) and activating the verbal warning alarm.



6. Enter the Event Name.

   Enter the name of the event. It will appear in the event window, in daily event logs, and when printed. The name can be up to 48 characters long and use any combination of letters, numbers, symbols, etc. available from the keyboard.

If the event name has a "comma" in it, the "tab" character must be used to delimit fields and the "Use Tab for Export/Import delimiter" option in the preference settings found under the "Misc" menu must be selected.

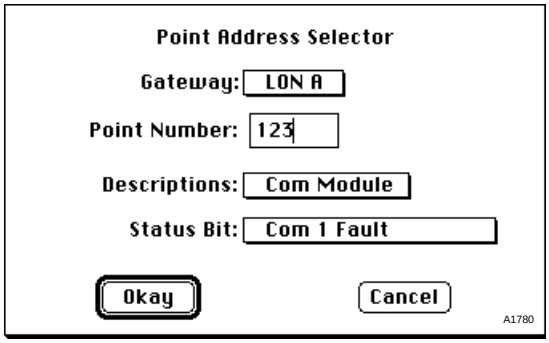
7. Enter the PLC number (i.e. gateway Modbus address).

8. Enter the event address.

   The address for the event must conform to the Modbus addressing format as shown below. This information is available from the Help button of the Event Modifier dialog box.

Address	Description
00004	Coil
10001	Input
30001	Input Register
30001/13	Input Register/Bit
40001	Holding Register
40001/11	Holding Register/Bit

   If the event being configured is one of the point status bits, the address can be automatically calculated by using the "Point Address" button.



This will bring up a dialog box where the operator enters the gateway number, point number, and then chooses the status bit from a pop-up menu. After this procedure, selecting “enter” will then place the correct Modbus address in the field.

9. Enter the Event Value.

   Enter the analog value that will trigger an event (Word type events only). Setpoint values range from 0 to 4095 with 4095 representing the full scale value of the device. Refer to the System Configuration Matrix (95-8453) for the range of values for specific devices.

10. Use the checkboxes in the Event Modifier dialog box to define how the event will be annunciated. Clicking on a checkbox turns the annunciation on or off.

    a. Event Window

       The Event Window checkbox controls the appearance of the event name when that event occurs.

       The event window is a three line ”First In First Out (FIFO)” display area running the full width of the screen at its bottom. The current date and time is displayed on the right side of the event window.

       The event window displays the last three events (configured with Event Window feature on) or errors that have occurred. Each new event that occurs will appear at the bottom of the event window. Any previous events in the window will move up one. The oldest event will scroll off the top and disappear.

    b. Log to File

       The Log to File checkbox controls the posting of the event to the daily log.

       The daily log keeps a one day chronological history of date and time-tagged events. The log begins at midnight and continues until the following midnight. A new file is created at midnight.

       The daily log is readily accessible for viewing at any time by means of the EventHistoryEV program. Current event status is displayed by means of the EventsActiveEV program.

    c. Sound

       The Sound checkbox controls the verbal alarm annunciation from EagleVision. This has no effect on any audible alarm controlled by any other device.

    d. Printer

       The Printer checkbox controls the printing function for the current event.

       When printing is selected, an additional pull-down menu appears. This menu permits selection of the colors that the event message will be printed and displayed. Color for both normal and event conditions can be selected. Color selections include: black (default), blue, red or green.

e. Auto Clear

The Auto Clear checkbox controls the requirement for operator acknowledgment. When Auto Clear is enabled, operator acknowledgment is not required to clear an event once the event condition has returned to its original state.

11. Select Save once the event has been configured.

As events are configured, select Save before selecting Exit, Next or Previous. If not, event configuration will be lost. The “save” button on the event configuration dialog box saves the event to the database in RAM only. To make event configuration changes permanent, select “save” from the “file” menu.

12. Once an event is configured, Next or Previous can be selected to configure another event. Exit can also be selected to return to the Event Configurations screen and scroll or use the Find command to select the next event to create or modify.

Proper operation of the event monitor depends on the proper configuration of datatable reads.

2.10

Event Configuration (External Database)

Although it is possible to build the entire event monitoring database from within the EagleVision application, the operator may wish to develop the database externally.

For large database applications EagleVision allows the importing or exporting of the “Events to Monitor” file in a generic comma separated values (CSV) format which is compatible with many database and spreadsheet programs. You can also work with “Tab” separated values by selecting this option from the “preferences” dialog box accessed by means of the “Misc” menu.

When configuring a system with hundreds or thousands of events, a considerable amount of time can be saved by performing the configuration in a different environment such as a dedicated database or spreadsheet application. These programs can be optimized for more efficient data entry.

The “EventsToMonitor” file is read by EagleVision when it is initially launched and contains all of the configuration information used by the database for monitoring, alarming, and printing events. During operation, the “EventsToMonitor” file is not used but is updated whenever Save is selected from the File menu.

To import or export a database file to or from another application choose the “IMP/EXP” button on the “Event Configurations” screen. The import/export dialog box will appear.

Selecting “Export” will create a file on the hard disk with all of the configured events. Following is an example of the first three records of a sample database as exported by EagleVision.

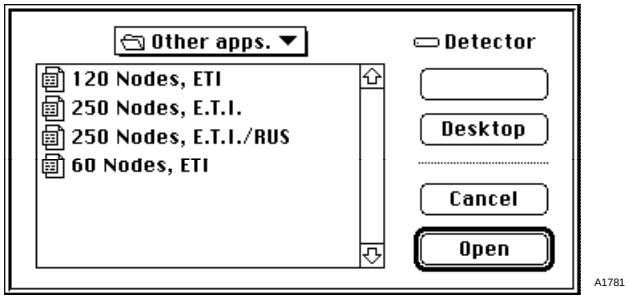
0,0,Transition On,Master Fuel Trip, N20:0/0,0,Y,Y,N,N,Red,Green,Y

1,0,Transition On,Master Fault Latch, N20:0/2,0,Y,Y,N,N,Red,Green,Y

2,0,Transition On,Alarm Horn Latch, N20:0/4,0,Y,Y,N,N,Red,Green,Y

To import a file containing all of the database records for the event monitor, the operator must ensure that the file follows the structure as defined on pages 2.12 and 2.13.

Select “Import” and the standard Macintosh file access dialog box will appear.



- Any text file will be recognized as “available“ for import.

2.12

Event Configuration (External Database)

DATABASE FILE STRUCTURE

The following is a field-by-field specification of the record structure.

Field 1: Event number

Must be a number ranging from 0 to 4999.

Field 2: Device address number

Must be the Modbus address of the PLC or Gateway, number ranging from 1 to 247.

Field 3: Event type

Must contain one of the following text strings:

Transition On	(13 characters)
Transition Off	(14 characters)
Word >=	(7 characters)
Word <=	(7 characters)

The character counts listed to the right include spaces between words and between the end of a word and any arithmetic operators.

Field 4: Event name (user-defined)

Up to 48 characters of any type.

Field 5: Address

Any legal Modbus address. Refer to the "Event Configuration" section for definition of legal addressing formats.

Field 6: Event value

If the event is based on a word value, the setpoint for toggling the event is entered in the value field within the following ranges:

		Minimum	Maximum
Word	Any integer between:	–32768	32767

Field 7: Event screen

Must contain either the single character "Y" for yes or "N" for no.

Field 8: Log to file

Must contain either the single character "Y" for yes or "N" for no.

Field 9: Sound

Must contain either the single character "Y" for yes or "N" for no.

Field 10: Printer

Must contain either the single character "Y" for yes or "N" for no.

Field 11: Event color

Must contain one of the following text strings:

Black	(5 characters)
Blue	(4 characters)
Red	(3 characters)
Green	(5 characters)

Field 12: Return to normal color

Must contain one of the following text strings:

Black	(5 characters)
Blue	(4 characters)
Red	(3 characters)
Green	(5 characters)

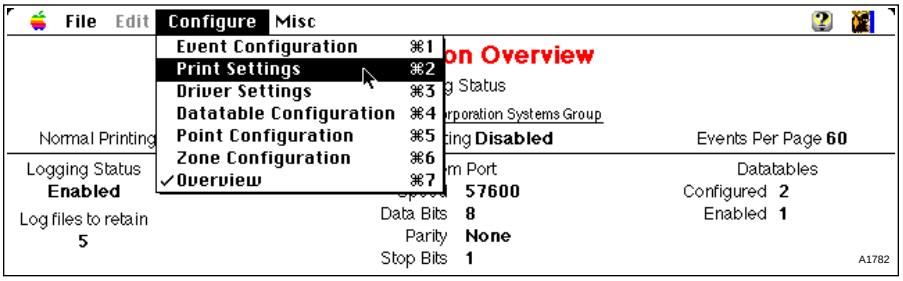
Field 13: Auto clear

Must contain either the single character “Y” for yes or “N” for no.

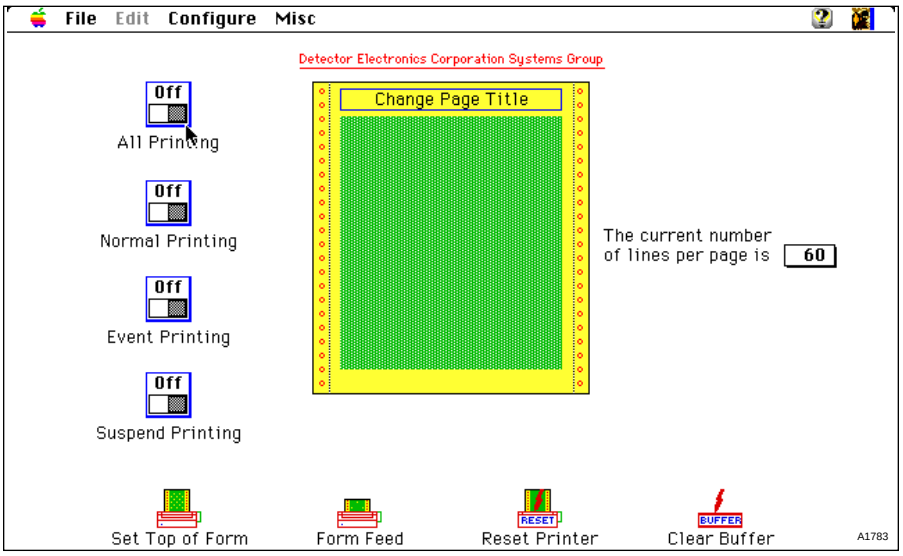
2.14

Print Settings Configuration (⌘2)

Selecting “Print Settings” from the configure menu will bring up the printing configuration screen.



It has a variety of icon based controls described below.



All Printing

Enables/disables both normal and event printing.

Normal Printing

When switched on, EagleVision prints the event name followed by a suffix of “NORMAL” and the time and date when that event returns to its nonevent condition.

Only events that were configured to print are printed. See Event Configurations (2.8, 10 d).

Event Printing

When switched on, EagleVision prints all events as they occur.

The printed event consists of the events name followed by the time and date it occurred.

The events are printed in the colors selected during event configuration.

Only events that were configured to print are printed. See Event Configurations (2.8, 10 d).

Change page title

Click on this area to bring up a dialog box allowing the header text printed on each page to be changed.

The page title can be any combination of text, symbols and numbers up to 48 characters long.

Set Top of Form

When changing paper in the printer, physically set the paper to the top of the page and select Set Top of Form.

This will ensure that form feeds will advance the paper to the proper position.

Form Feed

Select Form Feed to advance the printer one page.

Reset Printer

Select Reset Printer to perform the equivalent of cycling power to the printer. This is used when there is a print error.

Clear Buffer

EagleVision maintains a 1000 event buffer in RAM to allow the printer paper to be changed without losing events. It also enhances system performance when large numbers of events occur in a short time period.

Pressing the “clear Buffer” button will delete all events in the buffer.

Current number of lines per page

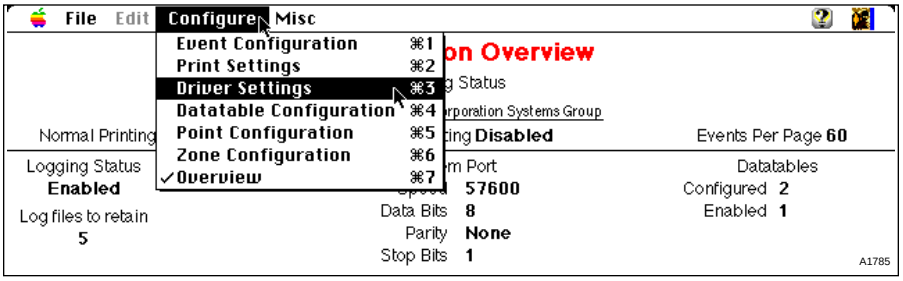
Allows the number of lines printed to be set before the printer advances to a new page.

