

RLE Technologies

Falcon Monitoring System





Falcon - Front View



Falcon - Back View

All Falcon units are shipped from the manufacturer with a user guide.

24VDC models are also shipped with a wall adapter.

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Part One

Getting Started

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Chapter One

Product Description

The Falcon Monitoring System is a comprehensive system which monitors critical operating parameters in enterprises, remote network facilities, communication rooms, remote and unmanned facilities, and critical support systems. The Falcon is a stand alone system. It operates via embedded software that handles all data collection, alarm reporting, and multiple concurrent communication mediums:

- The EIA-485 port allows a user to interconnect five units in a multi-drop topology.
- The EIA-232 direct connection facilitates firmware downloads, system configuration, inquiries, and alarm reporting.
- The internal modem provides dial in/out remote access support for the PC interface, inquiry and alarm reporting, numeric and alphanumeric paging, alarm acknowledgement, PPP to ISP, e-mail over a dial-up connection, and DTMF output relay control.
- The Ethernet 10BaseT network port supports SNMP V1 MIB for persistent alarm traps, e-mail alarm delivery, information inquiry, I/O configuration and modification, and alarm acknowledgement. This port also supports a UDP command set for third-party access and development.
- BACNet allows the Falcon to communicate with building management systems.
- The built-in Web Server enables the Falcon's web interface. This allows the Falcon to be configured and its status to be checked from remote locations.

The standard Falcon (FMS8) is configured in a rack mount enclosure with eight universal inputs, two digital output relays, a keypad interface, a power source for external sensors, one EIA-485 port, one EIA-232 port, one internal modem, one Ethernet

10BaseT network port, status LEDs, and an interface for one option card. The power source for the standard unit is a 24VDC wall adapter. An optional 48VDC unit (FMS8-48) is available. Option cards provide additional digital and analog inputs, up to 32 per unit. Reference Appendix A for option card configurations.

The Falcon performs internal diagnostics that check the flash program code, serial ports, RAM, non-volatile RAM, real-time clock, internal power supplies, relay drivers, analog to digital converter (ADC), and modem. During operation, the Falcon monitors its status and uses several LED indicators to report its condition. The functions of these LEDs are described later in this manual.

The embedded Falcon software enables system configuration, I/O setup, status inquiries, alarm reports, data logs, and troubleshooting. Falcon software is menu driven and operates with any ASCII terminal or terminal emulation application such as HyperTerminal.

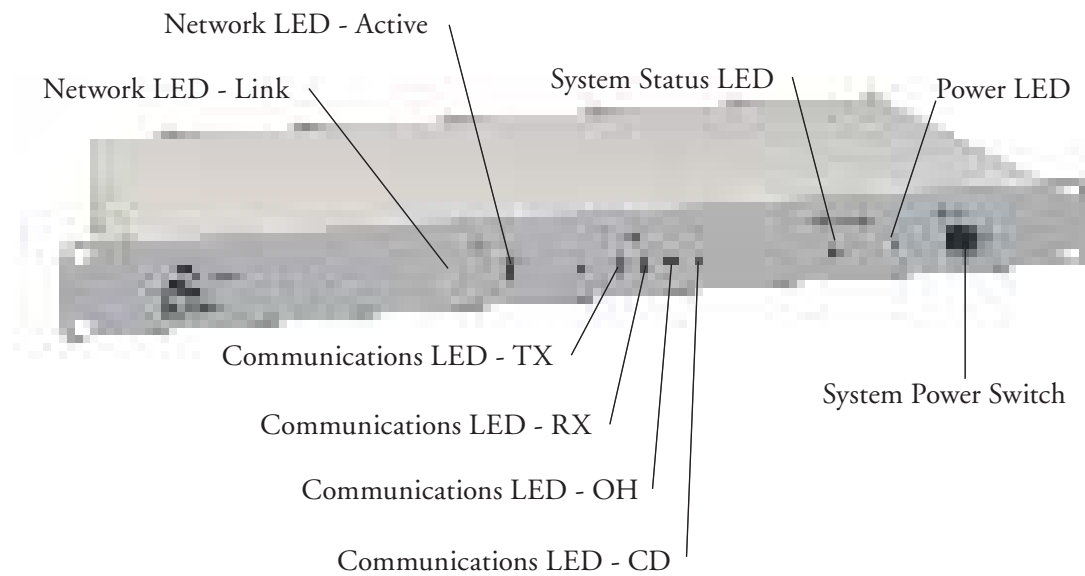
The universal inputs can be configured for digital signals - Normally Open (NO) or Normally Closed (NC) dry contacts - or analog signals (4-20mA). The system will report any change of state or values above or below specific set points. Data is logged for all analog points. The high, low, and average readings for each analog point are captured in minute, hour, and day logs. Alarms for all configured points are recorded in the alarm history log. All logs are fixed field delimited for easy data extraction and upload to other programs. Output relays can be activated through manual intervention or triggered by any input. Appropriate time delays can be set for each relay. The Falcon can provide 24VDC power for external sensors.

The Falcon supports a 3x4 numeric keypad interface for controlled access to critical areas. Twenty access codes and descriptions can be entered through the configuration port or over the network via the web browser interface. Access is granted when the system validates a keypad entry. The system generates an

alarm after three invalid entries. Access codes can also be entered via telephone using DTMF signaling – just dial the unit and enter the access code followed by the **# key**. A valid entry activates an output relay for a user-defined period of time,

which in turn activates an equipment door latch or electrical lock on an entrance door. An alarm bypass feature is also provided for doors equipped with a forced entry alarming contact.

Falcon - Front Panel Indicators and Controls



Network LEDs – Two network status LEDs:

- Link - Green if network link is established, red if not.
- Active - On (green) when the link is transmitting or receiving data.

Communications LEDs – Four modem status LEDs:

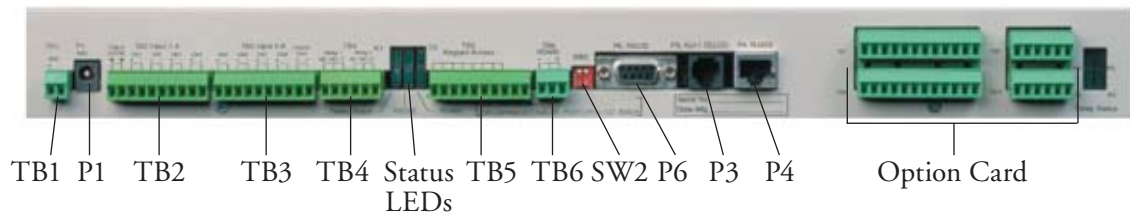
- TX - On (green) – Information is being transmitted.
- RX - On (green) – Information is being received.
- OH - On (green) – Modem detects a dial tone (off hook).
- CD - On (yellow) – Carrier detected.

System Status LED – This LED illuminates (red) during initial boot of the system and flashes ten times per second. If the initial boot fails, the LED continues to flash. This indicates a condition that requires service. During normal operation, the system status LED turns solid red when the unit is in alarm condition.

Power LED – On (green) as long as power is on.

System Power Switch – Used to turn power to the unit on and off.

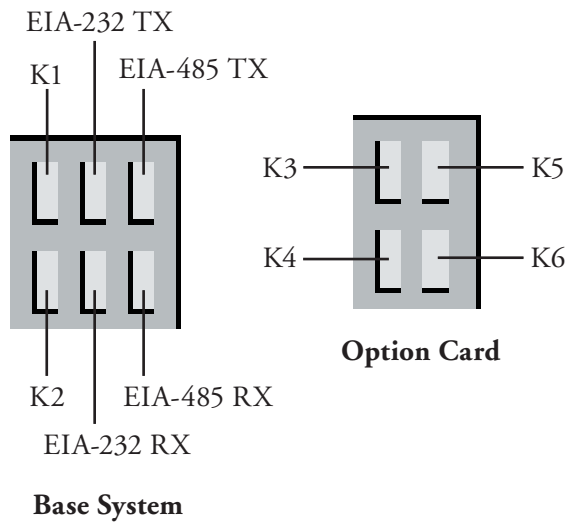
Falcon Terminal Block Designations



TB1-1	(+) Input for 24/48VDC power	TB4-1	Relay 1 normally closed (NC)
TB1-2	(-) Input for 24/48VDC power	TB4-2	Relay 1 normally open (NO)
P1	24VDC wall adapter input (center +) (not available with 48VDC version)	TB4-3	Relay 1 common
TB2-1	24VDC positive (+) (power for sensors)	TB4-4	Relay 2 normally closed (NC)
TB2-2	24VDC positive (+) (power for sensors)	TB4-5	Relay 2 normally open (NO)
TB2-3	Channel 1 positive (+)	TB4-6	Relay 2 common
TB2-4	Channel 1 negative (-)	TB5-1	Keypad column 1
TB2-5	Channel 2 positive (+)	TB5-2	Keypad column 2
TB2-6	Channel 2 negative (-)	TB5-3	Keypad column 3
TB2-7	Channel 3 positive (+)	TB5-4	Keypad row 1
TB2-8	Channel 3 negative (-)	TB5-5	Keypad row 2
TB2-9	Channel 4 positive (+)	TB5-6	Keypad row 3
TB2-10	Channel 4 negative (-)	TB5-7	Keypad row 4
TB3-1	Channel 5 positive (+)	TB5-8	Unused
TB3-2	Channel 5 negative (-)	TB5-9	Input signal normally open (NO)
TB3-3	Channel 6 positive (+)	TB5-10	Input signal return
TB3-4	Channel 6 negative (-)	TB6-1	EIA-485 positive (+)
TB3-5	Channel 7 positive (+)	TB6-2	EIA-485 negative (-)
TB3-6	Channel 7 negative (-)	TB6-3	EIA-485 ground
TB3-7	Channel 8 positive (+)	SW2-1	Unit termination switch
TB3-8	Channel 8 negative (-)	SW2-2	Master/slave switch
TB3-9	24VDC ground (power for sensors)	P6	EIA-232 female DB9 pin connector
TB3-10	24VDC ground (power for sensors)	P3	RJ-11 telephone line connector
		P4	Ethernet 10BaseT connector

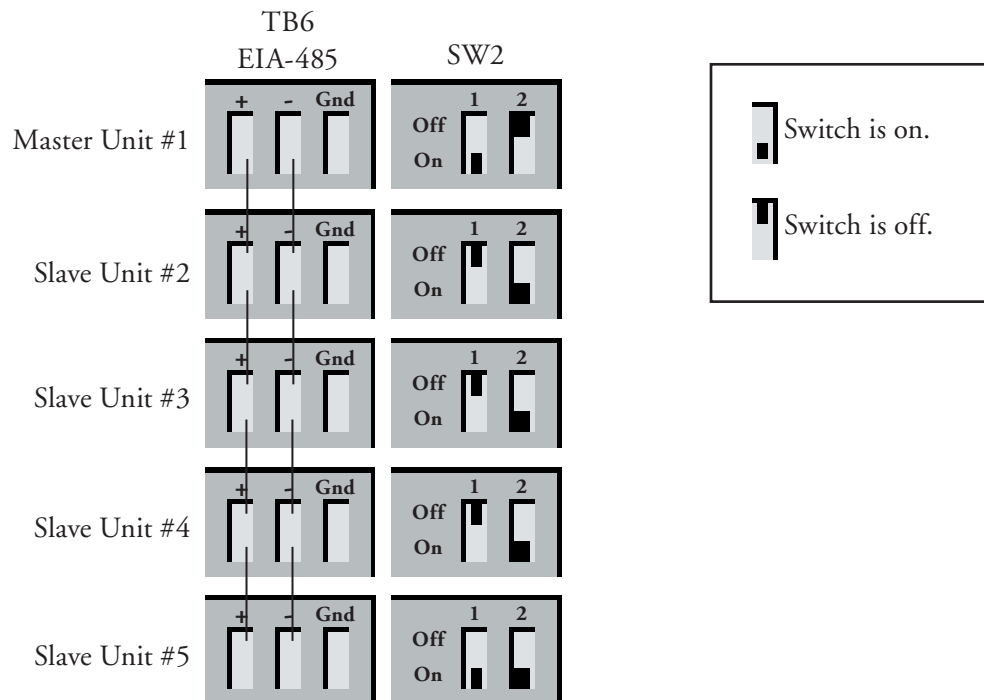
Falcon Rear Panel Indicators - Relay and Communication Status LEDs

The rear panel of the Falcon houses a series of green LEDs. The chart tracks indicator status when the corresponding green LED is illuminated:



Status	Indicator
K1 output relay	Energized
K2 output relay	Energized
EIA-232 TX interface	Data is being transmitted
EIA-232 RX interface	Data is being received
EIA-485 TX interface	Data is being transmitted
EIA-485 RX interface	Data is being received
K3 to K6 output relays	Energized (option card)

Detailed Switch Settings



- SW2-1 Termination switch ON (down) for first and last unit wired in the series.
Termination switch OFF (up) for all units between the first and last units wired in the series.
- SW2-2 Master/Slave switch OFF (up) for master unit and ON (down) for slave units.