2.16

Driver Settings (⌘3)

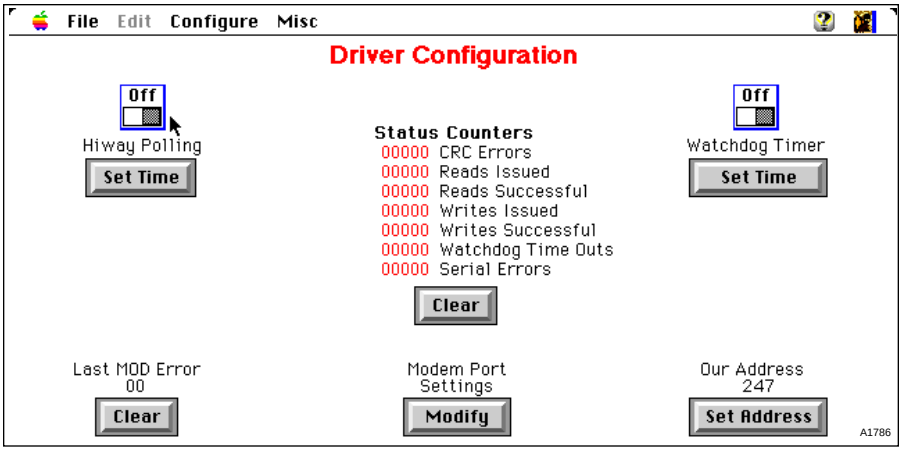
Driver Settings

Selecting “Driver Settings” from the configure menu will bring up the driver configuration screen.



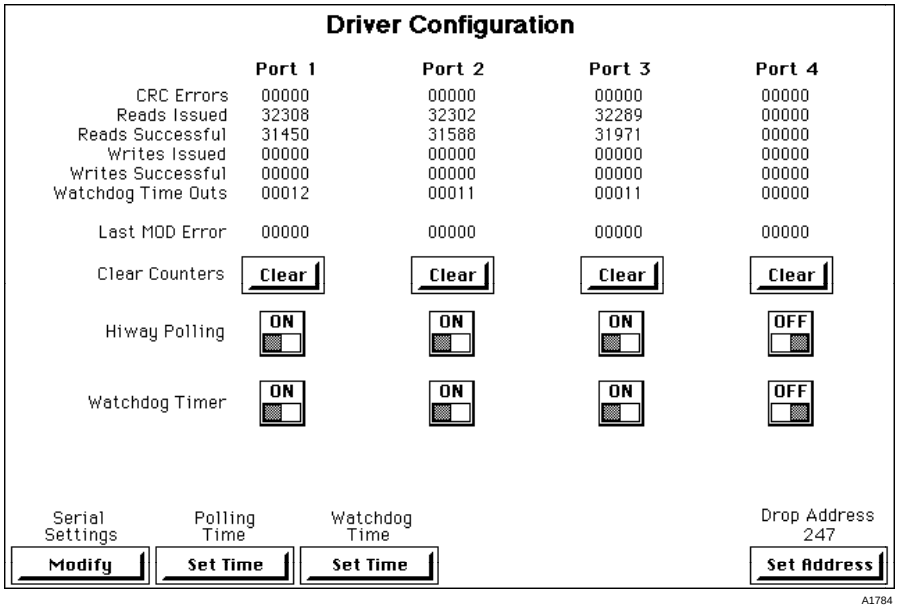
The Driver Configuration screen allows you to configure the communication link from the OIS to the gateway.

Single Port Version



On startup the software will check the OIS hardware and then enable the appropriate screen from either the single or four port version.

Four Port Version



Driver Settings (⌘3)

A variety of onscreen pushbuttons and switches control the configuration. These controls are described below.

Hiway Polling

Switch this off to stop requesting data from the gateway.

In the multi-port version there is one switch per port. When hiway polling is switched off for a port, you can not access the point displays for that gateway.

Last MOD Error

Displays the decimal value of the last Modbus error code. Refer to the Modbus protocol for a listing of Modbus error codes. The clear button will reset the error.

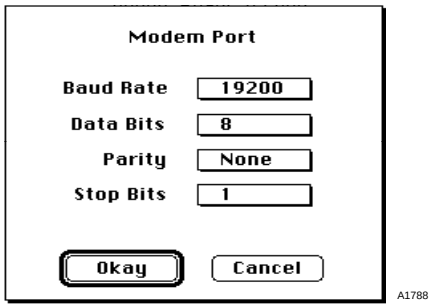
Status Counters

Allows you to monitor communications between the OIS and the gateway. The clear button can be used at any time to reset the counters of a given port to zero.

In the four port version, holding down the option key while selecting any "clear" button will reset all four sets of counters to zero.

Serial Port Settings

This dialog box allows you to adjust the communication parameters between the OIS and the gateway(s). These settings must match the gateway settings. Depending on the OIS hardware configuration, either the single port or four port version for serial settings dialog box will appear.

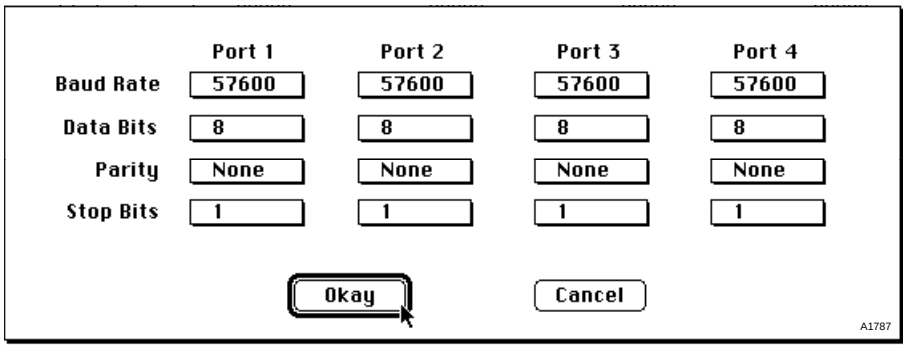


SINGLE PORT VERSION

2.18

Driver Settings (⌘3)

Four Port Version



The single port version assigns the modem port for communicating with the gateway.

The four port version leaves the modem port open and uses only the four serial ports on the serial expansion board.

Watchdog Timer

If Hiway Polling is switched on, the watchdog timer will continuously monitor serial communications.

- If the OIS requests data from the gateway, it must receive that data within the time specified in the watchdog timer dialog box (180 or 3 second default) or a watchdog timer timeout occurs. This indicates that the link to the gateway has been lost.
- Any watchdog timer timeout errors are displayed in the event window, logged to disk and sent to the printer.

OIS Modbus Address

Select the “Set Address” button to modify the Modbus station address for the OIS.

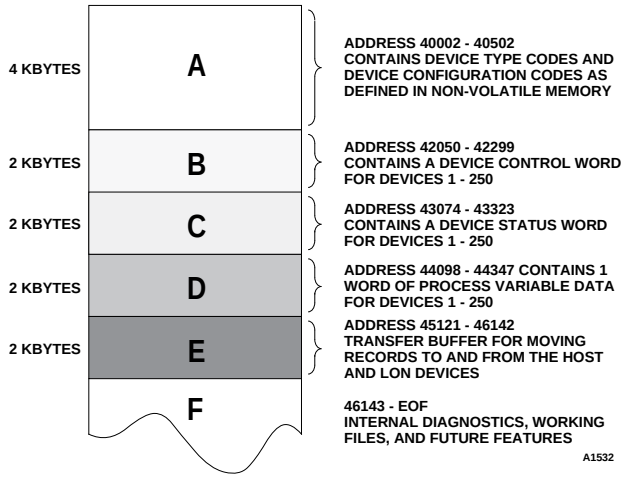
The current address setting is displayed in the data entry field. This must be a unique address. Each device must have a different address from 1 to 247.

Datatable Configuration (⌘4)

Datatable configuration defines the PLC/Gateway addresses that the OIS will read.

The gateway memory accessible to the OIS emulates a data table in register memory on a generic Modicon PLC. Each address is 16 bits wide (two contiguous bytes).

The gateway supports up to 250 devices. Each device is allotted five 16 bit words of memory in the “datatable”.



- Two words of “A” memory (type code and configuration word) normally not read, for diagnostics only.
- One word of “B” memory (device control words).
- One word of “C” memory (diagnostics and status).
- One word of “D” memory (current value of the process variable).
- “E” memory is used to transfer information to or from any individual communication module.
- "F" memory contains “last direction” diagnostic information.

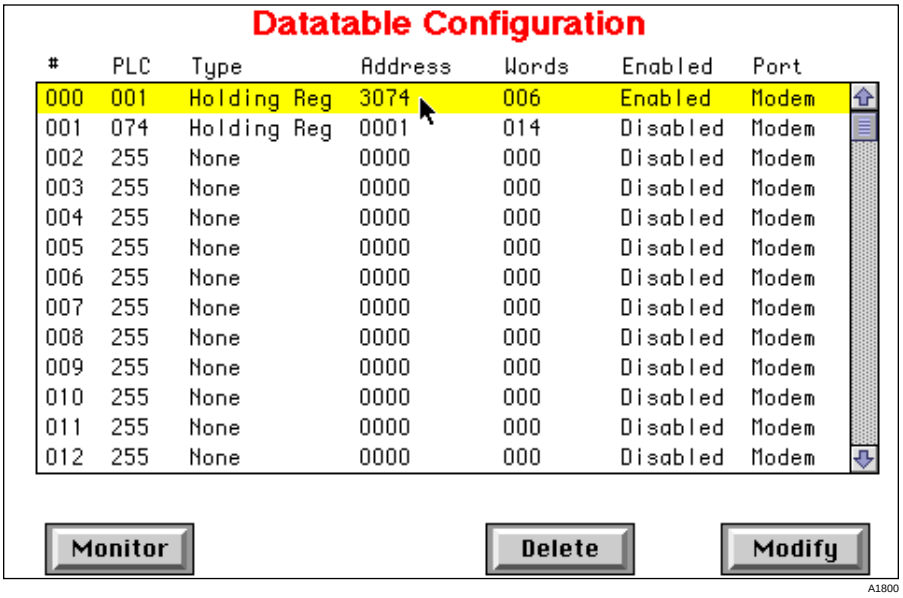
At least one datatable must be properly configured and enabled before the “point display” feature will operate.

2.20

Datatable Configuration (⌘4)

Datatable Configuration Screen

1. Select Datatable Configuration from the Configure menu. The Datatable Configuration screen appears:



#	The datatable number is a numeric index used by EagleVision for reference. It is also used by XCMD's in the graphics package to selectively enable or disable the reading of various datatables.
PLC	The Modbus address for a device, a number from 1 to 247. An address of 255 means the table is not configured.
Type	The type of memory (coil, input, input register or holding register).
Address	Starting address in Modbus notation (minus the register type), e.g., address 0001=40001, address 3073=43073 for holding registers.
Words	The number of words the OIS will read.
Enabled	Indicates whether the OIS is currently reading this area (user-defined in the Datatable Modifier dialog box and can be toggled via XCMD's from the graphics package).

If the enable/disable is modified by means of the appropriate XCMD while viewing this list, the list will not reflect the change until this screen is re-entered.

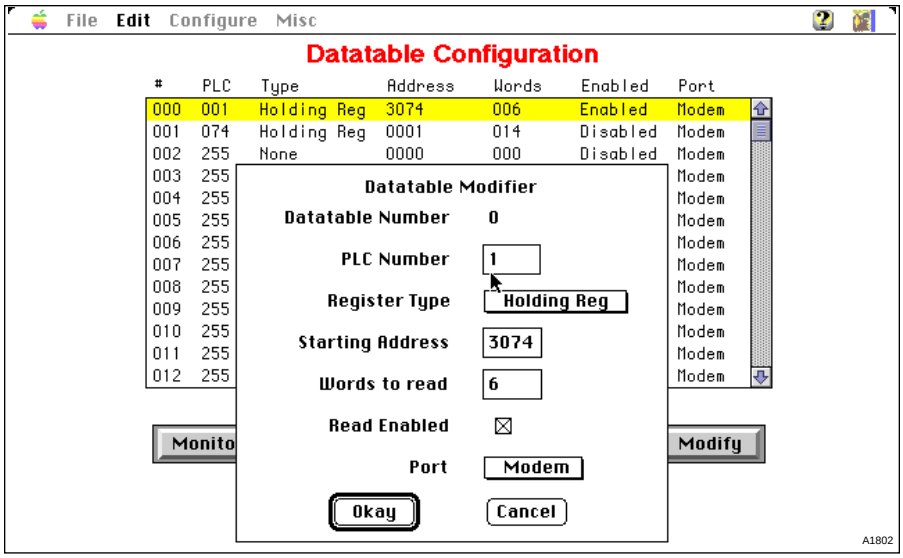
2. To set up or modify a datatable:

   a. Select the datatable for configuration or modificaton and select Modify.

   or

   Double-click on the datatable.

   b. The Datatable Modifier dialog box is displayed:



   c. Enter the PLC number (i.e., gateway Modbus address).

   d. Select the Register Type pop-up menu and select the register type.

   e. Enter the starting address.

   f. Enter the number of words to read (125 words max).

   g Enable or disable the read function by selecting the Read Enabled check box:

- An X in the Read Enabled check box causes the OIS to read the datatable.
- If the Read Enabled checkbox is left blank, the OIS will not read the data table.