Chapter Two Installation

1. The Falcon comes in a 19" rack mount enclosure. Install the Falcon in the rack. Use the proper anchoring method to mount the unit securely.
2. Supply either 24VDC or 48VDC to the unit.



Units have different model numbers.

24VDC model: FMS8

48VDC model: FMS8-48

Verify the model number and power rating (on back of unit) before applying power.

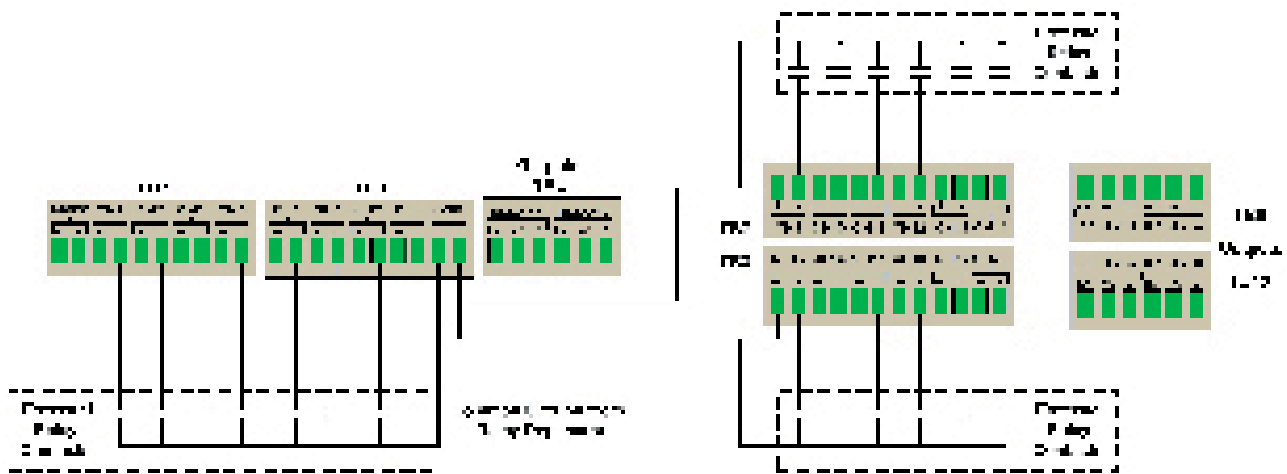
3. The Falcon will not communicate over a user's network the first time it is connected to the network. The manufacturer programs the Falcon with a default IP address: **10.0.0.186**, subnet: **255.255.255.0**. This default address must be changed to an IP address that corresponds with the user's network before the Falcon can communicate over the network.
 - a. Plug the crossover network cable that shipped with the Falcon unit into the laptop or workstation that will be used to configure the Falcon. This cable is not intended to be connected to a network hub.
 - b. Write down the computer's IP address. Then change the IP address of the computer from its existing address to one that will allow it to communicate with the Falcon, such as 10.0.0.185. It may be beneficial to set the IP address to one that is one number different from the Falcon's IP address.
 - i. Click on **Start > Settings > Control Panel > Network**.
 - ii. On the Configuration tab of the Network screen, double click the **TCP/IP Ethernet** component.
 - iii. On the IP Address tab of the TCP/IP Properties screen, specify the appropriate **IP address**. Click **OK**. The computer's IP address has been changed.
 - c. Connect the other end of the network cable to the Ethernet port on the back of the Falcon.
 - d. Change the IP address of the Falcon to one provided by the network administrator. This allows the Falcon to communicate on the network.
 - e. Change the IP address of the computer back to its original IP address. If the computer was configured as DHCP - the network domain controller assigns it an IP address, return it to this state.
 - f. The computer and the Falcon are now both configured to communicate on the network. Both should be accessible via the network.
4. The Falcon can be configured through the web interface or through the EIA-232 interface. To use the web interface, follow the direction in Part Two of this guide. To use the EIA-232 interface:
 - a. Connect the EIA-232 port on the Falcon to a terminal or PC running terminal emulation software (HyperTerminal) with a 9-Pin Male-Female straight through serial cable.
 - b. Set the appropriate COM port to **9600 baud, NO parity, 8 data bits, 1 stop bit, (9600/N/8/1)**, and **no software or hardware flow control**.

Win95/98/NT directions

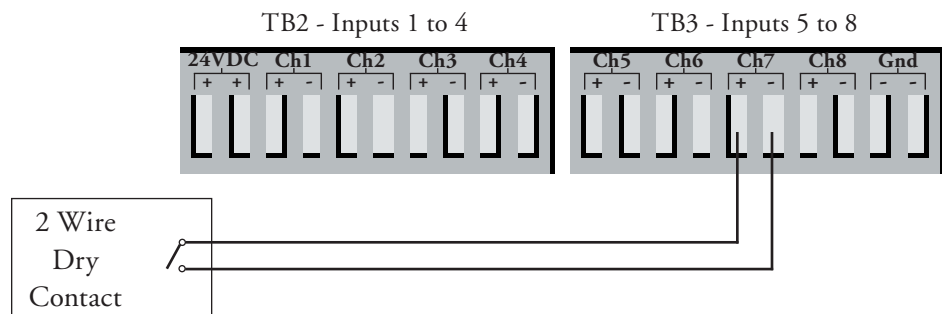
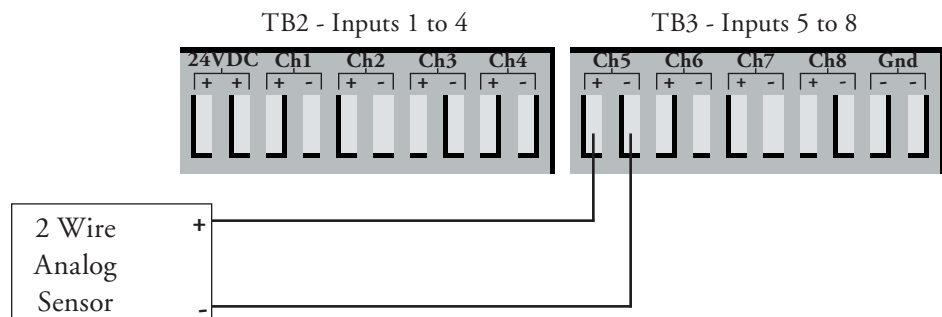
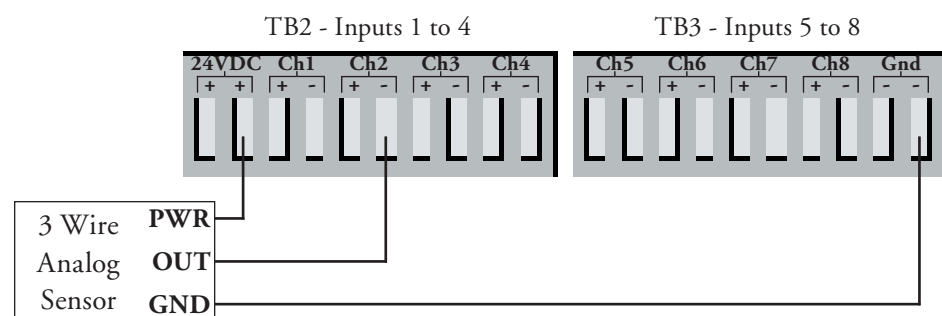
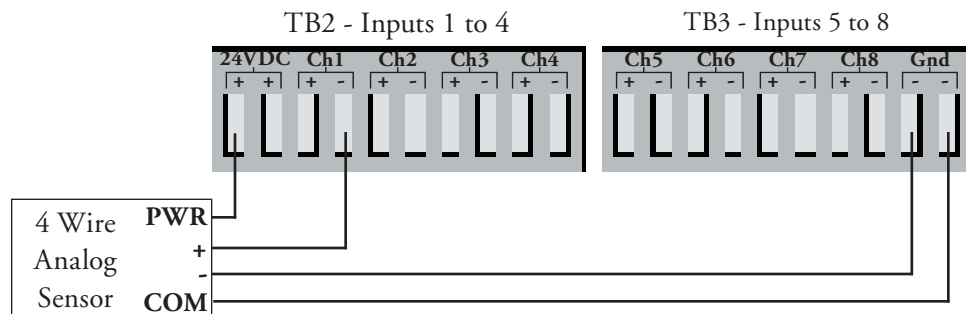
- i. Click on **Start > Settings > Control Panel > Network**.

- c. Once the terminal emulation software starts, press **Enter** (↵) on the keyboard and select/execute commands from the Main Menu. If the Main Menu does not appear, check the communication settings and make sure the unit is powered on.
5. Connect all other interfaces as required.
6. Proceed with further configuration and testing of the unit.

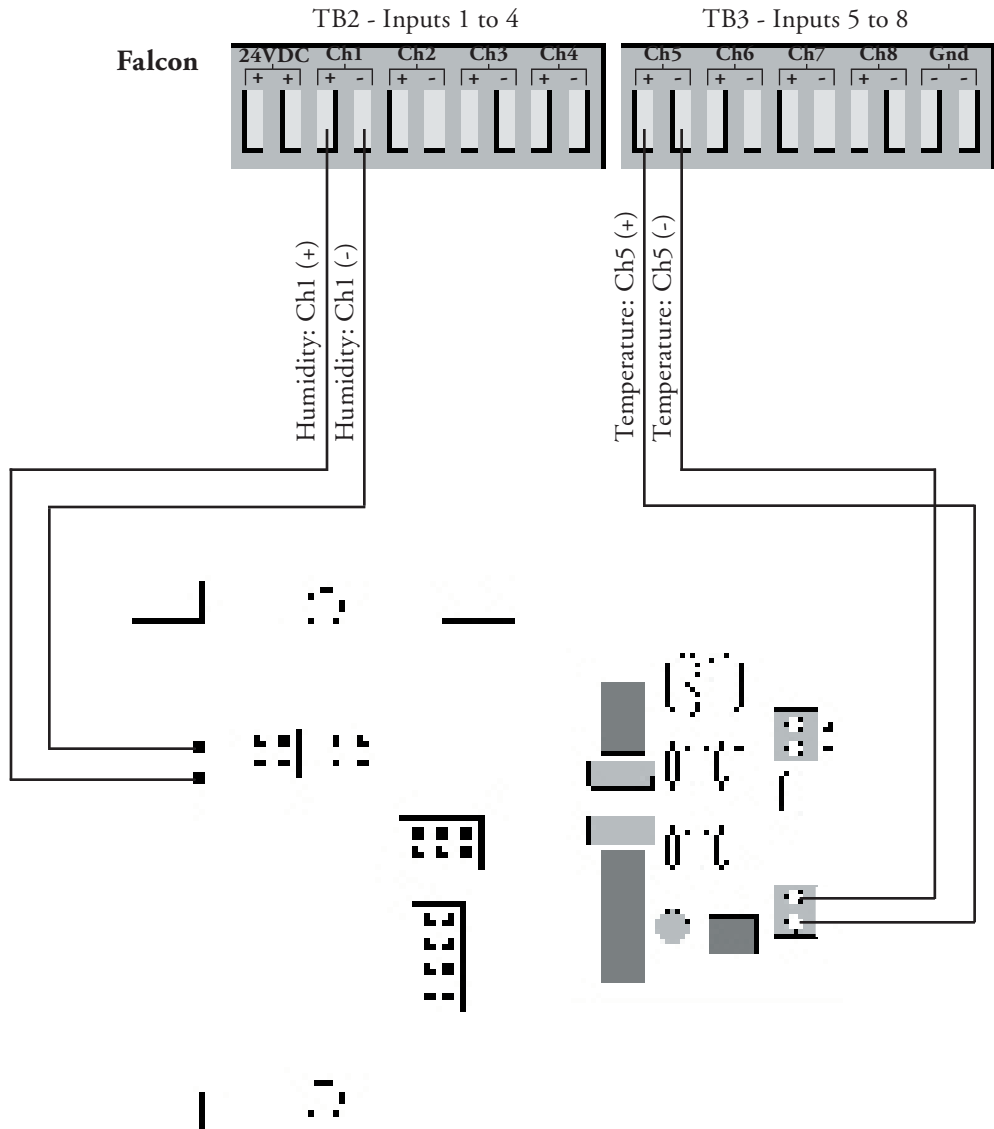
Recommended Common Ground Wiring for Falcon



Examples: Sensor Wiring - Interface to Base Falcon



Sensor Wiring - RLE Transducer to Base Falcon

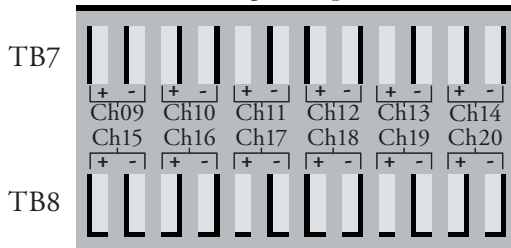


Transducer

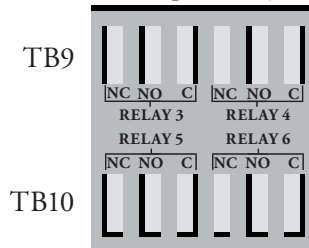
Two wire analog sensor with two channels

Interface - Falcon Option Cards

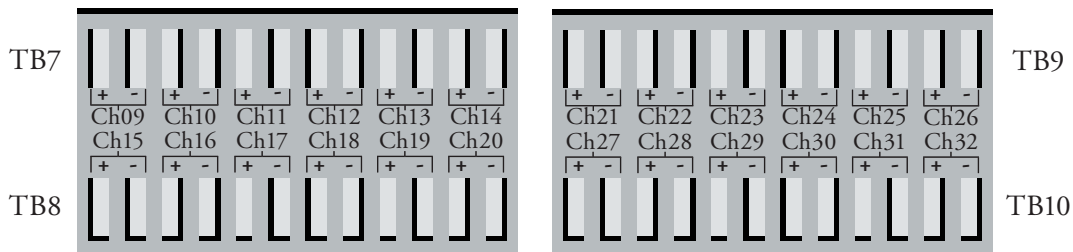
12 Input Digital Option Card - Digital Inputs



12 Input Option Card - Output Relays



24 Input Digital Option Card - Digital Inputs



Recommended wiring - RLE Technologies recommends 18 to 20AWG stranded copper for connection from each monitored point to a terminal block (TB) connection on the Falcon. RLE recommends no more than 500 feet at this specification. If longer runs are needed, please contact RLE Technologies for application guidance. Shielded twisted pair is recommended for analog signal transmitters being wired outside of conduit runs and dropped ceiling applications.

Part Two

Web Interface

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Chapter Three

Main Menu

The Falcon's web interface main menu provides a convenient way to check the Falcon's status and reconfigure basic settings from any Internet-enabled computer. A click of the mouse allows users with proper permissions to view the monitoring system's output and alter specific Falcon configuration settings.

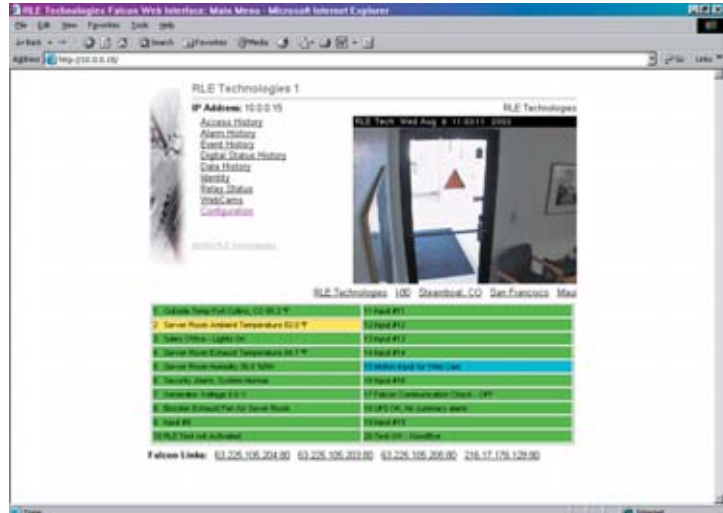
The Falcon is shipped to the user with the IP address configured as 10.0.0.186 and a subnet of 255.255.255.0. The user name is preconfigured as Falcon. The unit is configured without a password; when a password is requested, just leave the space blank. These preconfigurations can be changed to a personalized IP address, user name, and password. Do this through the System link on the Configuration Menu of the web interface.

To access the Falcon web interface, simply type the IP address of the Falcon into the location bar of the web browser. Then enter a user name and password.

The bottom of the Falcon web interface features two columns that list the Falcon's configured inputs. The number of inputs displayed corresponds with the number of inputs on the Falcon. Each input is numbered. The input's name is followed by its status.

The space behind each input is shaded. This shading changes as the input's status changes. This allows users to tell, at a glance, the status of their points. Shading is as follows:

- Green: Input is normal - not in an alarm state.
- Yellow: Analog inputs only - input is in high alarm 1 or low alarm 1 state.
- Red: Analog input - input is in high alarm 2 or low alarm 2 state.
Digital input - input is in an alarm state.
- Blue: Alarm/Input disabled by a schedule.



Initial Falcon IP Address Configuration:

Refer to chapter two to learn how to change the Falcon's factory assigned IP address to one that will enable it to work within a user's network.

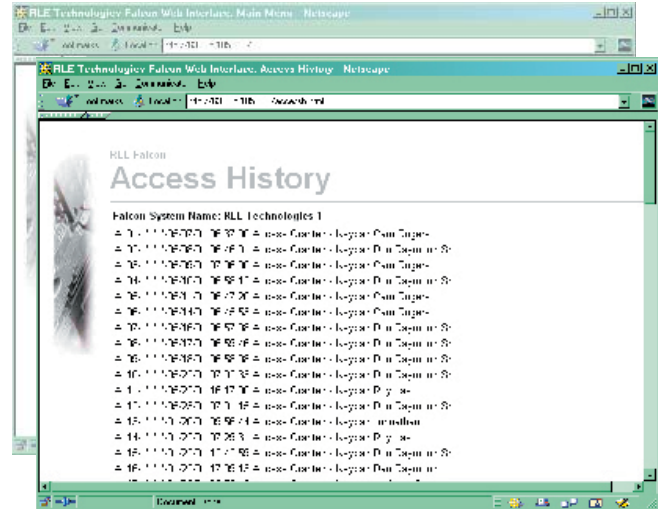
Optimize Use of Falcon Web Interface

Netscape's "Smart Browsing" feature complicates use of the Falcon Web Interface. Turn off Smart Browsing to avoid these complications:

- In the menu bar at the top of the Netscape browser, click on Edit, then on Preferences.
- Smart Browsing is a subcategory of the Navigator category. Access Smart Browsing and click the box in front of the "Enable 'What's Related'" option. Eliminate the check mark to disable this option.

Access History

The **Access History** link displays the last 100 entries captured by the master unit. The following information is displayed: access log index (ALxxx), date and time of event, whether access was granted or denied, method of entry (keypad or DTFM), and the description associated with the access code.



Alarm History

The **Alarm History** link displays the last 100 alarms captured by the master unit.

The following format is used to record each alarm entry:

AH###-ID-Condition-Date Time (Value UOM) Label

AH### is the alarm entry index.

ID is the alarm identifier number.

See Alarm ID Reference Table

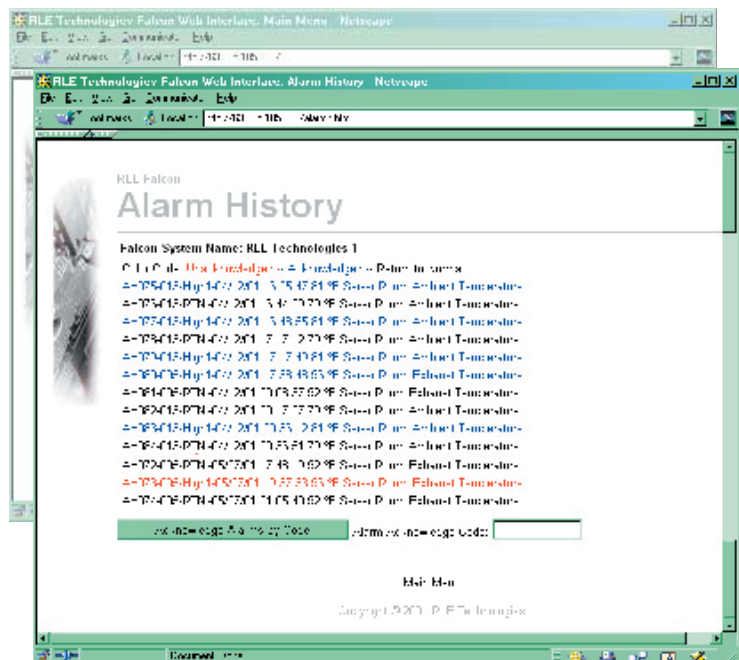
Condition is **On**, **High1**, **High2**, **Low1**, **Low2**, or **RTN** – Returned To Normal.

Date and Time is the internal date and time stamp of the alarm condition.

Label is the alarm descriptor – can be up to 64 characters long.

Value and **Unit of Measure (UOM)** are captured for analog channels only.

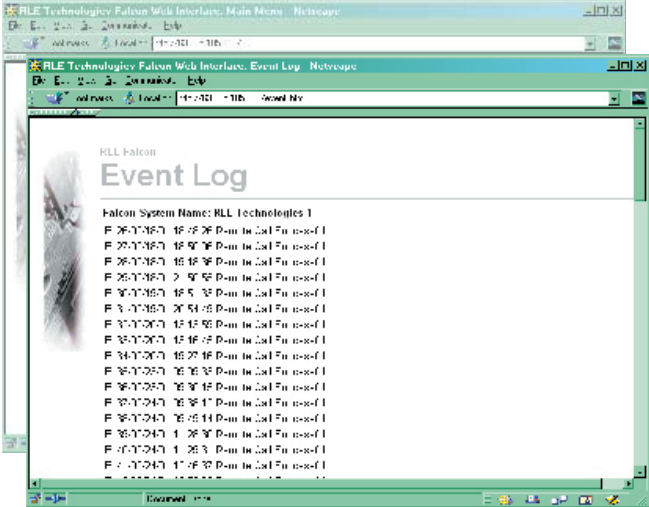
The value recorded is the actual analog value that exceeded its alarm threshold.



Alarms can also be acknowledged from this page. To do so, type the appropriate code in the box at the bottom of the page and click the **Acknowledge Alarms by Code** button.

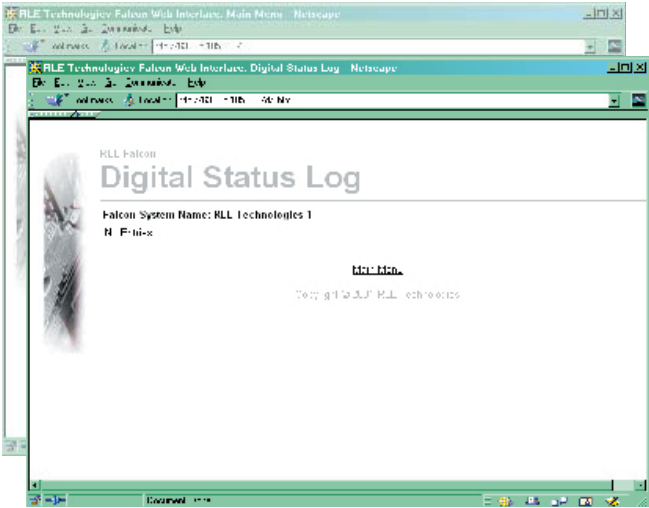
Event Log

The **Event Log** link displays the past 100 events, as recorded by the Falcon.



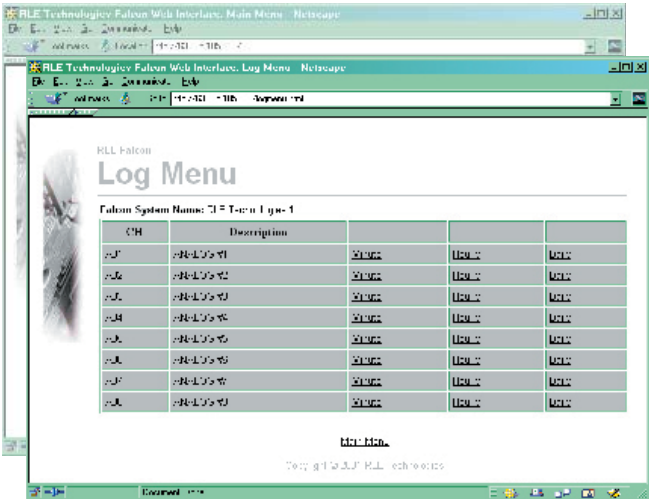
Digital Status Log

A digital input can be configured as NO, NC, or status. If the digital input is configured as status, it will not alarm, but it will appear on this page. The **Digital Status Log** link displays a history of the state of digital points configured as status points.



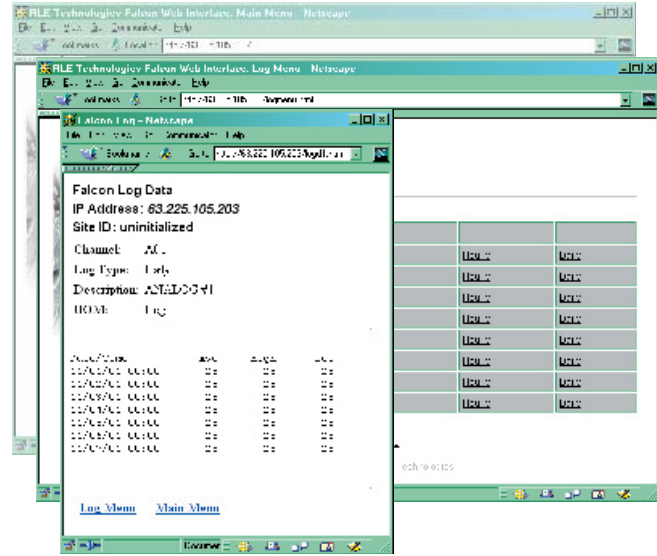
Log Menu

The **Log Menu** link displays links to the Falcon's data logs.