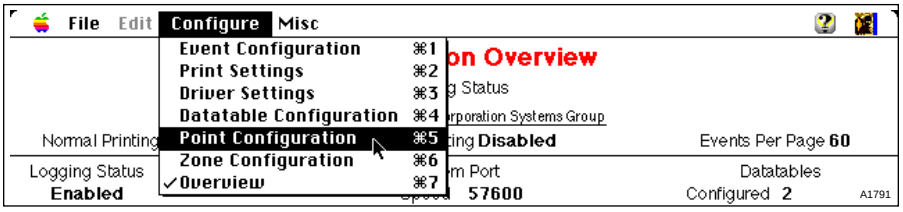
To save time, highlight and copy the Datatable Configuration from one datatable configuration and paste it elsewhere. Be sure to modify "Starting Address" and "Words to read" entries of the new configuration.

2.22

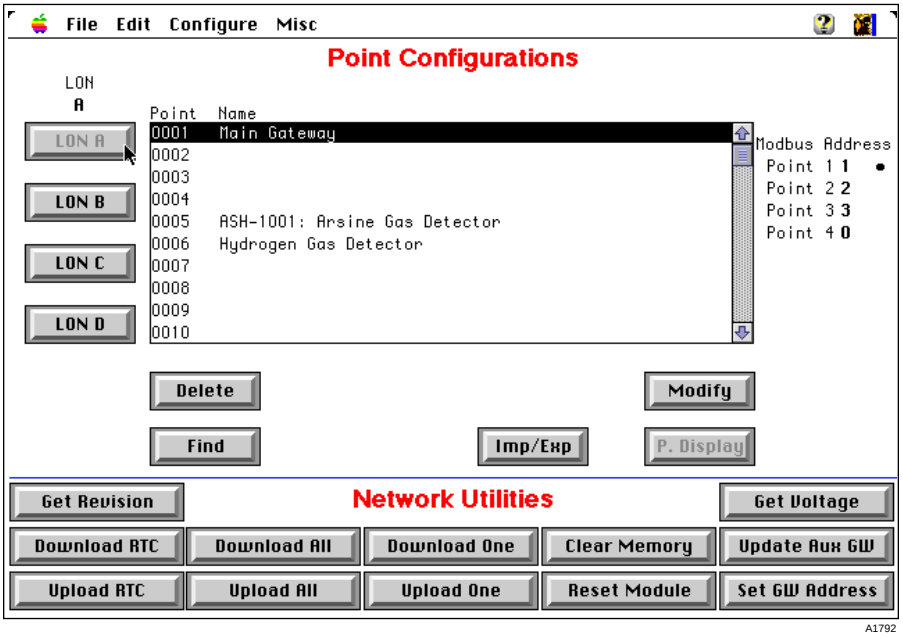
Point Configuration (⌘5)

Point Configuration Procedure

1. Select Point Configuration from the Configure menu.



This brings up the point configurations screen.



A "point'' is defined as a sensing device and its communication module. Each gateway supports up to 250 points. Each point has a unique address, which is set by means of a dip switch located in the device's communication module.

If this is a new EagleVision installation to an existing Eagle 2000 network, you can upload point configurations from the existing gateway that has been previously configured.

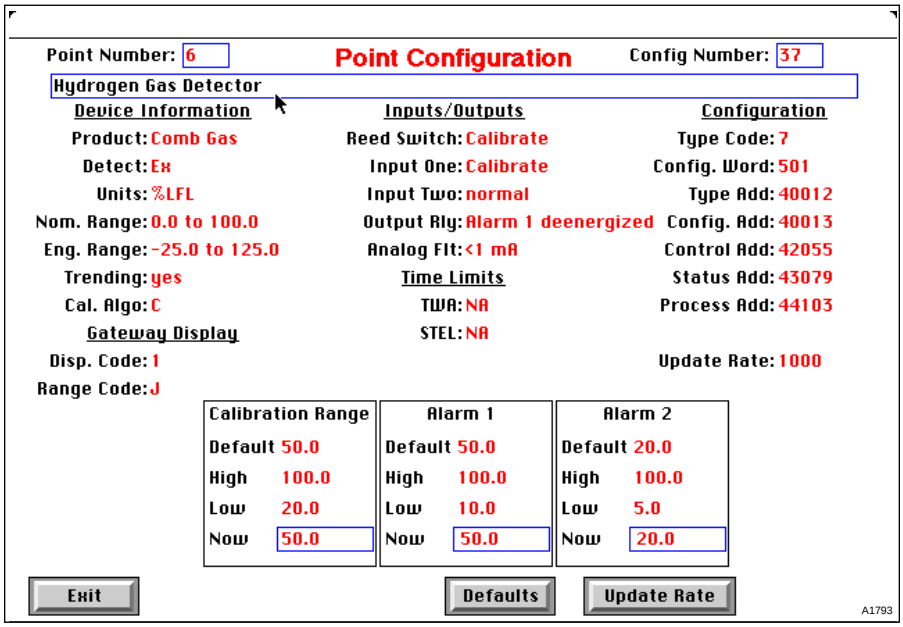
2. Select the point number or name of the device and then select the Modify button.

   or

   Double-click on the point or name of the device.

   For similar points, select the point number or name, select copy, select the point number to be configured and then choose paste. This will paste the complete point configuration requiring only the address and name to be changed. The configuration number, setpoints, etc. will be the same as the point copied.

3. The Point Configuration screen is displayed:



Point numbers 1 through 4 are reserved for the gateway.

4. Assign a configuration number to the current point:

   a. Refer to the Eagle 2000™ System Configuration Matrix (form number 95-8453) to determine the configuration number for the device.

   b. Select the Config Number box to display the up and down scroll arrows (located next to the Config Number box).

   c. Enter the configuration number:

   - Use the up and down scroll arrows until the desired Config. Number is displayed.
   - Select the "S" box next to the scroll arrows and enter the configuration number in the Enter Number dialog box. Scroll through the list using the arrows next to the configuration number. The information for that type will be displayed.

5. Select Accept when all the point configuration values are entered, or select Cancel to restore previous point configuration data.

6. Enter a point name:

   a. Select the point name box. The Enter Name/Title dialog box appears.

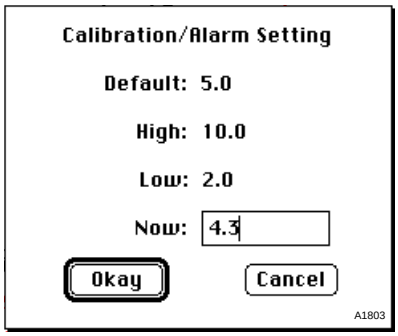
   b. Enter the desired point name (up to 48 characters).

   c. Select Okay to accept the name or cancel to leave the existing name.

Entering Point Calibration and Alarm Setpoints

7. Enter the user-defined calibration value in the appropriate units. See Units: under Device Information in the Point Configuration screen for the proper units.

   a. Select the "Calibration Range Now" box to display the Calibration/Alarm Setting dialog box.



   b. Enter the desired value and select Okay to accept the new value or cancel to leave the current value unchanged.

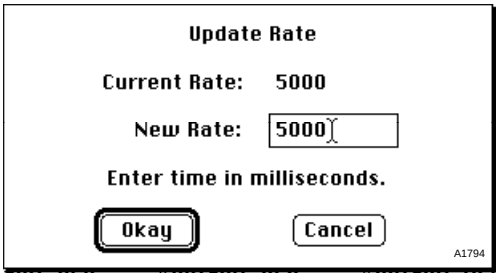
8. Enter the user-defined Alarm 1 and 2 values. This defines what levels will generate alarms.

   a. Select the "Alarm 1 or Alarm 2 Now" box to display the Calibration/Alarm Settings dialog box.

   b. Enter the desired value and select Okay to accept the new value or cancel to leave the current value unchanged.

⚠ Selecting the "Defaults" pushbutton will set the Calibration Range, Alarm 1, and Alarm 2 setpoints to their default values.

Setting Point Update Rates



9. Enter the desired point update rate in milliseconds.

   a. Select the "Update Rate" button.

   b. Enter the desired update rate in milliseconds. The minimum frequency is 1000 ms (1 sec.) and the maximum is 10,000 ms (10 sec.). The default update is 5000 ms (5 sec.).

⚠ Holding down the "option" key when selecting the update rate button will allow the rate for <u>all</u> points to be changed simultaneously.

10. To continue configuration of other points, select the point number box and:
    - Select the “S” box next to the scroll arrows and enter the desired Point Number in the Enter Number dialog box.
    - Use the up and down scroll arrows until the desired Point Number is displayed.
11. Use the above procedure (3 through 9) to configure the rest of the points.
12. Select Exit once the point configuration is complete. The display returns to the main Point Configurations screen.

Point configurations can be copied and pasted to speed up the configuration of similar points.

13. Select Save from the File menu to save the new point configuration information to the Configuration file on the OIS hard drive.
14. Download the point configuration to the gateway:
    a. Select Download All to download all the point configurations to the gateway.
    b. Select Download One to download the point configurations to a single selected point. Only the point that is highlighted will be downloaded.

The gateway will not respond to the new point configuration until the new point(s) are downloaded.

POINT DELETE AND FIND PROCEDURES

To delete a single point

1. Select the unwanted point.
2. Select Delete.

   A warning box will ask if the selected point should be deleted.

Deleting a point just removes it from the configuration file on the OIS hard drive. The gateway will still respond to the point. If Download All or Download One is selected, the gateway will stop responding to the point and the point will be deleted in the gateway’s memory.

To Find and modify a single point

1. Select Find and enter any portion of the point name you want to locate.
2. The Find command will search down from the current location and highlight the first point name that matches the find criteria.

   The Find command will only search down from the current location and will not wrap up to the beginning of the list.

2.26

Relay Node Configuration Procedure

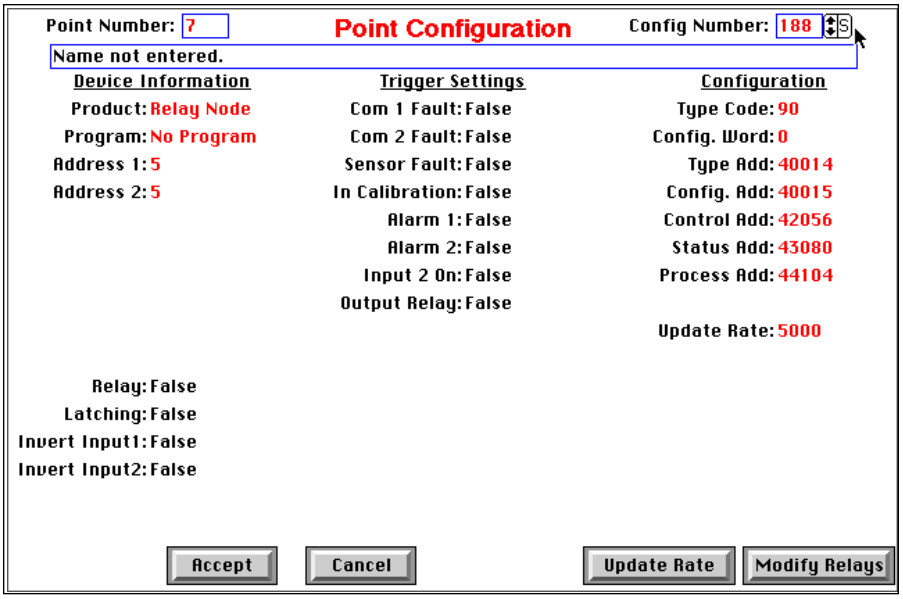
1. Select the point number or name of the device needing configuration and then select the Modify button.

   or

   Double-click on the point or name of the device.

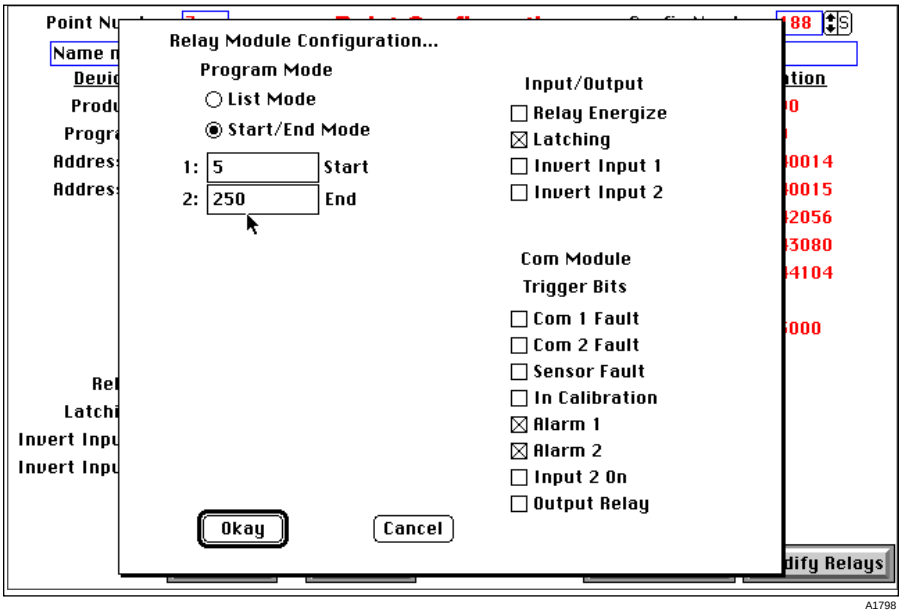
2. The Point Configuration screen for an unconfigured node is displayed. Click in the “Config Number” box in the upper right corner of the window and enter “188” as the point type.

   Type “188” is for relay nodes and will display the Point Configuration screen for a Relay Node.



A1797

3. Select the “Modify Relays” button. This will display a dialog box, allowing the relay node to be configured. From this dialog box the program for the module must be selected and the appropriate “node” information that determines how the unit will function must be entered.



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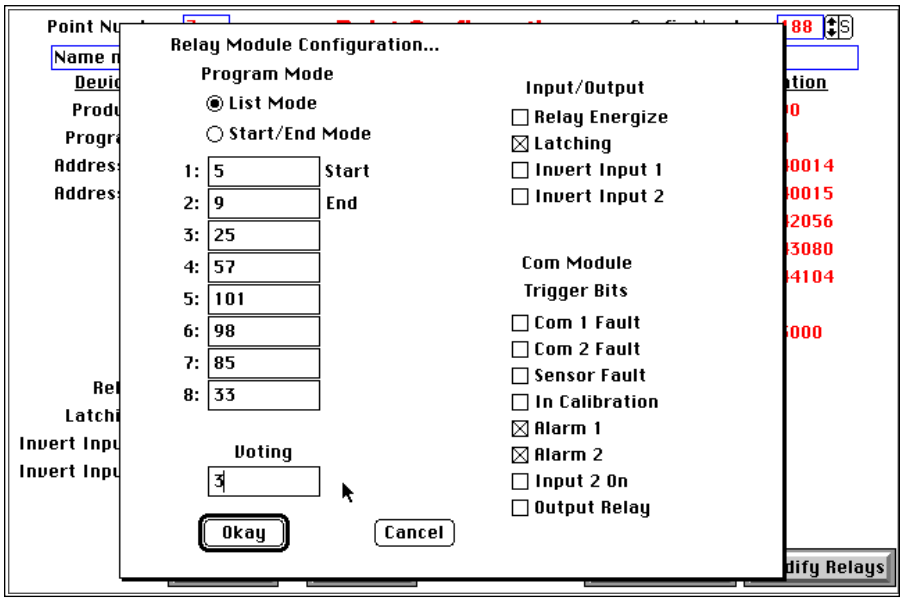
4. Start/End Mode:
   The default program mode selection for the Relay Module is the "Start/End" mode. In this mode enter a "start" and "end" node number and the relay module will activate its relay based on data from this range of nodes.

   Also select how the Inputs and Outputs of the module are to be used by using the appropriate checkboxes.

   After the I/O is configured, determine which events within the defined group of nodes will trigger the module's relay. This is done with the "Trigger Bits" checkboxes.

5. List Mode:
   The second available program that can be used by the Relay Module is the "List Mode." This mode is accessed by selecting the appropriate "radio button" from the Relay Module Configuration dialog box.



When selected, eight data entry fields are displayed in place of the two used in the Start/End mode. In these eight fields you may enter eight discrete communication module addresses and the relay module will respond based on data from these nodes. As shown in the example above, the node addresses can be in any order. I/O operation and triggers are selected by means of the same checkboxes as described in the "Start/End" mode.

In addition, a "Voting" option can be included. By entering a number in the voting field, the relay will only be activated when "n" modules from the list have one or more of the conditions specified by the trigger bits, where "n" is the number entered into the voting field.

In the example shown above, "3" is entered in the voting field and Alarm 1 and Alarm 2 are the triggers. When either Alarm 1 or Alarm 2 is present in at least three modules from the list of eight, the relay will activate.

2.28

IMPORT / EXPORT

Point Configuration Database Format

The IMP/EXP button allows the operator to export an existing EagleVision point configuration database, or, to import one that has been created or modified in an external application program. The import/export file is a text file with each field separated by either a "comma" or a "tab," depending on what was selected in the EagleVision preferences (see Misc. menu). The file format is as follows:

Field 1: "LON number"

A number, 0 through 3, which corresponds to EagleVision's four supported LONs A, B, C, or D.

Field 2: "Node number"

A number, 5 through 250. This is the logical address as set by the DIP switches on the field devices communication module.

The point configuration import/export function only pertains to field sensing devices, not gateways or relay nodes.

Field 3: "Point type"

A number, 1 through 184. This is the number from the left-most column of the System Configuration Matrix (95-8453) that identifies the parameters for the node to be configured.

Field 4: "Node name"

An operator entered name for the device, up to 48 characters in length, which appears in the heading of the point display screen.

Field 5: "Calibration Range"

A number from 1 to 100 representing the calibration gas concentration. This number must be within the proper range for the selected point type (field 3) and can be determined from the System Configuration Matrix (95-8453).

Field 6: "Alarm 1 Setpoint"

A number representing the alarm setpoint. This number must be within the proper range for the selected point type (field 3) and can be determined from the System Configuration Matrix (95-8453).

Field 7: "Alarm 2 Setpoint"

A number representing the alarm setpoint. This number must be within the proper range for the selected point type (field 3) and can be determined from the System Configuration Matrix (95-8453).

Field 8: "Update Rate"

A number from 1,000 to 10,000 (milliseconds). The update rate determines how often a module sends its report to the gateway.

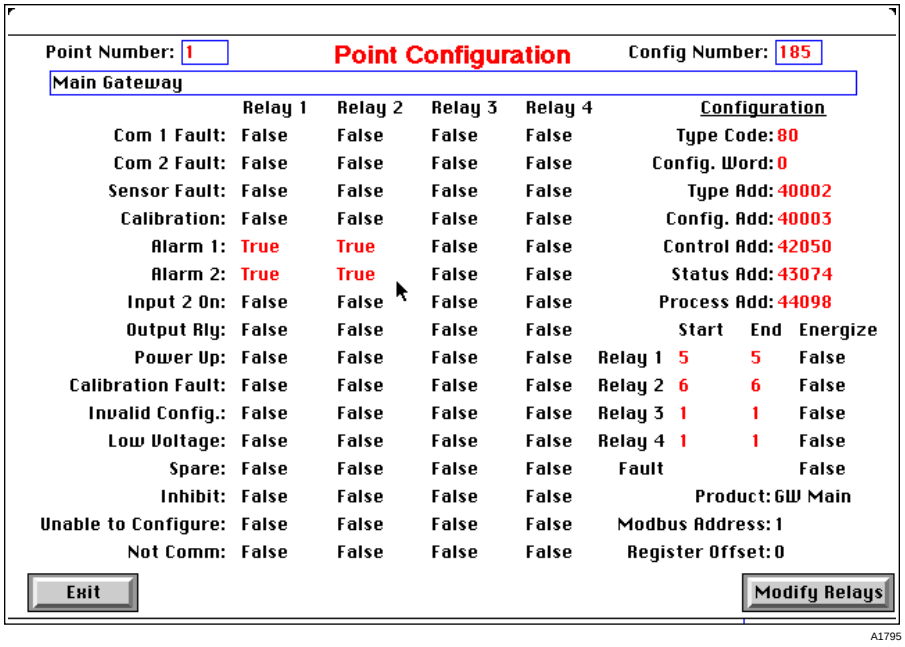
Gateway Relay Configuration

The gateway has four relays, each of which can be configured to monitor a contiguous group of points. In addition there is a gateway fault relay. All relays can be configured to be energized or de-energized in normal operation. Gateway relay operation is independent of the OIS.

1. Select Point Configuration from the Configure menu.
2. Select a point (1 through 4) and then select modify or double-click on the desired gateway point.

Points 1 through 4 are always reserved for the gateways.

3. The Point Configuration screen for the gateway is displayed:



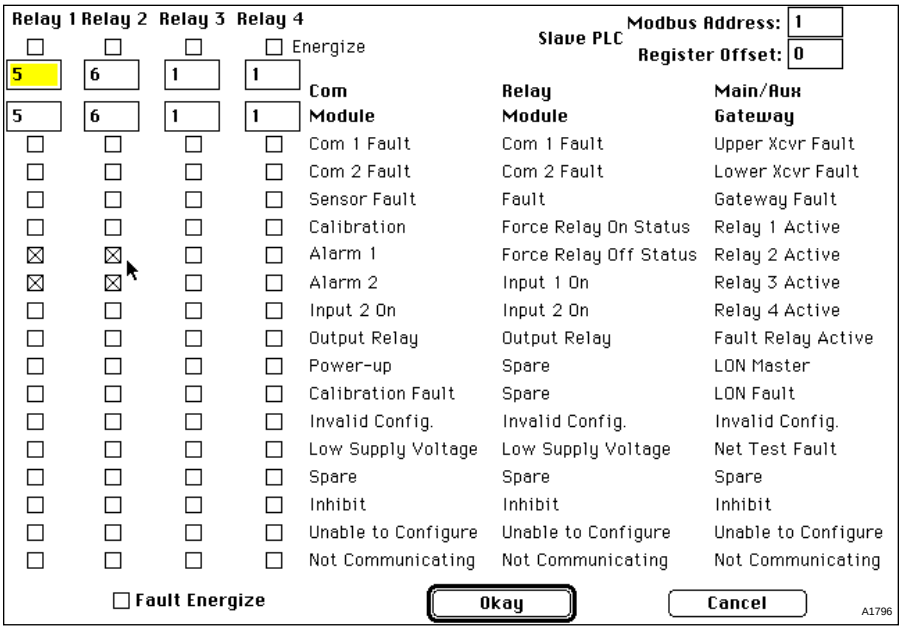
The Point Configuration screen provides an overview of the gateway relay configuration:

Any alarm/fault item listed as True will energize/de-energize the gateway relay when the alarm/fault condition is present.

Start Address	Displays the Modbus address where the starting point number is stored.
End Address	Displays the Modbus address where the end point number is stored.
Trigger Address	Displays the Modbus address where the relay trigger is stored.

Gateway Relay Configuration

4. To configure the gateway relays, select Modify Relays. The Gateway relay configuration screen is displayed:



5. The upper right area of the screen has two entries relating to "Slave PLC" operation. When the gateway is configured so its Port "0" is a Modbus RTU Master (to feed information to a PLC), the Modbus Address and register offset may need to be adjusted. The default values are MB address "1" and an offset of "0." Changing the PLC address (1 – 247) is used to ensure the gateway sends its data to the right PLC. The offset determines where in the "40,000" register memory the data is placed. Normally the gateway starts placing data in a Slave PLC's memory at 40,001. If an offset of "100" were specified, it would start at 40,101.

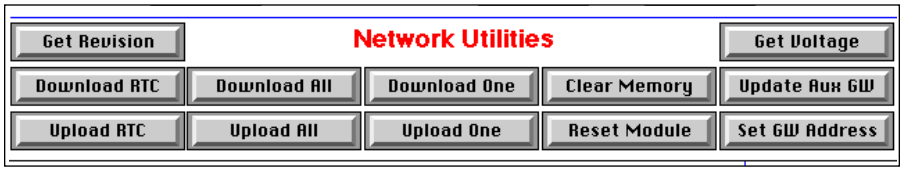
6. Configure the gateway relays.

   Gateway relay configuration involves selecting a range of points (communication modules and their associated devices), which will be monitored for any of the fault/alarm conditions listed. Any fault/alarm that has been selected will cause the gateway relay to energize/de-energize.

The point display screen provides a means of inhibiting a point. When a point is inhibited, the gateway relay will not respond to any events or alarms generated by a particular point. However, events configured in the OIS will still respond.

Network Utilities

The Network Utilities portion of the Point Configurations screen allows configurations to be transferred between the OIS and the gateway(s).



Get Revision

Retrieves and displays the firmware revision number for the selected point.

To stop this process, press "command period" (⌘.).

Holding down the option key when selecting "Get Revision" will allow entry of a starting and ending node number allowing the revision number of a specific group of nodes to be retrieved.

Download RTC

Select Download RTC to download the real time clock (RTC) value from the OIS to the gateway. This synchronizes the gateway clock to the OIS clock. In normal operation, the OIS will automatically synchronize the gateway clock every night at midnight along with the daily log management.

Upload RTC

Select Upload RTC to upload the real time clock (RTC) value from the current gateway to the OIS. This allows the gateway date/time clock values to be viewed without affecting the OIS clock. The gateway date/time clock values appear in the Event Window along with the gateways ROM software version number.

Download All

Once a group of points has been configured, select Download All to sequentially download all the point configurations from the OIS to the current gateway. Status messages appear during the download process. The gateway will then transfer the configuration to the individual communication modules.

To stop the download procedure, press "command period" (⌘.).

Holding down the option key when selecting "Download All" will allow entry of a starting and ending node number allowing a specific group of nodes to be downloaded.

Network Utilities

Upload All

Select Upload All to upload the point configuration from the current gateway to the OIS. The individual point names will appear as asterisks (if no name is entered in the database for the point) and will have to be renamed. Status messages appear during the upload process.

To stop the upload procedure, press "command period" (⌘.).

Download One

Select Download One to download a single point configuration (whichever point is selected) from the OIS to the current gateway. Status messages appear during the download process. The gateway will then transfer the configuration to the individual communication modules.

Upload One

Select Upload One to upload a selected single point's configuration from the current gateway to the OIS. The individual point name will appear as an asterisk (if no name is entered in the database for the point) and will have to be renamed. Status messages and prompts appear during the upload process.

Clear Memory

Select Clear Memory to completely erase any information stored in the current gateway's non-volatile memory. This is usually done at the start of the configuration of a new gateway.