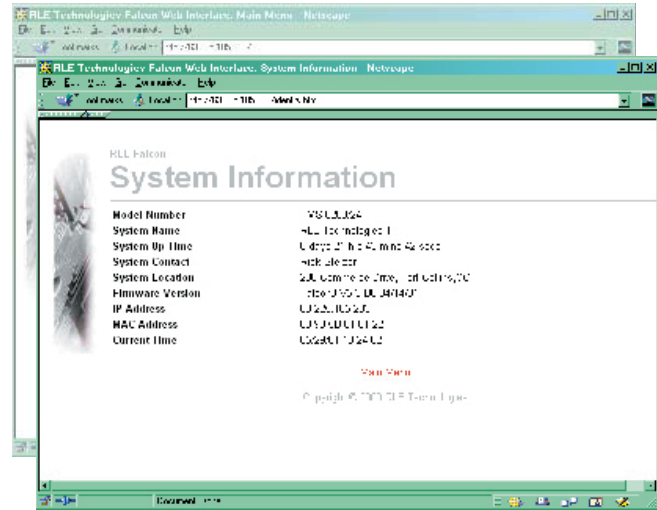
Minute, Hourly, and Daily Links

The **Minute**, **Hourly**, and **Daily** links on the **Log Menu** screen display the detailed information the Falcon records in its logs.



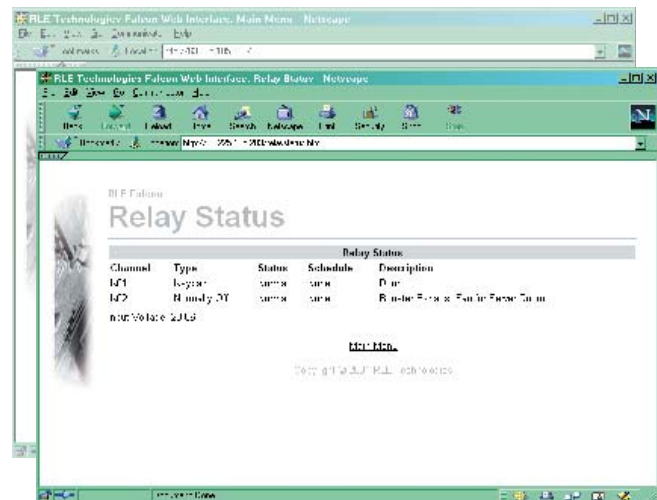
Identity

The **Identity** link displays basic Falcon information, including model number, firmware version, and IP address.



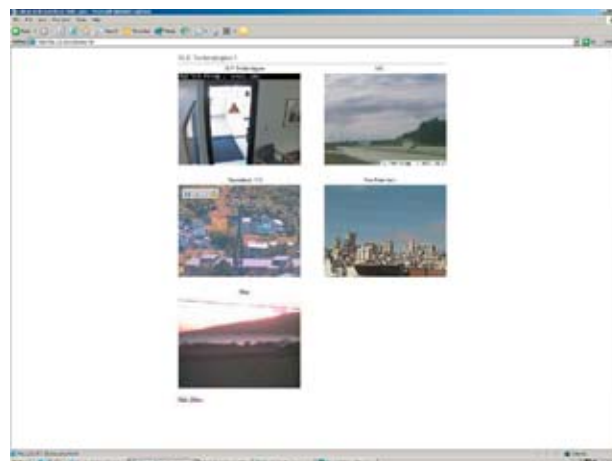
Relay Status

The **Relay Status** link displays the status of each Falcon relay output.



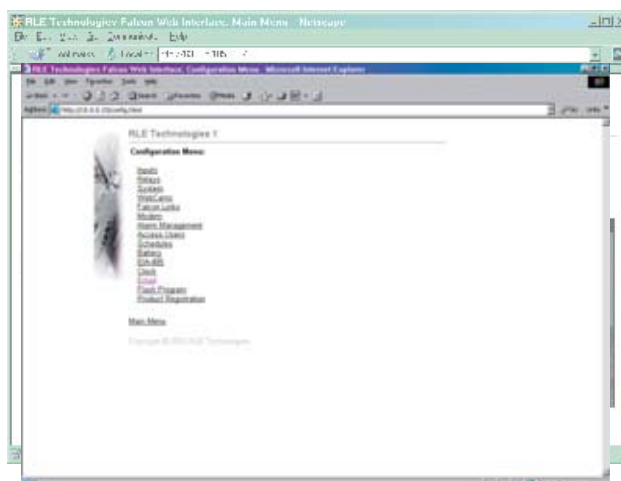
RLE Falcon WebCams

The **WebCam** link displays a still image (jpg) of all web cameras linked to the Falcon.



RLE Falcon Configuration

The **Configuration** link displays a menu that allows authorized users to configure the Falcon's settings. The Configuration Menu is described in greater detail in the next chapter.



Examples:

Relay Control: 2 Depending on channel configuration, this setting will activate Output Relay K2 for either an analog 2nd Stage High Alarm or a dry contact change-of-state.

Relay Control: 64 Setting will activate Output Relay K3 for an analog 2nd Stage Low Alarm.

Relay Control: 35 Depending on channel configuration, this setting will activate Output Relays K1, K2, and K4 for either an analog 2nd Stage High Alarm or a dry contact change-of-state (1+2+32).

Relay Control: 10 Setting will activate Output Relay K2 for either an analog 2nd Stage High or 2nd Stage Low Alarm (8+2).

Relay Control: 76 Setting will activate Output Relays K1, K2, and K3 for an analog 2nd Stage Low Alarm (4+8+64).

Unit of Measure is the appropriate unit of measure for that input.

Label is the appropriate label for the particular input.

Alarm Delay is the amount of time the Falcon waits to send an alert after an alarm condition is detected.

Hysteresis is a number that designates the amount an input reading must sway from its preset alarm reading before it is classified as returned to normal. For example, a temperature sensor alarms when it reaches 80°F. If hysteresis is set at four, the

Relay	Alarm Condition	Value
K1	High2 Analog Alarm	1
K1	Low2 Analog Alarm	4
K1	Digital Alarm	1
K2	High2 Analog Alarm	2
K2	Low2 Analog Alarm	8
K2	Digital Alarm	2
K3	High2 Analog Alarm	16
K3	Low2 Analog Alarm	64
K3	Digital Alarm	16
K4	High2 Analog Alarm	32
K4	Low2 Analog Alarm	128
K4	Digital Alarm	32
K5	High2 Analog Alarm	256
K5	Low2 Analog Alarm	1024
K5	Digital Alarm	256
K6	High2 Analog Alarm	512
K6	Low2 Analog Alarm	2048
K6	Digital Alarm	512

sensor must register 76°F before the Falcon reports it as returned to normal.

Alarm Dial Out is the order in which the Falcon sends alarm notification. The numbers correspond to phone numbers configured from the **Config Phone Number** links at the bottom of the **Modem Configuration** page.

BACnet Instance is a BACnet object identifier. It is a numerical code used to identify the input. This code must be unique within the BACnet device. Refer to the BACnet standard for further information.

BACnet Unit is the BACnet engineering units. This represents the units of measurement for the input. Refer to the BACnet standard for further information.

Label (Dig off) is the label that is associated with a digital input when it is in an off state. When the digital input is in the on state, this label is used.

Relays

The **Relays** link displays a screen that configures the Falcon's output relays.

Select a type for each relay. The **time** field then designates the number of seconds the relay is active: timed control 30=30 seconds, -1 = continuous, following the alarm input.

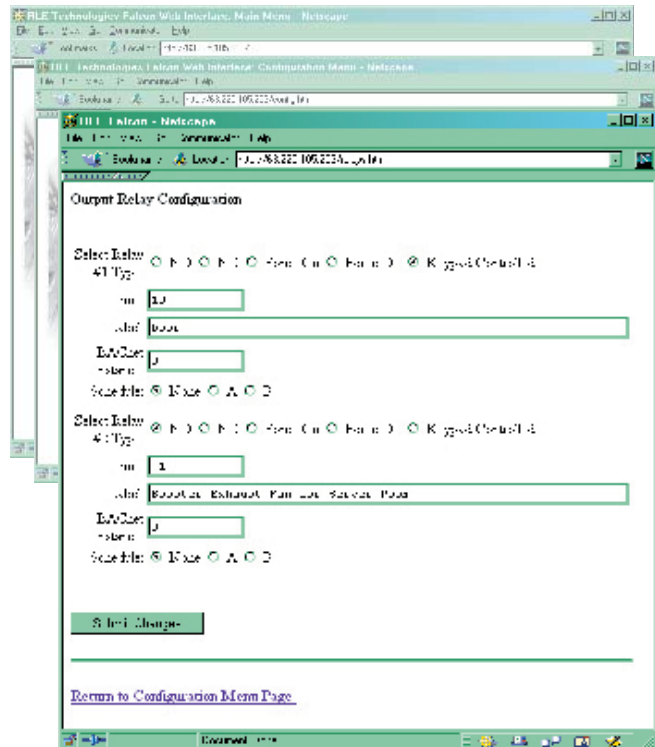
Label is the appropriate label for the particular relay.

BACnet Instance is a BACnet object identifier. It is a numerical code used to identify the input. This code must be unique within the BACnet device. Refer to the BACnet standard for further information.

BACnet Unit is the BACnet engineering units. This represents the units of measurement for the input. Refer to the BACnet standard for further information.

Schedule designates which of the schedules from the **Schedule Configuration** menu the relay will adhere to.

Again, the **Submit Changes** button must be pressed once changes are complete, or all changes will be lost.



System

The **System** link allows users to configure basic Falcon information. The Falcon's IP address may also be changed from this page.

System Name is the name of the Falcon.

System Contact is a contact person for the Falcon unit.

System Location is the physical location of the Falcon.

BACnet Device Name is similar to the **System Name** but is bound by some BACnet standards. Refer to the BACnet standard for further information.

BACnet Device ID is similar to the **BACnet Instance** but it applies to the entire device. Refer to the BACnet standard for further information.

BACnet Description is similar to the system description, but has some limitations. Refer to the BACnet standard for further information.

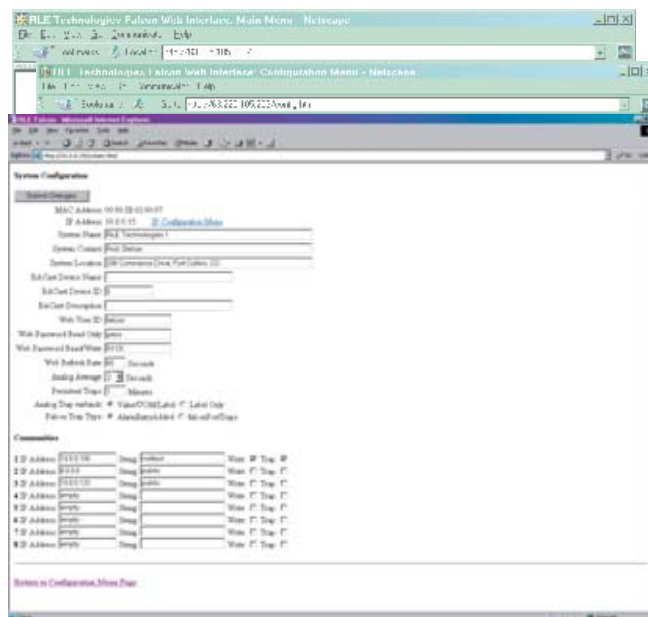
Web User Id is falcon (default). This Id can be changed allowing up to 18 characters.

Web Password Read Only allows users to access the Falcon web interface.

Web Password Read/Write allows users to access the Falcon web interface and web configuration screens.

Web Refresh Rate is the rate at which the Falcon's web pages refresh themselves within the web browser.

Analog Average allows the user to change the averaging method for analog inputs. Normally, the system samples analog points once a second while keeping track of high and low values for each analog point. After sixty seconds, the average of these readings and the high and low values for these



To enable the SNMP receiving stations, the Falcon MIB, provided on a diskette with every unit, must be loaded on a system(s) running a Network Operating System (NOS). This MIB is compiled through standard functions of the NOS. Consult with the Network Administrator for proper installation of the Falcon MIB on the NOS. Once the MIB is loaded, the Falcon unit(s) can be discovered and configured over the network. For proper operation, the IP addresses configured in the Falcon communities must match the IP addresses on the receiving stations.

points are recorded in the minute log. To alter this method of averaging, change the value to one of the values listed in the drop down menu. Zero or one maintains the method described above; a higher value changes the method of averaging and the manner by which high and low values are recorded.

An example of how averaging is altered and how it impacts high and low recordings is shown here.