Reset Module

Select Reset Module to initiate the equivalent of a power-up reset. This "re-initializes" the module's software.

This does not affect the module's type code, configuration code, calibration gas setpoint or alarm setpoints.

Set GW Address

Sets the Modbus address for the gateway being configured by EagleVision. This must match the DIP switch settings for Modbus address on the gateway.

Get Voltage

Retrieves and displays the 24 vdc supply voltage level as measured at the selected module.

To stop this process, press "command period" (⌘.).

Holding down the option key when selecting "Get Voltage" will allow entry of a starting and ending node number allowing the voltage of a specific group of nodes to be retrieved.

Update Aux GW

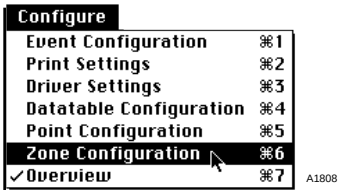
Sends updated configuration information to a selected auxiliary gateway.

Zone Configuration (⌘6)

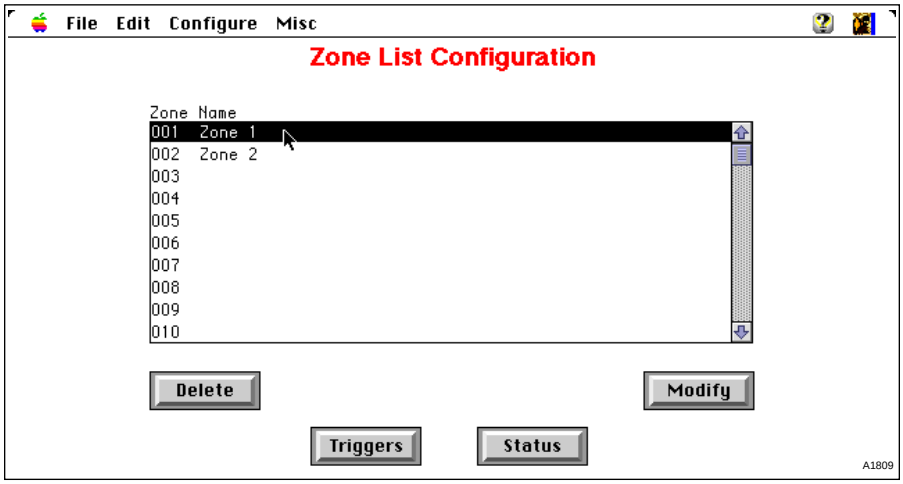
Zone Configuration

Zones are provided primarily to simplify the programming of custom graphics. They are operator configured logical groupings of up to 64 nodes, in any order, and from any attached LON. EagleVision supports up to 256 zones. Zones are configured in the following manner:

1. Select Zone Configuration from the Configure menu:



2. The Zone Configuration screen is displayed:

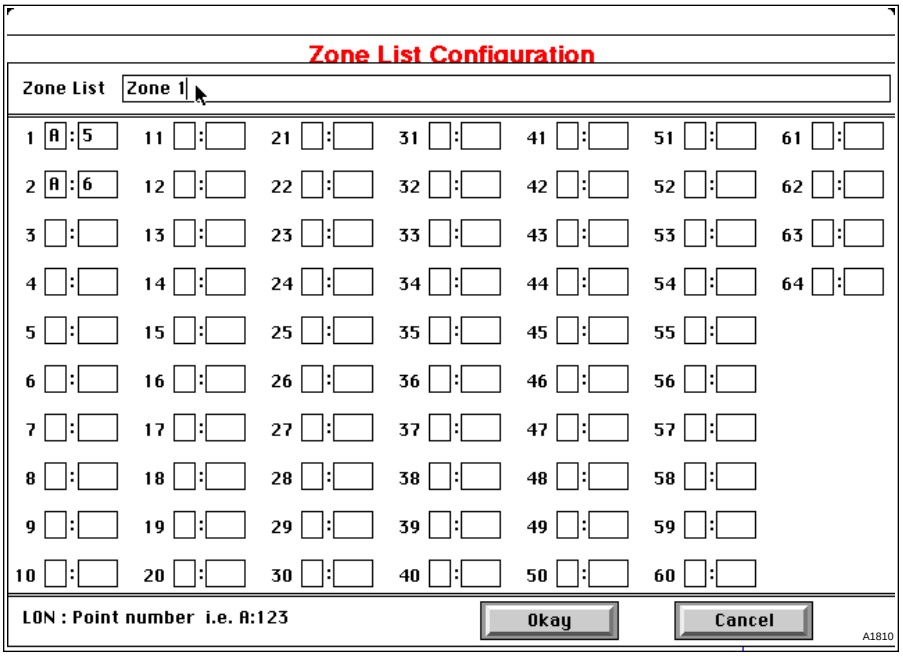


This screen displays the zone number and its name. The zone number is referenced by the zone status display and by XCMD's in graphic programming, the name can be any alphanumeric combination up to 45 characters in length. The name is used only on this screen.

For maximum performance, do not leave any blanks in the zone assignments. If additional zones will be added later, add them to the end. Blank spots are inefficient and degrade performance!

Zone Configuration (⌘6)

3. To configure or edit a zone, select a zone to modify by double-clicking on the zone of interest, or by clicking once on the zone and then selecting the modify button. This will open the “zone list” dialog box.

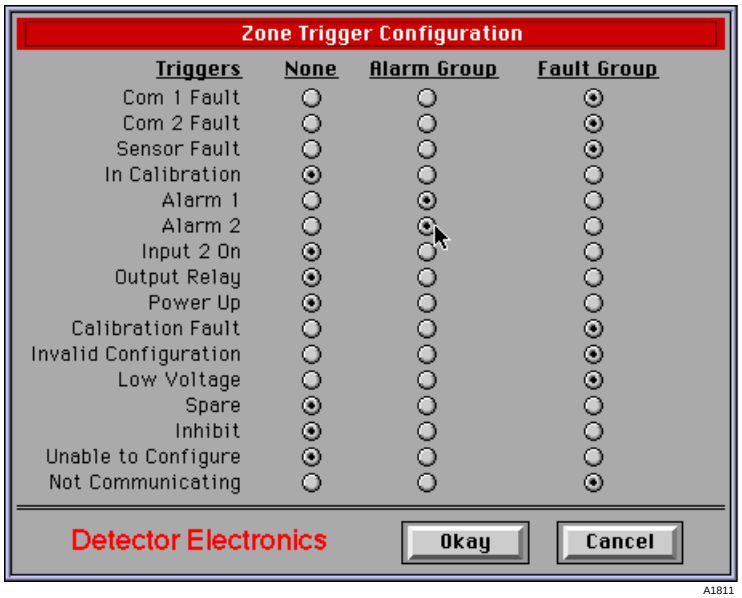


The zone list dialog box contains room for specifying up to 64 nodes to be included in the zone. Each node requires two entries, LON and node. The LON is identified as A, B, C, or D, and the node is identified as 5 through 250.

For maximum performance, do not leave any blanks in the node assignments. If additional points will be added to the zone later, then add them to the end or rework the zone. Blank spots are inefficient and degrade performance!

Zone Trigger Configuration

After the zones are configured, EagleVision must be given the criteria for what constitutes Alarms and Faults. This is done "globally" (for all zones) through the Zone Trigger dialog box. It is accessed by selecting the "Triggers" button on the "Zone List Configuration" screen.



How Zones Work

EagleVision continuously evaluates zones to see if any node in a zone meets the operator configured trigger criteria, and if so, determines if this information is new or old. It then sets the zone state to one of five possible conditions, represented by the numbers 0 through 4:

0	=	Normal	(no alarm or fault) lowest priority
1	=	Fault	(user selected faults)
2	=	Alarm	(user selected alarms)
3	=	New Fault	
4	=	New Alarm	(highest priority).

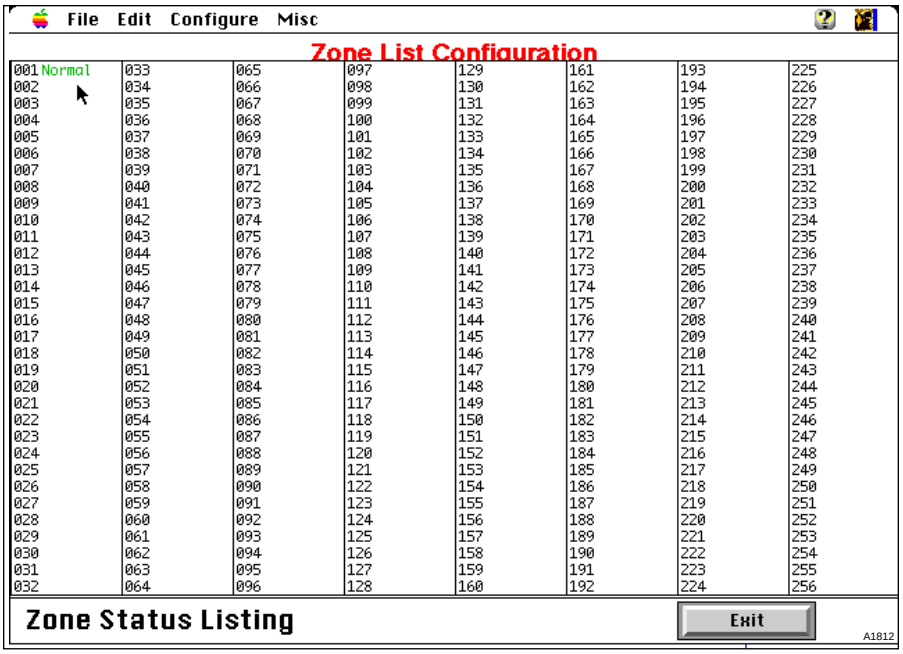
Two XCMD's "GetZoneState" and "GetZoneStatus" are provided to use in graphic programming to access the state and status of zones. GetZoneState returns whether or not something has changed in the zone since the last time it was called. GetZoneStatus returns a number (0 – 4) representing the current status of the zone (as defined above). See the XCMD/XFCN reference section of this manual for more detail.

Zone Monitoring

Once the zones are configured, their operation can be verified by selecting the "Status" button from the "Zone List Configuration" screen. This will display the "Zone Status Listing."

2.36

Zone Configuration (⌘6)



This screen shows the status of all 256 possible zones. Unconfigured zones are blank. Configured zones will display one of five possible states: Normal, Fault, Alarm, New Fault, or New Alarm.

As described above, there are five zone "states" represented by the numbers 0 through 4. The higher the number, the higher the priority of that state. The condition of a zone can be obtained by using either the zone monitor screen, or through SuperCard scripting with either of two zone XCMD's.

Example 1: One of the nodes in Zone 1 indicates a fault. EagleVision's Zone Monitor screen will show Zone 1's condition as "New Fault". Once the operator acknowledges the fault by using EagleVision's acknowledge button, or the AckEvents XCMD from SuperCard, the status will change to "Fault."

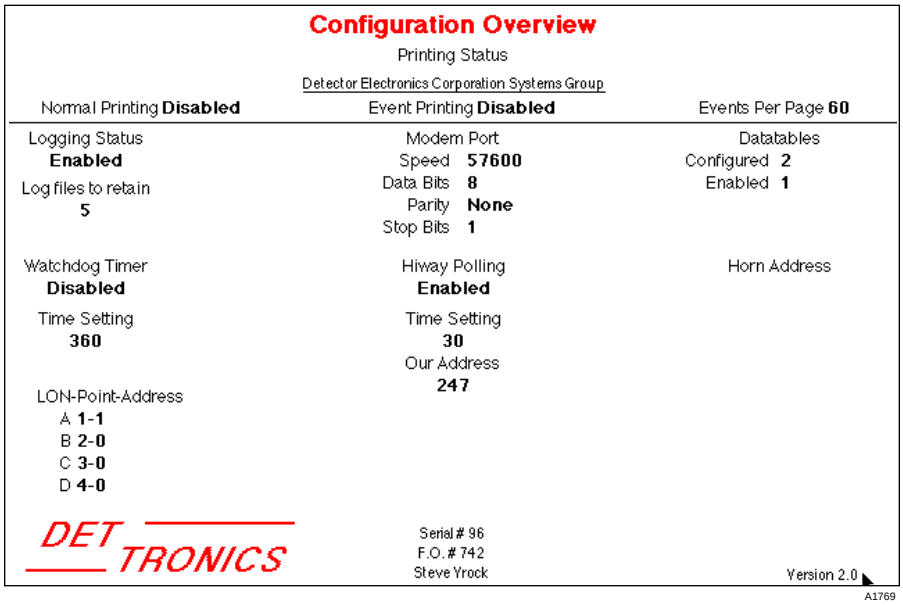
Example 2: With Zone 1 still in a "Fault" status, an alarm occurs. EagleVision's Zone Monitor screen will show Zone 1's condition as "New Alarm." Even though there is still a fault present, alarms have a higher priority and will be reported over the fault condition. Once the operator acknowledges the alarm by using EagleVision's acknowledge button, or the AckEvents XCMD from SuperCard, the status will change to "Alarm."

Configuration Overview (⌘6)

The configuration overview provides a convenient display of the current EagleVision configuration. This screen is shown at startup and can be accessed while running by means of the Configuration menu.

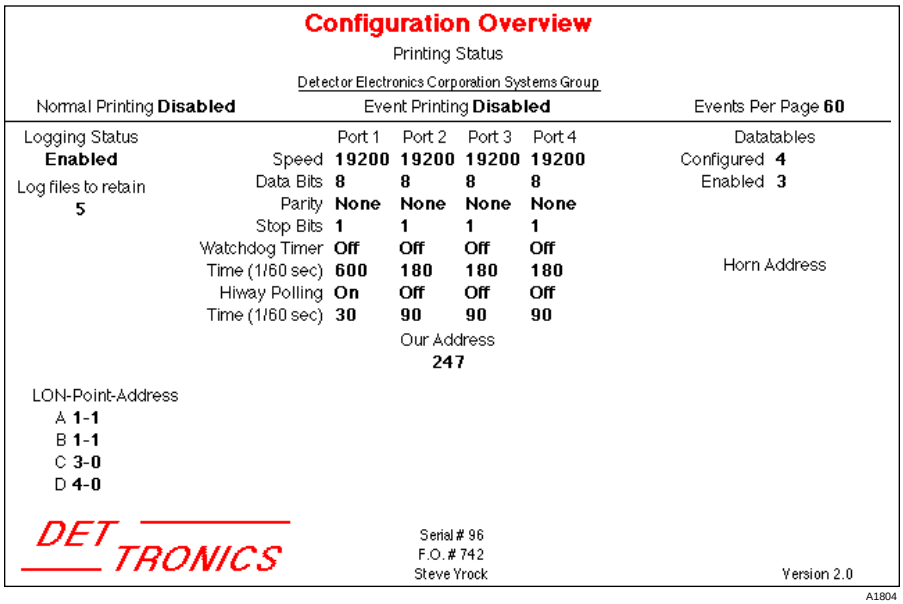
There are two different overview screens, one for a single port OIS and one for a four port OIS. The software will check the OIS hardware at startup and display the appropriate screen.

Single Port Version



The single port version shows a variety of addressing and configuration information and the status of the Modem port.

Four Port Version



The four port version shows the same information as the single port version but includes the communication parameters for all four serial ports.

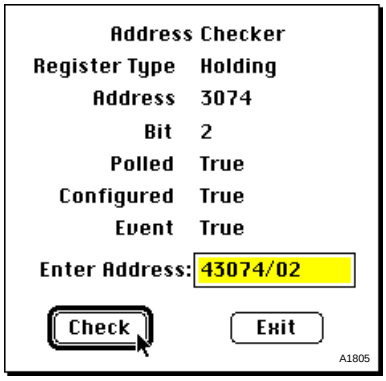
2.38

Misc Menu Items

Address Checker

Select Address Check to check address usage for a specific Modbus address. The operator enters an address to determine:

1. If the address is a legal address.
2. If the address is configured for reading in the datatable configuration.



3. If the address has an event configured.

If the address entered is not a legal address, the various fields will remain blank and a beep will be generated.

Register Type	displays the register type.
Address	displays the element.
Bit	displays the bit.
Polled	True indicates the datatable containing the address is currently being polled.
Configured	True indicates the address is within a configured datatable.
Event	True indicates that an event has been configured for this address.

Hide Event Window

Select Hide Event Window to remove the event window from the bottom of the OIS screen.

Show Event Window

Select Show Event Window to display the event window at the bottom of the OIS screen.

Modify Password

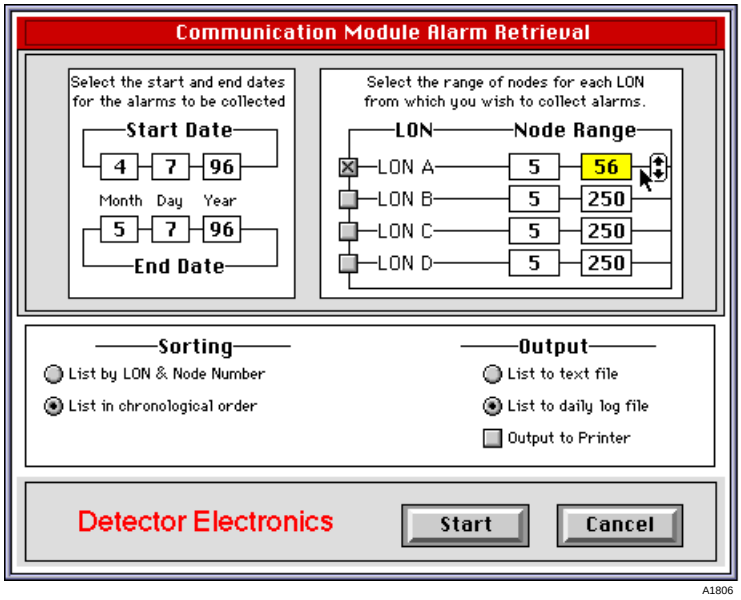
This screen allows you to change the current password, which protects the configuration utilities.

Restore Password Protection

With password protection enabled, operators without passwords can only access the overview. The point display screens can also be accessed by means of an external graphics program, which uses the “GetGWPointDisplay” XCMD. See Section 4 for more information on XCMD’s and XFCN’s.

COLLECT MODULE LOGS

Selecting this feature from the miscellaneous menu will invoke the "Communication Module Alarm Retrieval" dialog box. This will allow the targeted retrieval of alarm records from the non-volatile memory of field devices. The operator can specify a specific time window by entering a starting and ending date, and can also specify a range of nodes (per LON) to retrieve the data from. This alarm data can then be sorted either by LON & node number, or in chronological order. The retrieved data is then output to a text file or daily log file and can also be printed.



PREFERENCES

The preferences dialog box allows certain "global" parameters for the EagleVision program to be set. There is a radio button for selection of a 12 or 24 hour clock. And there are five checkboxes pertaining to importing and exporting events and point configurations.

2.40

Misc Menu Items

EVENTSACTIVE™

Launches the utility that shows a chronological list of any configured events that are currently out of tolerance.

EVENTHISTORY™

Launches the utility that displays the daily log.

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Section 3
Point Displays

DET TRONICS

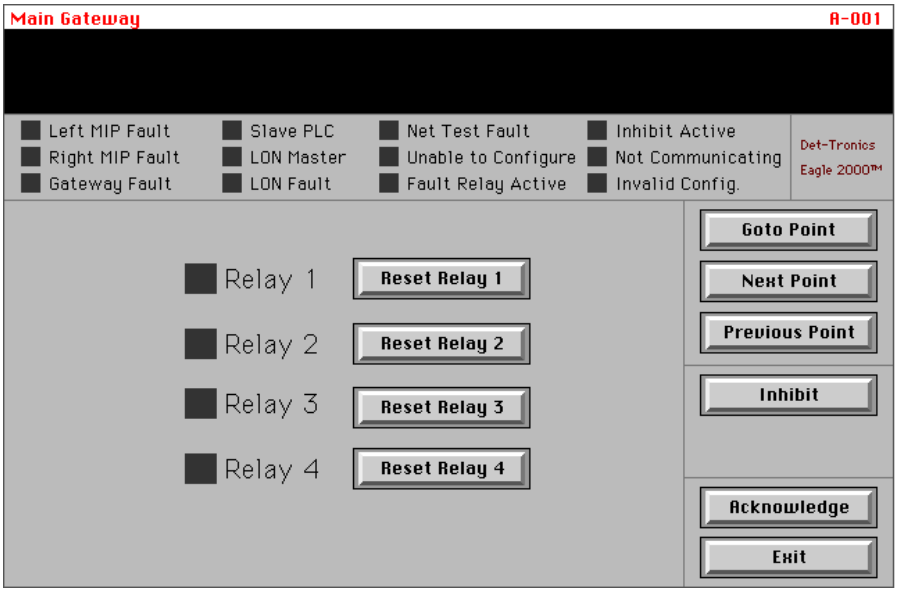
Gateway Point Display

3.1

GATEWAY POINT DISPLAY

The Point Display screens allow the operator to monitor gateway operations and perform certain control functions. The point display can also be entered by means of the "GetGWpointDisply" XCMD's.

1. Select the gateway of interest from the Point Configuration screen list box and then select the "P.Display" button. When the gateway point display appears, a field in the upper right corner of the display will show the gateway identifier (A, B, C or D) followed by the gateways' point number (1 through 4).



A1814

GENERAL INFORMATION INDICATORS

Left or Right MIP Fault — The gateway has two LON communication ports, which are identified as the left and right MIP. If a problem occurs in either of these hardware components, the appropriate indicator will turn red.

Gateway Fault — This indicator shows that an internal diagnostic has detected a problem with the gateway hardware.

Slave PLC — When the gateway is configured to act as a Modbus master, feeding information to a PLC or other Modbus Slave device, and the communication link has timed out, this indicator will turn red.

LON Master — This indicator lights when it is the "Master" gateway. There can be up to four gateways on a single LON, but only one can be the master. The master is the gateway currently generating the network "heartbeat" used for fault isolation, and the date and time tag used by field devices for logging calibration and alarm events.

3.2

Gateway Point Display

LON Fault — This indicator will turn red when the gateway diagnoses a LON fault. This type of fault is generally indicative of an electrical open or short circuit in the network wiring.

Net Test Fault — This indicator will turn red when a "Net Test Fault" occurs. A net test fault generally pertains to a faulty network extender.

One failure mode of a network extender is a case where it only passes messages in one direction. To detect this type of failure the gateway periodically performs a "network test." Once an hour the gateway temporarily reverses the direction of the "Heartbeat" signal it uses for LON integrity testing. By reversing the direction of the message, the gateway can determine if any of the network extenders have failed. Once a "Net Test Fault" has been detected, its indicator will stay set for at least one hour. This is true even after the faulty extender has been replaced.

Unable to Configure — This indicator will turn red if EagleVision was unable to successfully download configuration information to a gateway.

Fault Relay Active — This indicator will turn red when the gateway fault relay is active.

Inhibit Active — This indicator will turn red when the point has been "inhibited" by using the point displays inhibit button. When "inhibited" any gateway relays programmed to monitor the status of this gateway will ignore its data. In addition, the gateway faceplate will not respond to status changes in the inhibited point.

Not Communicating — This indicator will turn red when the periodic update for the gateway whose point display is being monitored has not been received by the gateway through which EagleVision is getting its data.

Invalid Config. — If the gateway configuration downloaded by EagleVision doesn't match the switch settings on the targeted gateway, this indicator will turn red.

Gateway Point Display

Reset Relay	Select a Reset Relay button to reset a gateway relay.
Goto Point	This button calls up a keypad allowing the user to go directly to any point on any of the attached LON's.
Next/Previous Point	These buttons allow you to view the point displays for the next higher or lower configured device connected to this gateway's LON.
Inhibit	This button will inhibit gateway relay and display response to status changes in this point.
Acknowledge	Select Acknowledge to acknowledge all events, zone events and silence any audible alarm.

3.4

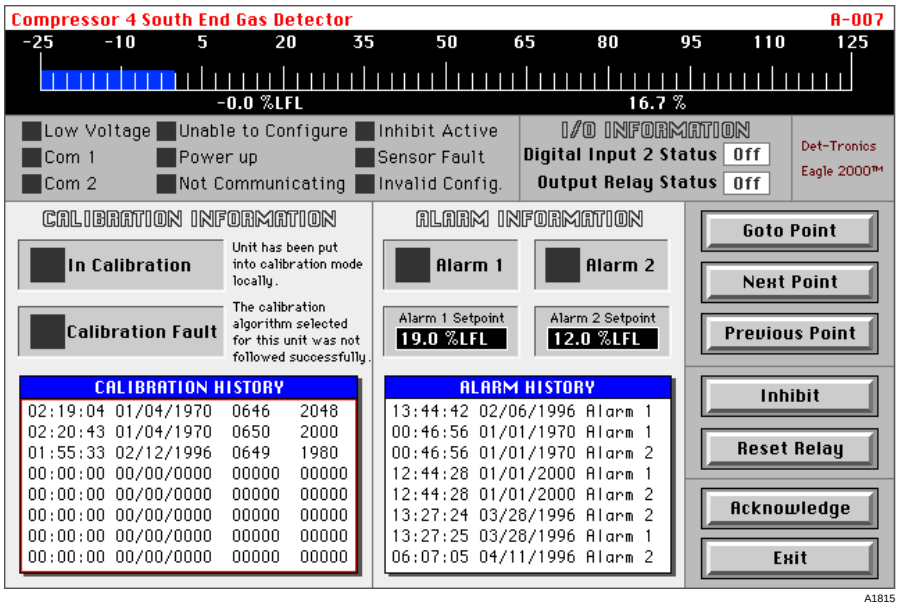
Communication Module Point Display

Communication Module Point Display

The Point Display screens allow the operator to monitor a communications module/sensor operation, and perform certain control functions.

1. Select the point of interest from the Point configurations screen and then select the "P. Display" button to access the point display.

General Information Indicators



Low Voltage — This indicator will turn red when the supply voltage to the module drops below 17.5 vdc.

Com 1/Com 2 — These indicators track the fault isolation status of the module. If the side of the network attached to terminals 1 and 2 has isolated due to a network fault, the "Com 1" indicator will turn red. If the side of the network attached to terminals 3 and 4 has isolated, the "Com 2" indicator will turn red.