- Analog averaging value is set to 5.
- The analog point is a temperature sensor.
- Temperature readings are displayed for an eleven second period:

Under normal conditions, the average reading would equal 71, the high value would equal 74, and the low value would equal 70. By changing the averaging

70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 70, High Value = 70, Low Value = 70

70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 70, High Value = 70, Low Value = 70

70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 71, High Value = 71, Low Value = 70

70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 71, High Value = 71, Low Value = 70

70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 72, High Value = 72, Low Value = 70

70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 72, High Value = 72, Low Value = 70

70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 73, High Value = 73, Low Value = 70

method, the average reading ends up at 73, the high value at 73, and the low value for this example remains the same. In a sense, averaging slows down the sensor response and the rate of change. This parameter impacts all analog points.

Persistent Traps enables the Falcon to issue continuous SNMP alarm traps until an Alarm Acknowledgement is received by the Falcon. The parameter is a user-defined time interval that is set in minutes.

Analog Trap Varbinds is for communication to a NMS via the SNMP traps. The default will add the value/UOM (unit of measure)/label. If

preferred, the Falcon can send only the label on Analog traps.

Falcon Trap Types is set by default to send an alarm entry added type trap. The Trap type can be set to a Port Type Trap.

Communities identify computers that receive SNMP traps from the Falcon and interact with the Falcon over the network. To add a computer to the communities list, select a community number posted as “empty.” Enter the receiving computer’s **IP address** and a **string** that identifies the computer. An IP address of 0.0.0.0 in the **Communities > IP Address** field allows any computer to access the Falcon through an MIB browser or RLENet. Check the box next to write if the machine will have read/write network access - this allows the computer to be configured over the network. Check the box next to traps if the computer will receive traps.

Changes will not go into effect until the **Submit Changes** button is clicked.

IP Configuration

The **IP Configuration** link allows users to change the Falcon's IP address.

Contact a network administrator to obtain a valid IP address for the network. Then, type the appropriate IP address, net mask (subnet), and default route into the interface.

HTTP Port

The Falcon broadcasts its web pages on port: 80 of the IP address assigned. A zero in the field block defaults the Falcon to Port: 80. This can be changed to a specific port allowing increased security of the web page broadcast.

TCP Max Segment Size 1436 or 536

The Falcon is defaulted to send web pages at a 1436 TCP seg. size. A smaller TCP seg. size helps with a congested network.

Refer to Part Five of this User Guide to learn more about PPP and establishing a PPP connection with the Falcon.

Changes will not go into effect until the **Submit Changes** button is clicked.

WebCams

The **WebCam Configuration** link allows up to five IP addressable web cameras to be linked to the Falcon.

The first field, Web Cam #x JPG URL will display a still image (jpg) on the main page of the Falcon.

The second field, Web Cam #x Home URL will open a second window and give the PC a direct link to the WebCam allowing streaming video to be displays.

The third field, Web Cam #x Link Test will display the name assigned to the image..



Falcon Links

The **Falcon Links** link allows up to four Falcons or IP addressable devices to link to the Falcon.

Modem

The **Modem** link allows users to configure the Falcon's internal modem. The initialization string can be a maximum of 38 characters. **&c1 and &d3 are mandatory.** **s0=1** sets the modem to answer after one ring.

The dial prefix should be a specific Hayes compatible command or dial modifier. It is also limited to 38 characters. The default is set to **atdt**.

Pager Deliveries designates the number of times to call the pager until the alarm is acknowledged - 1 to 255. Pagers are called in sequence. For example, if **Pager Deliveries** is set to 3 and pagers 1, 7, and 10 are programmed to be notified, the Falcon dials 1, 7, 10, 1, 7, 10, 1, 7, 10. As soon as the alarm is acknowledged, the Falcon quits dialing the pagers with that particular access code. Pagers with different access codes are still dialed.

Pager Interval allots the number of minutes to wait between redials.

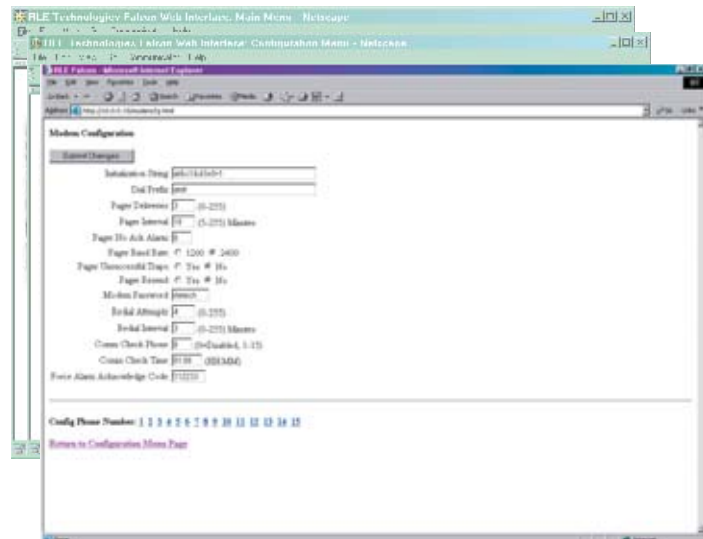
Pager No Ack Alarm establishes a number to call if the alarm isn't acknowledged. A numbered contact (one through 16) designates the number to call.

Pager Baud Rate designates the pager baud rate.

Pager Unsuccessful Traps will allow the Falcon to send an SNMP trap to the NMS if set to **YES**.

Pager Resend will send all unacknowledged alarms in the Alarm History menu if set to **YES**. It will only send the last unacknowledged alarm if set at **NO**.

Modem Password defines a remote access password, seven characters max.



Redial Attempts sets a number of times to call a number until the call is successful, from one to 255.

Redial Interval establishes the number of minutes to wait between redials, from one to 255.

Comm Check Phone defines a numbered contact (one through 16) to call to check communications.

Comm Check Time sets a time (24 hour format) to make the communications check.

Force Alarm Acknowledge Code acknowledges all unacknowledged alarms. This acts as a master code and can override all other alarm acknowledge codes.

Changes will not go into effect until the **Submit Changes** button is clicked.

Configure Phone Numbers

This page is accessed through the **Config Phone Number** link at the bottom of the Modem Configuration page. This screen allows users to configure pager and cell phone numbers that are used for alarm notification.

A drop down menu allows the user to select which type of device the Falcon calls. Use the **text** option to dial a PC receiving ASCII strings. **Alpha-numeric Pager** dials an alphanumeric pager. **Numeric Pager** dials a numeric pager. **FalconView** dials a PC running FalconView software.

The **Number** blank is filled in with the pager service number for numeric and alphanumeric pager entries. Each comma after the pager number represents a two second delay. This delay is used to allow enough time for the pager service to answer before requesting the pager ID. Experimentation with the proper number of commas may be necessary.

The **Pager ID** field is mandatory for numeric and alphanumeric pagers.

Alphanumeric pager - This ID is sent to the paging service along with all queued alarm messages. The ID is the unique PIN for a specific pager. The ID may be a maximum of 16 characters.

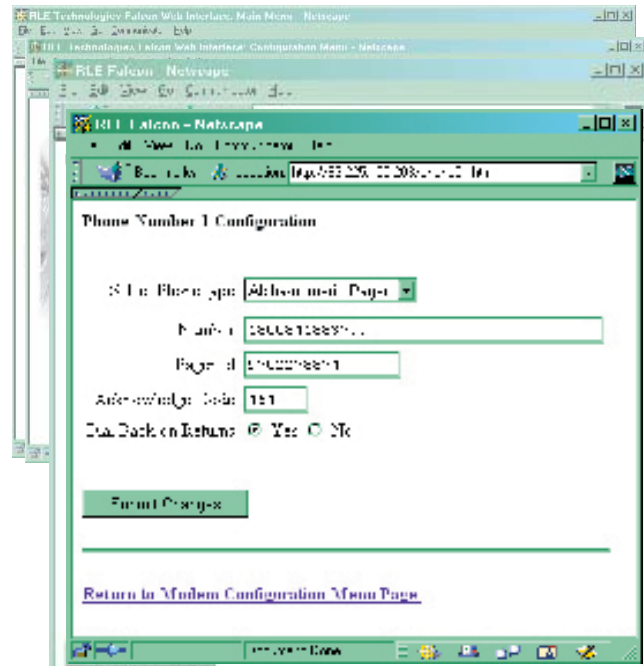
Numeric pager - The ID may be configured to deliver different numeric messages. The ID can contain 15 characters: any combination of the numerals 0 through 9 and a * or #. These are the only characters that will be transmitted to the paging service.

A \$ can be added or inserted anywhere into the message string. This is converted into a 5 digit alarm code: **XYZZZ**.

X - binary alarm condition: 1=on, 0=return to normal (RTN)

Y - multi-drop address of the Falcon (0-4)

ZZZ - alarm ID number - see reference table



Each paging service interprets * and # differently. Before using these characters, consult the paging service to see how they are interpreted and when they should be used.

An effective numeric page depends largely on the parameters established by the paging service. Experimentation may be required to achieve desired results.

The **Acknowledgement Code** is any number, up to six digits, used to acknowledge receipt of an alarm and to terminate any additional call outs for this phone number.

Dial Back on Returns designates whether to call this number again once the alarm condition returns to normal.

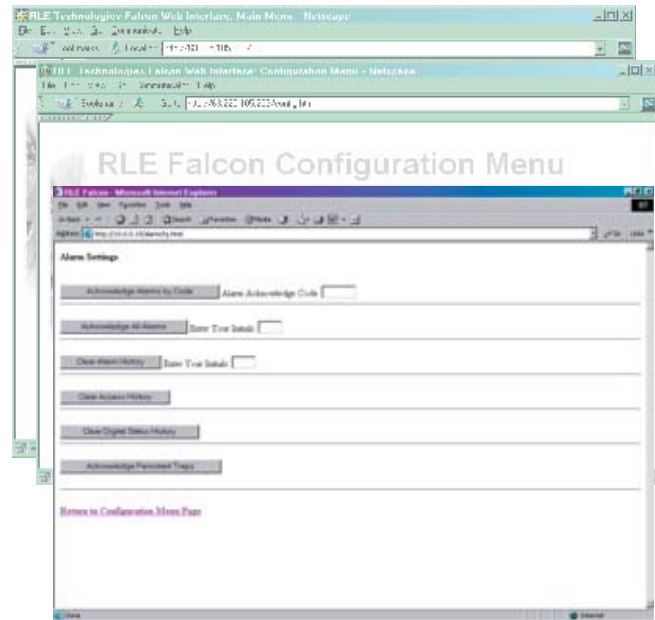
Changes will not go into effect until the **Submit Changes** button is clicked.

Acknowledge an Alarm:

1. Dial Falcon from any phone.
2. Wait for the computer tone.
3. Enter acknowledgement code followed by the # key.

Alarm Settings

The **Alarm Settings** link displays a menu that allows users to acknowledge current Falcon alarms and clear the Falcon's alarm and access history. A click of each of these buttons will complete the tasks.

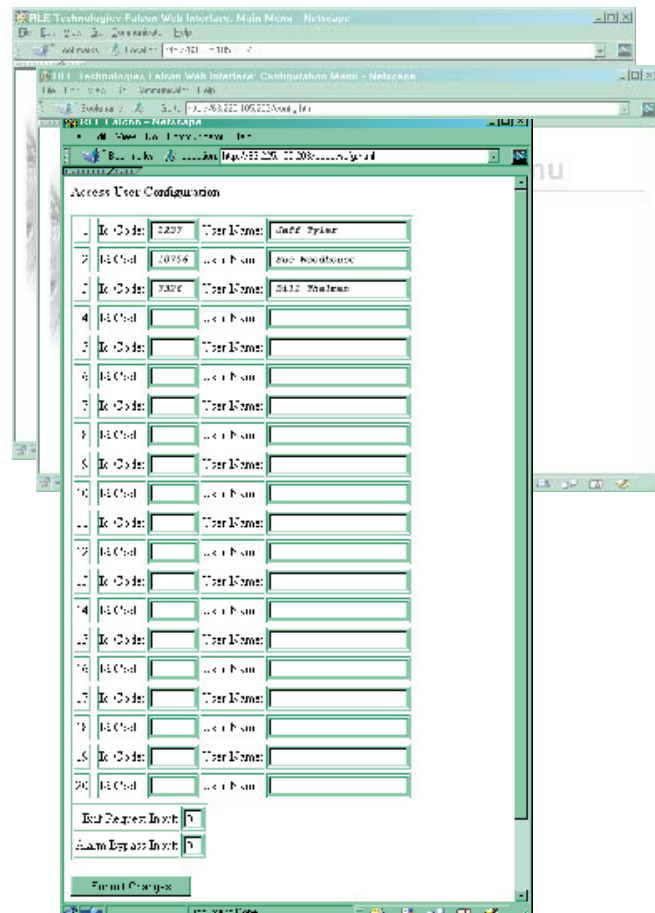


Access Users

The **Access Users** link displays a screen that allows configuration of a maximum of 20 access codes and user names. The access code can be up to six digits long and the user name up to twenty characters long.

Exit Request and **Alarm Bypass Inputs** may also be configured from this menu. Exit request devices provide a dry contact interface which signals a request-to-exit relay to unlock a door. The alarm bypass input is used in conjunction with the controlled access function of the Falcon. When enabled, the alarm circuit on the door is bypassed upon entry of this valid access code.

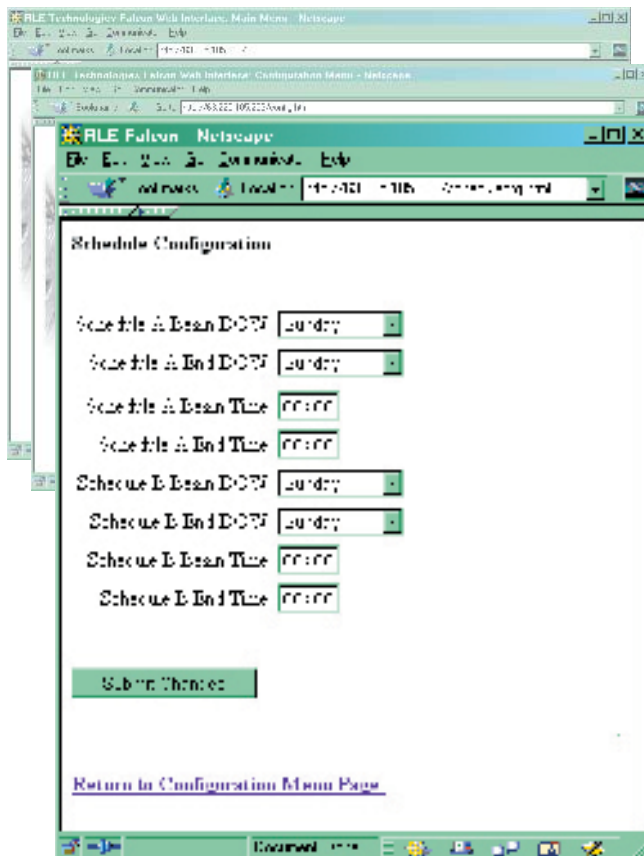
Press the **Submit Changes** button after configuration is complete or all access user configuration changes will be lost.



Schedules

The **Schedules** link allows users to schedule the activation and deactivation of relay outputs. This is useful for cycling redundant equipment such as chillers, generators, etc.

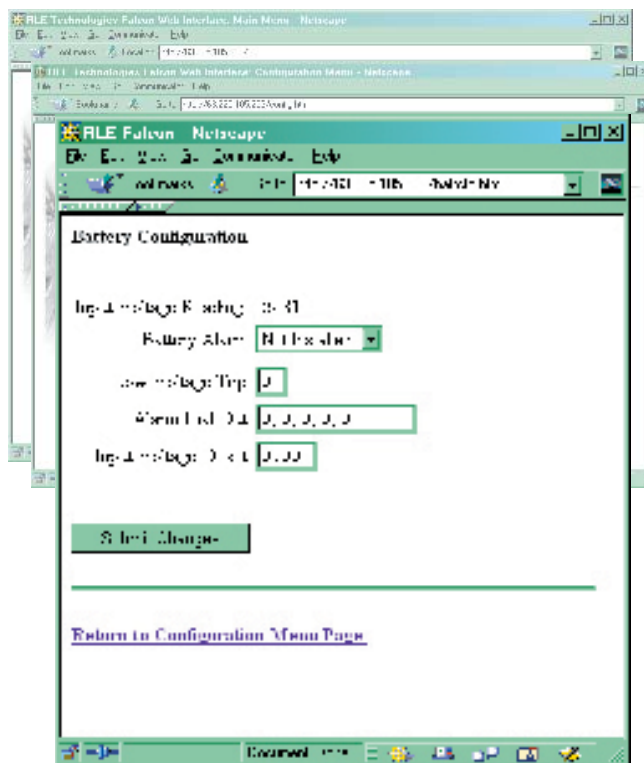
Press the **Submit Changes** button when done to save all schedule changes.



Battery

The **Battery** link is used to configure power when the Falcon is running off a 48V battery string.

Press the **Submit Changes** button when done to save all battery configuration changes.



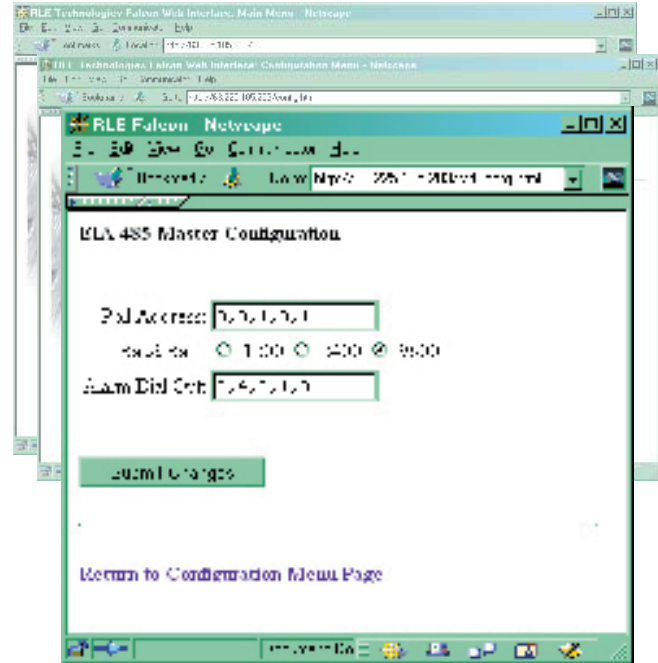
EIA-485

The **EIA-485** link is used to create polling addresses for Falcon units wired in series on the EIA-485 bus, as well as the communications baud rate for the bus. Before entering addresses, be sure each unit's SW2 is set properly. Each poll address must be a unique number from 2 through 254. They are entered sequentially, separated by commas.

9600 is the default baud rate setting.

Alarm Dial Out specifies which of the pre-programmed phone numbers to dial if a communications loss occurs, and in which sequence to call them.

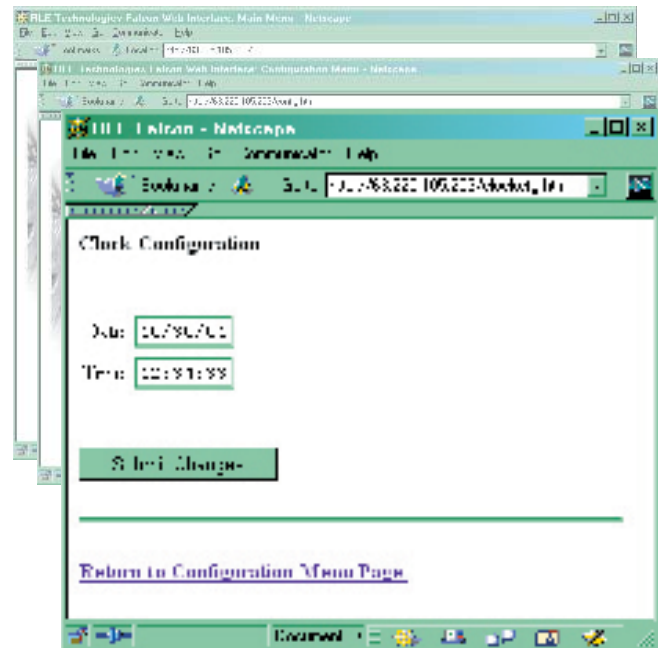
Press the **Submit Changes** button when done to save all schedule changes.



Clock

The **Clock** link allows users to set the date and time on the Falcon's internal clock.

Press the **Submit Changes** button when done to save all schedule changes.

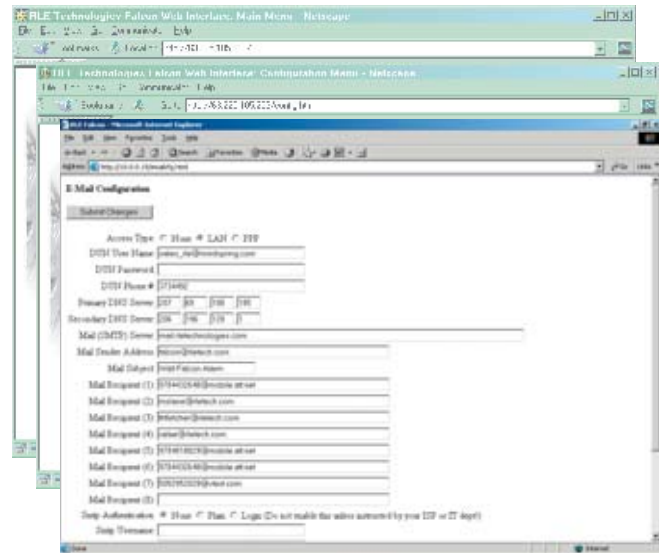


Email

Falcon firmware versions 5.3 and above can send e-mail messages over a network connection or through a dial-up connection to an ISP. The **Email** link allows users to configure the Falcon so it sends alarm notifications via e-mail. The Falcon will send one e-mail message per alarm instance to a maximum of eight e-mail recipients. This allows the Falcon to send e-mail messages when inputs are in alarm state.

The **Email** link displays a data entry form which is used to configure the e-mail settings.

- **Access Type** specifies to send the message through a local network or over a PPP dial up connection.
- **DUN User Name and Password** are only used if PPP is selected. Use these blanks to specify the dial-up networking user name and password. Contact your ISP for this information.
- **DUN Phone Number** is the number the Falcon dials to connect to the ISP. Contact your IT Department to obtain this phone number.
- **DNS Servers** are provided by your ISP. This information is needed to deliver the e-mail message.
- The **Mail (SMTP) Server** specifies the e-mail server used to receive/send mail.
- The **Mail Sender Address** is the address that will be displayed in the form field of the e-mail messages.
- The **Mail Subject** is displayed in the subject field of the received e-mails. Adding `&m` inserts the MAC Address of the Falcon into the e-mail subject line. This ensures the e-mail subject is always unique to a Falcon.
- Up to eight e-mail recipients can be specified in the **Mail Recipient (1)** through **Mail Recipient (8)** fields.
- **SMTP Authentication** is used for ESMTP. Do not change from the default setting unless instructed by your IT Department.



When the information is complete, click **Submit Changes** for the changes to take effect.

An individual e-mail client can be configured to enhance the capabilities of the Falcon. The e-mail client can be set up to filter e-mails from specific Falcons and automatically place the e-mails into specific folders. Some e-mail clients can also be set up to automatically forward the e-mail to other recipients.

Flash Program

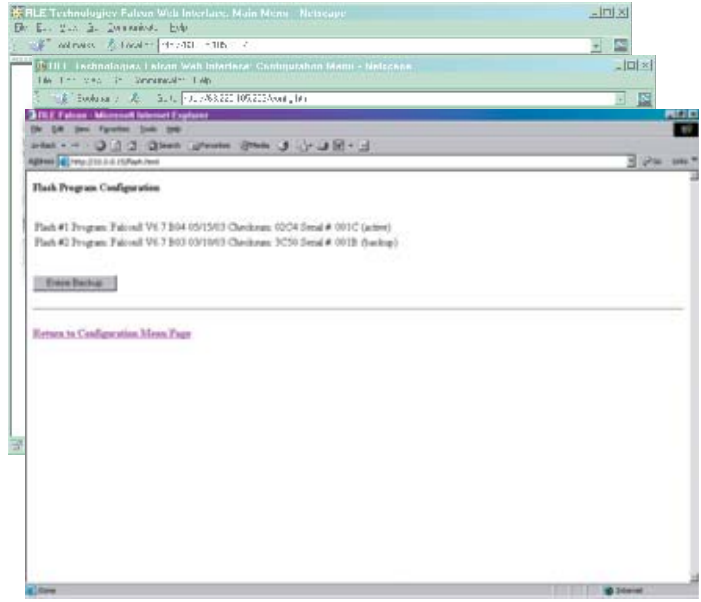
The **Flash Program** link specifies which versions of Falcon firmware are loaded onto the Falcon. Only two copies can be loaded onto the Falcon at a time.

In order to upload a program update, the backup flash must be blank. If it is not, click the **Erase Backup** button to erase it. This erases the oldest version of firmware stored on the Falcon. Using a TFTP client software program, send the falcon(vx.x bx).bin file to the IP address of the Falcon. The Falcon verifies the file name starts with **falcon** and ends with **.bin**. Other file names or types will not be accepted. The Falcon will accept TFTP block sizes of 64, 128, 256, 512, or 1024.

Once the program has been successfully uploaded, the Falcon will automatically reboot.

Product Registration

The **Product Registration** link allows the Falcon to be registered on RLE's database at the time of configuration. IP address, subnet mask and default gateway must already be set on the Falcon before this link will work.



Part Three

EIA-232 Interface

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Chapter Five

Start Up



In order to proceed through this part of the Falcon User Guide, the Falcon must be connected to a PC via the EIA-232 port. If the Falcon is not yet connected to a PC, turn to section 1.2 in this manual and follow the directions to do so.