Unable to Configure — This indicator will turn red if EagleVision was unable to successfully download configuration information to the target module.

Power-up — The power-up time delay for the device has not yet expired.

Not Communicating — The gateway has not been receiving the periodic status updates from the target module.

Inhibit Active — This indicator will turn red when the point has been "inhibited" by using the point display's inhibit button. When "inhibited" any gateway relays programmed to monitor the status of the point will ignore its data. In addition, the gateway faceplate will not respond to status changes in the inhibited point.

Sensor Fault — A sensor related fault has been detected. The fault could be caused by a sensor wiring problem, a sensor input that is below the threshold for normal operation, or by an invalid configuration where one or more set-points is inconsistent with the type of device specified.

This status bit has two different meanings. "Sensor fault" or "digital input 1." Refer to the "System Configuration Matrix" (95-8453) for details.

Invalid Config. — Invalid configuration data has been received. This could include type code, configuration word, calibration gas level or alarm setpoint level.

It is not possible for a device to receive invalid configuration data from EagleVision, however it is possible for a third party Modbus RTU master to write invalid data to a module through the gateway.

PUSHBUTTON FUNCTIONS

Goto Point — This button calls up a keypad allowing the operator to go directly to any point on any of the attached LON's.

Next/Previous Point — These buttons allow the operator to view the point displays for the next higher or lower configured device connected to this gate-way's LON.

Inhibit — Select the Inhibit button to inhibit the current point. When a point is inhibited, the gateway relays will not respond to any events or alarms generated by this module. Information from this module will be displayed on the screen and events configured in EagleVision will respond.

Reset Relay — Click on the Reset Relay button to reset the communication module's relay.

Acknowledge — Select Acknowledge to acknowledge all events, zone events and silence any audible alarm.

3.6

Communication Module Point Display

I/O Information

Digital Input 2 Status — Shows the status of the signal connected to the communication module's digital input 2.

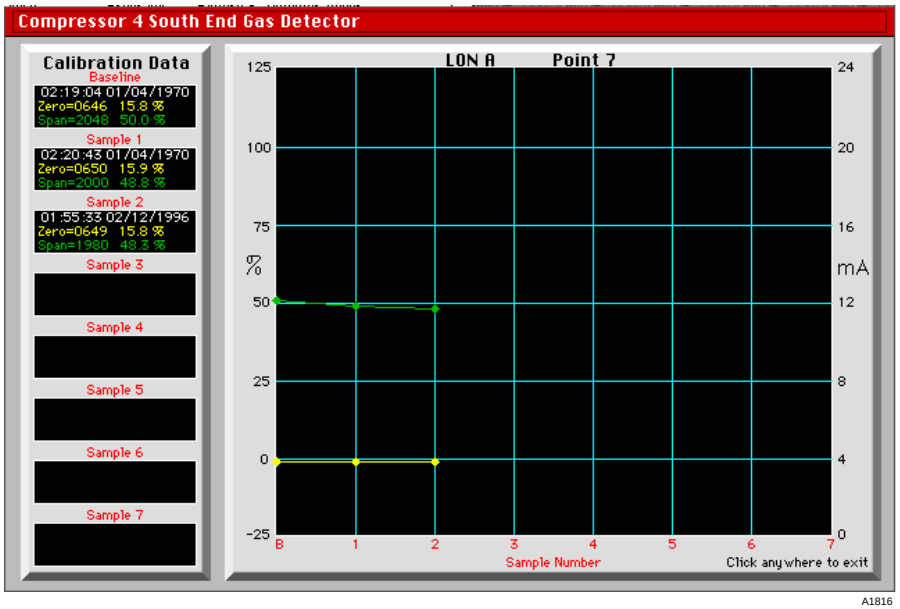
Output Relay Status — Shows the status of the communication module's output relay.

Calibration Information

These indicators show the status of sensor calibration.

Calibration History

The communication module stores and the OIS displays the baseline calibration and the last seven calibration records (high and low calibration points). These records allow the operator to spot trends in sensor sensitivity or other problems. The time and date stamp is generated in the communications module based on information from the gateway. If the sensor supports "trending" the Calibration History field will be framed in red. By clicking the field (inside the red box) a graphic representation of the calibration history is displayed.



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Alarm Information

Includes Alarm 1 and Alarm 2 status indicators and the current setpoint value for Alarm 1 and Alarm 2. The alarm setpoint values are defined in the point configuration screen for the current point (sensor).

Alarm History

The communication module stores and displays the last eight alarms (Alarm 1 or Alarm 2). The display includes the type of alarm and a time and date stamp for the alarm. The time and date stamp is generated in the communication module based on information from the gateway.

3.7

SENSOR LEVEL BAR GRAPH

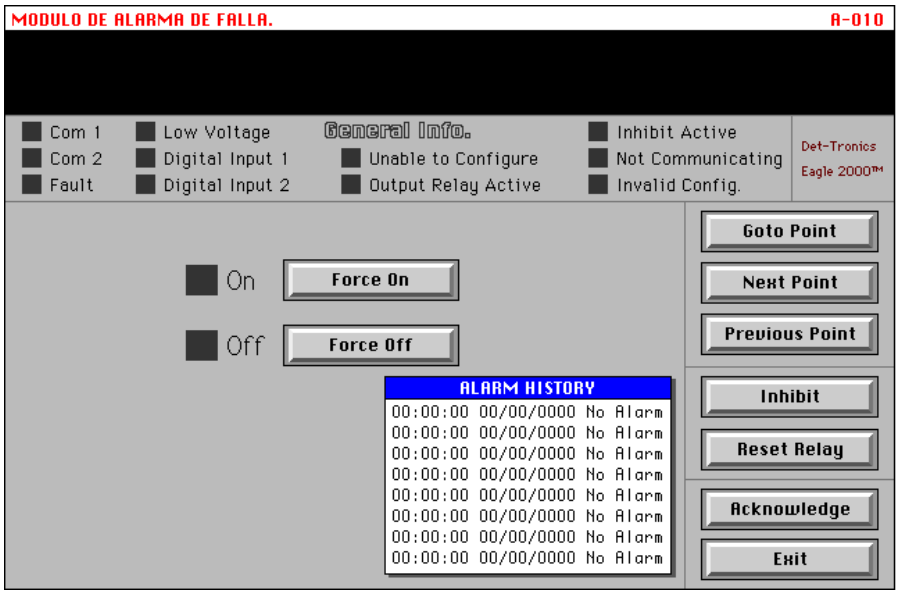
The sensor level bar graph provides the following real-time information:

- The sensor level bar graph provides a graphic display of the sensor's output value. The scaling of the bar graph changes to match the output of the specific sensor.
- The digital display in the lower left shows the current sensor output value in the appropriate engineering units.
- The digital display in the lower right shows the sensor's output as a percent of full scale.

3.8

General Information Indicators

Relay Module Point Display



Com 1/Com 2 — These indicators track the fault isolation status of the module. If the left side has isolated due to a network fault, the "Com 1" indicator will turn red. If the right side has isolated, the "Com 2" indicator will turn red.

Fault — This indicator will turn red when a hardware fault has been detected.

Low Voltage — This indicator will turn red when the supply voltage to the module drops below 17.5 vdc.

Digital Input 1/ Digital Input 2 — These indicators track the status of the two digital inputs and will turn red when the input is active.

Unable to Configure — This indicator will turn red if EagleVision was unable to successfully download configuration information to the target module.

Output Relay Active — This indicator turns red when the onboard relay is active.

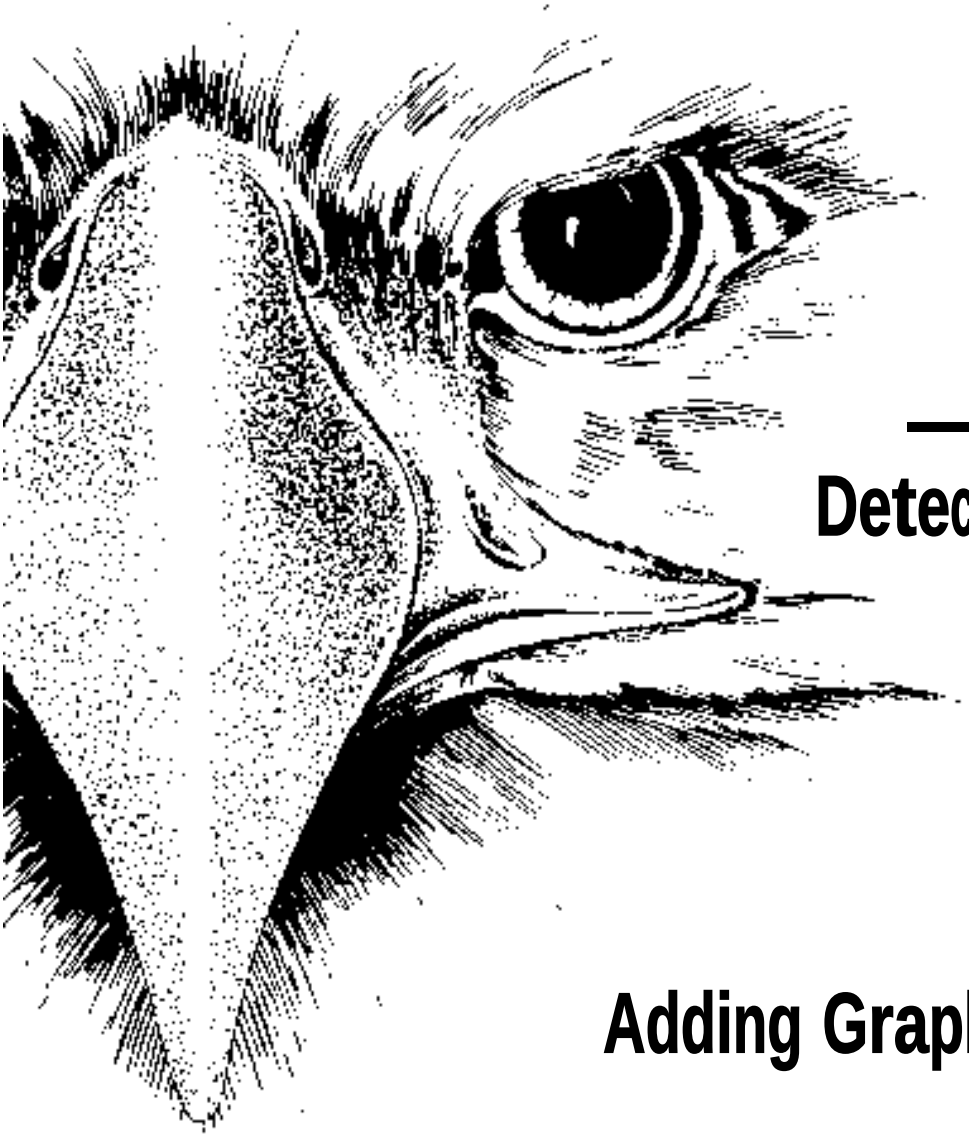
Inhibit Active — This indicator will turn red when the point has been "inhibited" by the using the point displays inhibit button. When "inhibited" any gateway relays programmed to monitor the status of the point will ignore its data. In addition, the gateway faceplate will not respond to status changes in the inhibited point.

Not Communicating	The gateway has not been receiving the periodic status updates from the target module.
Invalid Config.	Invalid configuration data has been received. For a relay module, the most likely cause is trying to download a configuration for another type of device.

It is not possible for a device to receive invalid configuration data from EagleVision, however it is possible for a third party Modbus RTU master to write invalid data to a module through the gateway.

PUSHBUTTON FUNCTIONS

Goto Point	This button calls up a keypad allowing the operator to go directly to any point on any of the attached LON's.
Next/Previous Point	These buttons allow the operator to view the point displays for the next higher or lower configured device connected to this gateway's LON.
Inhibit	Select the Inhibit button to inhibit the current point. When a point is inhibited, the gateway relays will not respond to any events or alarms generated by this module. Information from this module will be displayed on the screen and events configured in EagleVision will respond.
Reset Relay	Click on the Reset Relay button to reset the communication module's relay.
Acknowledge	Select Acknowledge to acknowledge all events and silence any audible annunciation.
Force Relay On	The relay is in a "force on" condition, causing it to be in its active state, regardless of voting or other programmed responses.
Force Relay Off	The relay is in a "force off" condition, causing it to be in its inactive state, regardless of voting or other programmed responses.



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Section 4
Adding Graphics Capabilities

DET TRONICS

XCMD's & XFCN's

4.1

Included with the EagleVision software package are two files, "EagleVision Supercard" and "EagleVision Hypercard." These files contain a suite of XCMD's and XFCN's.

XCMD AND XFCN DEFINITION

XCMD's (External Commands) and XFCN's (External Functions) allow other compatible application programs to interface with the EagleVision application program. This interface includes the retrieval of data from EagleVision and the sending of data to EagleVision. Below is a list of the included XCMD's and XFCN's.

AckEvents
ChkEventState
ClearEventWindow
GetALoggedEvent
GetBit
GetGWPointDisplay
GetManyBit
GetNumLoggedEvents
GetTableState
GetWord
GetZoneState
GetZoneStatus
LogToAll
LogToDisk
LogToEventWindow
LogToPrinter
ResetBit
SetBit
SetTablePolling
SetTableState
SetWord
SetZoneState

In order to use these "resources" they must be incorporated into a XCMD compatible application program in some manner.