Unit Start-Up

When the unit is powered up, diagnostic tests are performed and the flash program code is verified. The main system code is executed after a ten second delay. During the bootup sequence, the System Status LED will flash at a rapid rate of 10 flashes per second. If the System Status LED continues to flash for more than ten seconds, there is a fault with the unit and service is required. Output similar to the screen shown should appear on the terminal or terminal emulation software.

```
Falcon V6.1 BOOTUP
uP last reset by: external signal
Identifying Flash #1
Flash Mfg:      0089 Intel
Device Id: Mfg: 4471 28F400-B
Identifying Flash #2
Flash Mfg:      0089 Intel
Device Id: Mfg: 4471 28F400-B
Current Time: MON 10/29/01 15:36:10
Diagnostics in progress
Serials: Passed
Ram:      Passed
Clock:    Passed
Nvram:    Passed
Flash #1 Blank Check:
Parm1= Has Data
Parm2= Has Data
Boot = Blank
Prgm = Has Data
Flash Checksum - Calc: 9FC7 Actual:9FC7
CS: Valid Serial Num: 0000
Flash #2 Blank Check:
Parm3= Blank
Parm4= Blank
Boot = Blank
Prgm = Has Data
Flash Checksum - Calc: 9FC7 Actual:9FC7
CS: Valid Serial Num: 0001
Relay Driver: Passed
Power Supplies:
24V: 25.62
Passed
ADC MAX197: (0,0,0,0,0,0,0,0) Passed
NIC 83902: Passed
Testing Modem:
ç{24}G{0}ðE{0}at{13}{13}{10}OK{13}{10}
Passed
Testing Option Card
Option Card Detected - 12DI/4 (00000001)
Flash Code will start in 10 seconds
Press <ESC> to abort Flash Code
Checking flash program 1 .. Checking flash program 2
.. Running flash program 2
```

Flash Executable Code

After the bootup sequence, the main program executes from Flash memory. In order to run properly, the unit must have a unique MAC address (assigned by the manufacturer) and an IP address. The factory default for the IP address is **10.0.0.186**. If the unit is connected to the enterprise's network, an IP address must be obtained from the network administrator. The Falcon must be reconfigured with this new IP address. This reconfiguration can be done in the field - see the Main Configuration Menu, menu number 2.

Once the system reaches this point, press the **Enter** (↵) **key** to display the System Main Menu. Refer to the other chapters in Part Three for setup, configuration, and display of system information.

```
System Bootup
Falcon8 V6.3 B6 08/24/01
Current time: 10/29/01 15:36:42

Copyright 2000, Raymond & Lae Engineering Inc.

NvRam Initialized @ 00040000
Initializing log @ 00048000
Loading Block 1
DATA LOADED
This device is an EIA-485 Master
Option Card Detected - 12DI/4
PC Ethernet address = 00:90:5B:00:00:40
IP address = 10.0.0.128
Cold Start Completed
```


Chapter Six

Main Menu

All system functions begin in the Main Menu. Two letter commands display information, execute commands, and display submenus for additional inquiry and system configuration functions.

SS – System Status

SS displays the raw input voltage or current of each channel to the Falcon and the alarm status of all input channels and output relays. Actual data displayed depends on option card installed.

CA – Current Alarms

CA displays all active alarms on the master unit. If alarms are present, the System Status LED is red.

KA – Kill Alarms

KA acknowledges all alarms and terminates all dial-out communications and network traps.

LM - Log Menu

LM displays a submenu that lists all the options available for viewing and erasing log files.

TI – Display Date/Time

TI displays the Falcon's current time and date.

AD – ADC Input Values

AD allows the user to examine the readings of the 4-20mA inputs. These readings can be referenced during start-up to verify gain and offset calculations. Data displayed depends on the option card installed.

MS – Modem Statistics

MS provides a summary of all modem information.

NS – Network Statistics

NS displays network and EIA-485 statistics including: network packets received, packets transmitted, and errors.

SC - System Configuration

SC displays a submenu that lists all items for system setup and configuration.

DU – Dump Network Packets

```
** System Menu/Help **
SS - System Status
CA - Current Alarms
KA - Kill All Alarms
LM - Log Menu
TI - Display Date/Time
AD - ADC Input Values
MS - Modem Stats
NS - Network Stats
AT - Arp Table
SC - System Config
DU - Dump Network Packets
NT - Network Trace
PING - Ping an IP Address
EX - Exit to Bootloader
```

Menu Time-Outs

The Falcon backs up one menu level at a time after one minute of inactivity. The process executes until the Main Menu is reached.

DU dumps the headers of all network packets received and sent. It is only active until the next command is entered. This item is for network debugging only and is **not normally enabled**.

NT – Network Trace

NT displays troubleshooting messages during the processing of network packets. It is only active until the next command is entered. **NT** is for network troubleshooting only and is **not normally enabled**.

PING - Allows user to ping another device on the network.

EX – Exit to Bootloader

EX is used to enter the Bootloader command section. The unit will stop monitoring the inputs and allow firmware updates to be loaded. To restore normal operation after updating firmware, type run and press the **Enter** (↵) **key** on the keyboard, or power the unit OFF and then back ON again.



The Bootloader section is designed for experienced technicians or users responsible for maintaining the system. Exit immediately if you have not been trained in the use of the Bootloader commands.

Contact RLE for more information regarding the commands in this section.

Chapter Seven

Log Menu

LM – Log Menu

LM displays a submenu that lists all the options available for viewing and erasing log files. Information contained in the logs is fixed field delimited for capture and extraction to other software packages. The next few pages show examples of what the commands in this submenu display.

```

** System Menu/Help **
SS  Enter Menu Selection > LM
CA  ** Log Menu **
KA  1. Alarm History Log
LM  2. Minute Log
TI  3. Hourly Log
AD  4. Daily Log
MS  5. Access Log
NS  6. Event Log
AT  7. Log Information
SC  8. Digital Status Log
DU  Mx. Minute Log by Channel Number (x)
NT  Hx. Hourly Log by Channel Number (x)
PIN Dx. Daily Log by Channel Number (x)
EX  AHCHx. Alarms by Channel Number (x)

RT. Run Times
EH. Erase Alarm History Log
ET. Erase Trending Log
EA. Erase Access Log
ER. Erase Run Times
EE. Erase Event Log
ED. Erase Digital Status Log
20. Return
Enter Menu Selection >

```

1 - Alarm History Log

This log contains the last 100 alarms captured by the Master Unit. The following format is used to record each alarm entry:

AH###-ID-Condition-Date Time (Value UOM) Label

AH### is the alarm entry index.

ID is the alarm identifier number. See *Alarm ID Reference Table*

Condition is **On**, **High1**, **High2**, **Low1**, **Low2**, or **RTN – Returned To Normal**.

Date and Time is the internal date and time stamp of the alarm condition.

Label is the alarm descriptor – can be up to 64 characters long.

Value and **Unit of Measure (UOM)** are captured for analog channels only. The value recorded is the actual analog value that exceeded its alarm threshold.

```

** System Menu/Help **
SS  Enter Menu Selection >LM
CA  ** Enter Menu Selection >1
KA  1. AH008-101-On -11/01/00 12:29:53 Slave Ofn
LM  2. AH009-101-On -11/01/00 18:12:22 Slave Ofn
TI  3. AH010-101-On -11/01/00 18:12:24 Slave Ofn
AD  4. AH011-101-On -11/01/00 18:12:27 Slave Ofn
MS  5. AH012-101-On -11/01/00 18:12:30 Slave Ofn
NS  6. AH013-101-On -11/02/00 15:53:51 Slave Ofn
AT  7. AH014-101-On -11/02/00 15:53:53 Slave Ofn
SC  8. AH015-101-On -11/02/00 15:53:56 Slave Ofn
DU  Mx. AH016-101-On -11/02/00 15:53:59 Slave Ofn
NT  Hx. Press Enter to Redisplay the Menu
PIN Dx. <RLE CR Wall Unit>
EX  AH017-101-On -11/02/00 15:53:59 Slave Ofn

RT. Run Times
EH. Erase Alarm History Log
ET. Erase Trending Log
EA. Erase Access Log
ER. Erase Run Times
EE. Erase Event Log
ED. Erase Digital Status Log
20. Return
Enter Menu Selection >

```

2 - Minute Log

The Minute Log contains the average, high, and low values for all analog inputs in the Master Unit for a sixty-minute period. At the end of this period, the average, high, and low value for each analog point is recorded in the Hourly Log, and the Minute Log is reset to accumulate another sixty minutes of activity.

```

** System Menu/Help **
SS   Enter Menu Selection >LM
CA   **
KA   1.  "MAC=00:00:6C:22:01:01"
LM   2.  "Computer Room Falcon"
TI   3.  12/01/00 11:25
AD   4.  CH01  32  33  32  F Outside Air
MS   5.  CH02  68  69  68  F Inside Temp
NS   6.  CH04  72  72  72  F Server Room
AT   7.  CH05  18  19  17  %RH Server Rm
SC   8.  CH07  0   0   0   Volts Generator
DU   Mx  12/01/00 11:26
NT   Hx  CH01  32  33  32  F Outside Air
PIN  Dx  CH02  68  69  68  F Inside Temp
EX   AH  CH04  71  72  71  F Server Room
      RT  CH05  17  18  17  %RH Server Rm
      EH  CH07  0   0   0   Volts Generator
ET   12/01/00 11:27
EA   CH01  33  33  33  F Outside Air
ER   CH02  68  69  68  F Inside Temp
EE   CH04  71  71  71  F Server Room
ED   CH05  17  17  17  %RH Server Rm
20.  CH07  0   0   0   Volts Generator
Ent  <Computer Room Falcon>

```

3 - Hourly Log

The Hourly Log contains the average, high, and low values for all analog inputs for a twenty-four hour period in the Master Unit. At the end of this period, the average, high, and low value for each analog point is recorded in the Daily Log, and the Hourly Log is reset to accumulate another twenty-four hours of activity.

```

** System Menu/Help **
SS   Enter Menu Selection >LM
CA   **
KA   1.  Enter Menu Selection >3
LM   2.  "MAC=00:00:6C:22:01:01"
TI   3.  "Computer Room Falcon"
AD   4.  11/30/00 12:00
MS   5.  CH01  42  45  42  F Outside Air
NS   6.  CH02  72  74  71  F Inside Temp
AT   7.  CH04  73  74  72  F Server Room
SC   8.  CH05  15  17  15  %RH Server Rm
DU   Mx  CH07  0   0   0   Generator Voltage
NT   Hx  11/30/00 13:00
PIN  Dx  CH01  44  45  43  F Outside Air
EX   AH  CH02  73  75  72  F Inside Temp
      RT  CH04  73  74  73  F Server Room
      EH  CH05  15  16  15  %RH Server Rm
ET   CH07  0   0   0   Generator Voltage
EA   11/30/00 14:00
ER   CH01  44  46  43  F Outside Air
EE   CH02  73  76  73  F Inside Temp
ED   CH04  73  75  73  F Server Room
20.  CH05  14  16  13  %RH Server Rm
Ent  CH07  0   0   0   Volts Generator
      Press Enter to Redisplay the Menu
      <Computer Room Falcon>

```

4 - Daily Log

This Log maintains seven days of daily averages, highs, and lows for each analog point in the Master Unit. This log is updated every day at midnight. The oldest record is replaced with the newest entry.

```

** System Menu/Help **
SS  Enter Menu Selection >LM
CA  **
KA  1.  "MAC=00:00:6C:22:01:01"
LM  2.  "Computer Room Falcon"
TI  3.  11/25/00 00:00
AD  4.  CH01  30  21  43  F Outside Air
MS  5.  CH02  56  59  54  F Inside Temp
NS  6.  CH04  66  68  65  F Server Room
AT  7.  CH05  16  18  15  %RH Server Rm
SC  8.  CH07  0  0  0  Generator Voltage
DU  Mx. 11/26/00 00:00
NT  Hx. CH01  27  44  18  F Outside Air
PIN  Dx. CH02  55  58  53  F Inside Temp
EX  AHC CH04  65  68  65  F Server Room
    RT. CH05  16  18  16  %RH Server Rm
    EH. CH07  0  0  0  Generator Voltage
    ET. 11/27/00 00:00
    EA. CH01  32  44  24  F Outside Air
    ER. CH02  59  68  53  F Inside Temp
    EE. CH04  67  72  41  F Server Room
    ED. CH05  17  21  1  %RH Server Rm
    20. CH07  0  0  0  Generator Voltage
Ent Press Enter to Redisplay the Menu
    <Computer Room Falcon>