For use in SuperCard they must reside in the resource area of the project from which they will be called, or in the resource area of the "Shared File." Follow the directions for "importing resources" in the SuperCard documentation.

The best way to copy the XCMD's and XFCN's to your project is to copy them from the EagleVision Supercard stack and paste them in your project.

4.2

XCMD's & XFCN's

For use in HyperCard, they must reside in either the stack from which they will be called or within the resource fork of the HyperCard application. This is done using a resource editor such as Apple Computer's ”ResEdit” program. Other methods would be to clone the sample stack that contains the XCMD's and use it as a template, or copy them from the “EagleVision Supercard” project file provided with EagleVision.

There are many other third party application programs that are compatible with XCMD's and XFCN's. These programs should be able to utilize these resources to interface to EagleVision.

AckEvents

If an event is triggered and is configured to produce a sound, this command will silence the sound, until the next event, that has the sound attribute set, occurs.

Example:

```
on mouseUp
    AckEvents
end mouseUp
```

ChkEventState

This function is used to check the active state of a range of events. The events are numbered from 0 to 4999. This can be used, for example, to determine if a range of detectors are in alarm in an area. To check the state of one event pass the same number in both parameters. i.e. if ChkEventState(56,56) = 1 then

```
ChkEventState(startEvent,endEvent)
```

Example:

```
on idle
    if ChkEventState(3,44) = 1 then
        we have one or more active
    else
        no events are active.
end idle
```

ClearEventWindow

This command erases the contents of the event window located at the bottom of the screen.

Example:

```
on mouseUp
    ClearEventWindow
end mouseUp
```

GETALOGGEDEVENT

This command gets an event that is in the log file. The count is from the start of the file.

```
GetALoggedEvent(theLoggedEventNumber)
```

Example:

```
on openCard
    put GetALoggedEvent(theNumber) into theString
end openCard
```

GETBIT

This command returns the state (1 or 0) of up to fifteen bits in the PLC. The addresses that the operator requests the state of must be configured in the "Datatable Configuration" window of the EagleVision™ application.

This command returns the state (1 or 0) of any single bit in the PLC. The address that the operator requests the state of must be configured in the "Datatable Configuration" window of the EagleVision™ application. Refer to the section on addressing for the correct format of the address.

```
GetBit(PLCNum,address)
```

Example:

```
on idle
    if GetBit(27,"43073/1") = 1 then
        your command for "1" state
    else
        your command for "0" state
end idle
```

GETGWPOINTDISPLAY

This command will display the point display window for the point requested. The gateways are numbered 0 to 3. Point numbers are 1 to 250. Several conditions must be met before the point display will be shown.

1. The "Gateway Address," set from within the "Point Configuration" window, must be non-zero.
2. "Hiway Polling" for the port of the connected gateway, set from within the "Driver Settings" window, must be enabled.
3. The point must be configured.

```
GetGWPointDisplay(gateWayNumber,pointNumber)
```

Example:

```
on mouseUp
    GetGWPointDisplay(0,24)
end mouseUp
```

GETMANYBIT

Refer to the section on addressing for the correct format of the address. A string is returned that contains one character for each of the addresses that have been requested. Each character is a "1" or a "0," i.e. 011100010101.

```
GetManyBit(PLCNum,address,address,address,etc)
```

Example:

```
    on idle
        put GetBit(27,"43073/1","43120/5") into temp
        if the 1 char of temp= 1 then
            do something
        else
            do something else

        if the 2 char of temp= 0 then
            do something
        else
            do something else
    end idle
```

GETNUMLOGGEDEVENTS

Example:

```
    on openCard
        put GetNumLoggedEvents() into theNumber
    end openCard
```

This command and "GetALoggedEvent" can be used in conjunction to display all or part of the events logged. The following is one example of scripting.

```
on startUp
    global lastEventCount
    put 0 into lastEventCount
end startUp

on openCard
    global lastEventCount
    if lastEventCount = 0 then
        put "" into card field AlarmField
        — the "AlarmField" is multi-line
    end if
    put GetNumLoggedEvents() into theNumber
    — how many events are there total
    put theNumber - lastEventCount into numberToGet
    — how many do we need to get
    if numberToGet > 0 then
        set the cursor to watch
        — show the watch
```

```
        set the lockScreen to true
        — speed up getting the data
        put lastEventCount into count
        — where do we start from
        repeat for numberToGet
        — get all of the new ones
            put GetALoggedEvent(count) into tempString
            — the XFCN.
            put count + 1 into count
            — increment to use later
            put char 76 of tempString into colorKind
            — char 76 has the color number
                – 1 = black
                – 2 = blue
                – 3 = red
                – 4 = green
            delete char 76 of tempString
            — delete the last char
            put tempString into line count of card field AlarmField
            — put the string in the field
            select line count of card field AlarmField
            — select it to change the color
            if colorKind = 1 then
                set the textColor of card field AlarmField to 256
            else if colorKind = 2 then
                set the textColor of card field AlarmField to 7
            else if colorKind = 3 then
                set the textColor of card field AlarmField to 108
            else if colorKind = 4 then
                set the textColor of card field AlarmField to 10
            end if
        end repeat
        put theNumber into lastEventCount
        — save it for next time
        set the cursor to arrow
    end if
    select after last char of card field AlarmField
    — scroll the window to the last event
    set the lockText of card field AlarmField to true
    — do not select any text
    set the lockScreen to false
    — let drawing begin
end openCard
```

While the operator is looking at the event log, a new event might occur. The following script checks for new events during idle and displays any new event. This script is similar to the one above. The difference is that some things are done at a different time.

```
on idle
    global lastEventCount
        put GetNumLoggedEvents() into theNumber
        put theNumber - lastEventCount into numberToGet
        if numberToGet > 0 then
            set the cursor to watch
            set the lockScreen to true
            put lastEventCount into count
            repeat for numberToGet
                put GetALoggedEvent(count) into tempString
                put count + 1 into count
                put char 76 of tempString into colorKind
                delete char 76 of tempString
                put tempString into line count of card field AlarmField
                select line count of card field AlarmField
                if colorKind = 1 then
                    set the textColor of card field AlarmField to 256
                else if colorKind = 2 then
                    set the textColor of card field AlarmField to 7
                else if colorKind = 3 then
                    set the textColor of card field AlarmField to 108
                else if colorKind = 4 then
                    set the textColor of card field AlarmField to 10
                end if
            end repeat
            put theNumber into lastEventCount
            set the lockText of card field AlarmField to false
            — it was true from above script
            select after last char of card field AlarmField
            set the lockText of card field AlarmField to true
            set the lockScreen to false
            set the cursor to arrow
        end if
end idle
```

GETTABLESTATE

This command will return the changed bit of the datatable requested.

```
GetTableState(3)
```

Example:

```
on openCard
    if GetTableState(3) then
        beep
    end if
end openCard
```

The datatables maintain a CRC (Cyclic Redundancy Check) that is compared to any new data that is received from the PLC. If the data is different from the last data received, a flag is set. Calling this command returns the state of the flag and clears it. If the bit is set since the last time this call was made (for this table) the data has changed.

GETWORD

This command gets the value (–32768 to 32767) of any single word in the PLC. The address that the operator requests the state of must be configured in the "Datatable Configuration" window of the EagleVision™ application. Refer to the section on addressing for the correct format of the address.

```
GetWord(PLCNum,address)
```

Example:

```
on idle
    put GetWord(27,"44080") into theValue
end idle

on idle
    if GetWord(27,"44085") = 5678 then
        your command for equal
    else
        your command for not equal
end idle
```

GetZoneState

This command will return the changed bit of the zone requested. Zones are numbered 1-256.

```
GetZoneState(3)
```

Example:

```
on openCard
    if GetZoneState(3) then
        beep
    end if
end openCard
```

If the value of the zone status has changed, then this bit will be set. If the bit is set since the last time this call was made (for this zone) the status has changed.

GetZoneStatus

This command gets the status (0-4) of any single zone. The zone that the operator requests the state of must be configured in the "Zone Configuration" window of the EagleVision™ application. Zones are numbered 1-256.

0 = Normal	(no alarm or fault)	lowest
1 = Fault	(com 1 or 2 fault, sensor fault)	
2 = Alarm	(alarm 1 or 2)	
3 = New Fault	(a new fault)	
4 = New Alarm	(a new alarm)	highest

The conditions work off priorities. Conditions 3 and 4 do not clear until the operator acknowledges the condition. Conditions 1 and 2 are self clearing. If an alarm and a fault co-exist, the status will be 2=Alarm.

Example:

```
New alarm = condition 4
User acknowledges = condition 2
Alarm conditions is corrected = condition 0
```

```
GetZoneStatus(zoneNumber)
```

Example:

```
on idle
    put GetZoneStatus(3) into theValue
end idle

on idle
    if GetZoneStatus(3) = 4 then
    — your command for new alarm
end idle
```

LogToAll

This command "Logs" any event in a text format. This command will log the data passed to the printer, today's disk file and the event window. The data will be time stamped when it is logged.

```
LogToAll theThingToLog
```

Example:

```
on mouseUp
    LogToAll "The operator activated the button"
end mouseUp

on mouseUp
    LogToAll someContainerThatHoldsAValue
end mouseUp
```

LogToDisk

This command "Logs" any event in a text format. This command will log the data passed to today's disk file. The data will be time stamped when it is logged.

```
LogToDisk theThingToLog
```

Example:

```
on mouseUp
    LogToDisk "The operator activated the button"
end mouseUp

on mouseUp
    LogToDisk someContainerThatHoldsAValue
end mouseUp
```

LogToEventWindow

This command "Logs" any event in a text format. This command will log the data passed to the event window. The data will be time stamped when it is logged.

```
LogToEventWindow theThingToLog
```

Example:

```
on mouseUp
    LogToEventWindow "Sent to the event window"
end mouseUp

on mouseUp
    LogToEventWindow somethingThatHoldsAValue
end mouseUp
```

LOGTOPRINTER

This command "Logs" any event in a text format. This command will log the data passed to the printer. The data will be time stamped when it is logged.

```
LogToPrinter theThingToLog
```

Example:

```
on mouseUp
    LogToPrinter "The operator activated the button"
end mouseUp

on mouseUp
    LogToPrinter someContainerThatHoldsAValue
end mouseUp
```

RESETBIT

This command resets the state (0) of any single bit in the PLC. Refer to the section on addressing for the correct format of the address. This command can set to zero any bit, in any PLC accessible on the network that is not protected. The ports are numbered as follows:

Modem	0	
Printer	1	not used for this command
Port 1	2	if you have a multi-port board
Port 2	3	these numbers apply
Port 3	4	
Port 4	5	

```
ResetBit PLCNum,portNum,,address
```

Example:

```
on mouseUp
     ResetBit 27,0,"42010/3"
end mouseUp
```

4.11

SetBit

This command sets the state (1) of any single bit in the PLC. Refer to the section on addressing for the correct format of the address. This command can set any bit to one, in any PLC accessible on the network that is not protected. The ports are numbered as follows:

Modem	0	
Printer	1	not used for this command
Port 1	2	if you have a multi-port board
Port 2	3	these numbers apply
Port 3	4	
Port 4	5	

```
SetBit PLCNum,address
```

Example:

```
on mouseUp
     SetBit 27,2,"42100/3"
end mouseUp
```

SetTablePolling

The EagleVision™ system uses a set of tables configured to read data from the PLC. These tables poll the PLC in a circular nature. The system continuously starts at table zero and polls all of the tables that have the enable bit set for the port(s) that are used. When the last table is polled, the system starts at table zero again. Some table(s) may only need to be polled every hour or when the operator is on a certain screen. For example, a screen that shows the value of a timer and is not used in any other manner. When the operator selects the screen, enable the timer polling and when the operator leaves the screen, disable the polling of that timer. This will reduce the highway and computer loading. If an event is configured to the timer then the event will only trigger if the system is polling the timer and the event becomes true.

```
SetTablePolling tableNumber,state
```

Example:

```
on mouseUp
    SetTablePolling 14,1 — on
end mouseUp

on mouseUp
    SetTablePolling 14,0 — off
end mouseUp
```

4.12

SETTABLESTATE

This command will set the changed bit of the datatable requested.

```
SetTableState tableNumber
```

Example:

```
on openCard
    SetTableState 3
end openCard
```

See command GetTableData

SETWORD

This command sets the value (–32768 to 32767) of any single word in the PLC. Refer to the section on addressing for the correct format of the address. This command can set any word to a value, in any PLC assessable on the network that is not protected. The ports are numbered as follows:

Modem	0	
Printer	1	not used for this command
Port 1	2	if you have a multi-port board
Port 2	3	these numbers apply
Port 3	4	
Port 4	5	

```
SetWord PLCNum,portNum,address,theValue
```

Example:

```
on mouseUp
    SetWord 27,3,"43075",227
end mouseUp
```

SETZONESTATE

This command will set the changed bit of the zone requested.

```
SetZoneState zoneNumber
```

Example:

```
on openCard
    SetZoneState 3
end openCard
```

See command GetZoneState