```

5 - Access Log

The Access Log accumulates the last 100 entries captured by the Master Unit. The following information is displayed: Access Log Index (ALxxx), access code, date and time of event, whether access was granted or denied, method of entry (keypad or DTFM), and the description associated with the access code.

```

** System Menu/Help **
SS  Enter Menu Selection >LM
CA  **
KA  1.  Computer Room Falcon
LM  2.  Access History Entries = 100
TI  3.  AL37-000873-08/07/00 15:42:33
AD  4.  Access Granted - Keypad J.Smith
MS  5.  AL38-000241-08/07/00 21:07:15
NS  6.  Access Granted - Keypad P.Jones
AT  7.  AL39-036700-08/21/00 08:02:17
SC  8.  Access Granted - Keypad G.Ross
DU  Mx. AL40-078050-08/27/00 12:07:34
NT  Hx. Access Granted - Keypad L.Choi
PIN  Dx. .
EX  AHC .
    RT. .
    EH. AL36-000754-09/04/00 07:32:45
    ET. Access Granted - Keypad P.Jones
    EA. Press Enter to Redisplay the Menu
    ER. <Computer Room Falcon>
    EE.
    ED. Erase Digital Status Log
    20. Return
Enter Menu Selection >

```

6 - Event Log

The Event Log compiles a current record of the 100 most recent system events in the Master Unit.

```

** System Menu/Help **
SS  Enter Menu Selection >LM
CA  ** Enter Menu Selection >6
KA  1. EL54-11/01/00 12:29:02 System Booted
LM  2. EL55-11/01/00 18:11:39 System Booted
TI  3. EL56-11/02/00 15:53:08 System Booted
AD  4. EL57-11/02/00 16:17:03 System Booted
MS  5. EL58-11/02/00 16:21:27 System Booted
NS  6. EL59-11/02/00 16:25:53 System Booted
AT  7. EL60-11/02/00 16:31:04 System Booted
SC  8. EL61-11/05/00 19:18:44 System Booted
DU  Mx EL62-11/05/00 19:19:29 System Booted
NT  Hx EL63-11/06/00 07:46:33 System Booted
PIN  Dx EL64-11/10/00 17:26:36 System Booted
EX  AH EL65-11/17/00 11:45:10 System Booted
     RT EL66-11/21/00 16:59:31 System Booted
     EH EL67-11/27/00 09:54:58 System Booted
ET  Press Enter to Redisplay the Menu
EA  Erase Access Log
ER  Erase Run Times
EE  Erase Event Log
ED  Erase Digital Status Log
20. Return
Enter Menu Selection >

```

7 - Log Information

Menu selection 7 displays a content summary of the trend logs in the Master Unit.

```

** System Menu/Help **
SS  Enter Menu Selection >LM
CA  ** Enter Menu Selection >7
KA  1. Log Information: -11/02/00 15:5
LM  2. Address: 00048000 NVRam Bytes Used: 28150
TI  3. AH016-101-On -11
AD  4. Records: 65 Minute 25 Hour 7 Day
MS  5. Address: MRP: 00048008 MRD: 0004800C:11
NS  6. Minute Record: 65 Entries 5 Index
AT  7. 1st Entry Time: 11/27/00 10:49
SC  8. Last Entry Time: 11/27/00 11:53
DU  Mx Hourly Record: 25 Entries 18 Index
NT  Hx 1st Entry Time: 11/10/00 07:00
PIN  Dx Last Entry Time: 11/27/00 11:00
EX  AH Daily Record: 7 Entries 6 Index
     RT 1st Entry Time: 11/07/00 00:00
     EH Last Entry Time: 11/27/00 00:00
ET  Total Log Entries: 266896
EA  Alarm Log Size: 2634
ER  Address: Begin: 00040000 End: 00040A4A
EE  Access Log Size: 2028
ED  Address: Begin: 00047530 End: 00047D1C
20. Event Log Size: 1830
Ent Address: Begin: 00046D60 End: 00047486
Access Denied Log: 36
Run Time Log: 160
Total Bytes Used: 34838
Press Enter to Redisplay the Menu

```

8 - Digital Status Log

Menu selection **8** displays a history of the state of digital points configured as status points. A digital input can be configured as NO, NC, or status. If the digital input is configured as status, it will not alarm, but it will appear on this page.

```

** System Menu/Help **
SS  Enter Menu Selection >LM
CA  ** Enter Menu Selection >8
KA  1.
LM  2. Total Digital Status Log Entries = 0
TI  3. Press Enter to Redisplay the Menu
AD  4.
MS  5. Access Log
NS  6. Event Log
AT  7. Log Information
SC  8. Digital Status Log
DU  Mx. Minute Log by Channel Number (x)
NT  Hx. Hourly Log by Channel Number (x)
PIN  Dx. Daily Log by Channel Number (x)
EX  AHCHx. Alarms by Channel Number (x)
    RT. Run Times
    EH. Erase Alarm History Log
    ET. Erase Trending Log
    EA. Erase Access Log
    ER. Erase Run Times
    EE. Erase Event Log
    ED. Erase Digital Status Log
    20. Return
    Enter Menu Selection >
    
```

Mx, Hx, Dx, and AHCHx Commands

These selections provide a means to display information by analog input channel number in the Master Unit. They aid in data capture and import to spreadsheet and database application software packages; the display format is fixed field delimited. The **x** in the command string represents the Master Unit's analog input channel number. Example outputs generated by each command are shown here.

```

** System Menu/Help **
SS  Enter Menu Selection >LM
CA  ** Enter Menu Selection >M5
KA  1. 11/27/00 11:56 -25 -25 -25
LM  2. 11/27/00 11:57 -25 -25 -25
TI  3. 11/27/00 11:58 -25 -25 -25
AD  4. Press Enter to Redisplay the Menu
MS  5. <RLE CR Wall Unit>
NS  6. Enter Menu Selection >H5
AT  7. 11/27/00 10:00 -25 -25 -25
SC  8. 11/27/00 11:00 -25 -25 -25
DU  Mx 11/27/00 12:00 -25 -25 -25
NT  Hx Press Enter to Redisplay the Menu
PIN  Dx <RLE CR Wall Unit>
EX  AHCHx Enter Menu Selection >D5
    RT. 11/17/00 00:00 -25 -25 -25
    EH. 11/21/00 00:00 -25 -25 -25
    ET. 11/27/00 00:00 -25 -25 -25
    EA. Press Enter to Redisplay the Menu
    ER. <RLE CR Wall Unit>
    EE. Enter Menu Selection >AHCH5
    ED. Total Alarm History Entries = 26
    20. AH024-018-Low1 -11/27/00 09:56:12 -25 %RH
    Ent Server Room Humidity
    Press Enter to Redisplay the Menu
    <RLE CR Wall Unit>
    
```

RT - Run Times

The **RT** command tracks the cumulative run time on a digital point. This allows users to see the total hours and minutes a device has been running. This option is only available for digital points.

```

** System Menu/Help **
SS  Enter Menu Selection >LM
CA  ** : Enter Menu Selection >RT
KA  1.   Runtime Accumulations
LM  2.   Ch Label 2/1 2/2 2/3 2/4 2/7 2/8 2/9 Tot
TI  3.   -----
AD  4.   Press Enter to Redisplay the Menu
MS  5.
NS  6.   Event Log
AT  7.   Log Information
SC  8.   Digital Status Log
DU  Mx. Minute Log by Channel Number (x)
NT  Hx. Hourly Log by Channel Number (x)
PIN  Dx. Daily Log by Channel Number (x)
EX  AHCHx. Alarms by Channel Number (x)
    RT. Run Times
    EH. Erase Alarm History Log
    ET. Erase Trending Log
    EA. Erase Access Log
    ER. Erase Run Times
    EE. Erase Event Log
    ED. Erase Digital Status Log
    20. Return
Enter Menu Selection >

```

EH, ET, EA, ER, EE, and ED - Erase Commands

These commands erase the contents of their respective logs in the Master Unit: **EH** - Alarm History log, **ET** - all trending logs (Minute, Hourly, and Daily), **EA** - Access log, **ER** - Run Time log, **EE** - Event log, and **ED** - Digital Status log. All logs should be erased after installation and configuration is complete. Doing so resets all counters and initializes a fresh starting point for accumulating alarm history records, trend data, and access events.

```

** System Menu/Help **
SS  Enter Menu Selection >LM
CA  ** : Enter Menu Selection >EH
KA  1.
LM  2.   Minute Log
TI  3.   Enter Menu Selection >ET
AD  4.
MS  5.
NS  6.   Enter Menu Selection >EA
AT  7.
SC  8.
DU  Mx.   Enter Menu Selection >ER
NT  Hx.
PIN  Dx.
EX  AHCHx. Enter Menu Selection >EE
    RT.
    EH.
    ET.   Enter Menu Selection >ED
    EA.
    ER. Erase Run Times
    EE. Erase Event Log
    ED. Erase Digital Status Log
    20. Return
Enter Menu Selection >

```

20 - Return

This command returns control from the Log Menu back to the Main Menu.

```
** System Menu/Help **
SS  Enter Menu Selection >LM
CA  **
KA  1.  Enter Menu Selection >20
LM  2.
TI  3.  Log Menu Exited
AD  4.
MS  5.  ** System Menu/Help **
NS  6.  SS - System Status
AT  7.  CA - Current Alarms
SC  8.  KA - Kill All Alarms
DU  Mx  LM - Log Menu
NT  Hx  TI - Display Date/Time
PING Dx  AD - ADC Input Values
EX  AH  MS - Modem Stats
RT  NS - Network Stats
EH  AT - Arp Table
ET  SC - System Config
EA  DU - Dump Network Packets
ER  NT - Network Trace
EE  PING - Ping an IP Address
ED  EX - Exit to Bootloader
20. Return
Enter Menu Selection >
```


Chapter Eight

System Configuration

SC - System Configuration

SC displays a submenu that lists all items for system setup and configuration. Each system can be customized for every application.

This menu may be password protected. If it is, the password must be entered when the SC menu selection is made. To enter the password, type **SC**, press the space bar once, and then type the appropriate password. The menu in the example is accessed via a password.

1 - System Menu

Menu selection **1** displays the System Configuration Menu. Certain system parameters, access definitions, and all inputs and outputs can be configured from this screen.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Main Configuration Menu **
KA  1. System Menu
LM  2. IP Config Menu
TI  3. Modem Config menu
AD  4. EIA-485 Config menu
MS  5. Factory Menu
NS  6. Load/Save Config Data
AT  7. Configuration Password
SC  8. E-Mail, SMTP Config Menu
DU  X. Exit
NT  Enter Menu Selection >
PIN
EX - Exit to Bootloader
Enter Menu Selection >

```

```

** System Menu/Help **
SS  Enter Menu Selection > SC
CA  ** Enter Menu Selection >1
KA  1. System Configuration Menu
LM  2. 1. System Name: Falcon Monitoring System
TI  3. 2. Clock: 10/27/00 16:37:17
AD  4. 3. Keypad Access
MS  5. 4. Inputs
NS  6. 5. Relays
AT  7. 6. Battery
SC  8. 7. Analog Averaging: 0
DU  X. 8. Persistent Traps: 0
NT  Ent 9. Slave Inputs
PIN 10. Slave Relays
EX 11. Schedules
12. BACnet
13. Exit & Save
Enter Menu Selection >

```

1 - System Name

Option 1 allows a user to enter a descriptive name for the system – maximum of 64 characters.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >1
KA - 1. System Name
LM - 2. 1. Enter Menu Selection >1
    2. sysName: Falcon Monitoring System
TI - 3. 2. Enter new sysName >
AD - 4. 3.
MS - 5. 4.
NS - 6. 5. Relays
AT - 7. 6. Battery
SC - 8. 7. Analog Averaging: 0
DU - X. 8. Persistent Traps: 0
NT - Ent 9. Slave Inputs
PINC 10. Slave Relays
EX - 11. Schedules
Enter Me 12. BACnet
        13. Exit & Save
        Enter Menu Selection >1

```

2 - Clock

Option 2 allows a user to change the date and time. Date is in mm/dd/yy format; time is maintained in a 24-hour hh:mm format.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >1
KA - 1. System Name
LM - 2. 1. Enter Menu Selection >2
    2. Enter new date (mm/dd/yy) >10/27/00
TI - 3. 2. Ok
AD - 4. 3. Enter new system time (hh:mm) >16:51
MS - 5. 4. Ok
NS - 6. 5.
AT - 7. 6. Battery
SC - 8. 7. Analog Averaging: 0
DU - X. 8. Persistent Traps: 0
NT - Ent 9. Slave Inputs
PINC 10. Slave Relays
EX - 11. Schedules
Enter Me 12. BACnet
        13. Exit & Save
        Enter Menu Selection >2

```

3 - Keypad Access

This option displays the Keypad Configuration Menu; select an item number to add or change entries. Any data entry will overwrite existing field content. The system accommodates twenty access codes and descriptions, designation of exit request input and alarm bypass input, and alarm dial out assignments of up to five telephone numbers.

```
** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >1
KA - 1. Sys Enter Menu Selection >3
LM - 2. 1. Keypad Configuration Menu
TI - 3. 2. 1. Access Code: 1234 Fred
AD - 4. 3. 2. Access Code: 12345 Mary
MS - 5. 4. 3. Access Code: 123456 John
NS - 6. 5. 4. Access Code:
AT - 7. 6. 5. Access Code:
SC - 8. 7. 6. Access Code:
DU - X. 8. 7. Access Code:
NT - Ent 9. 8. Access Code:
PINC 10. 9. Access Code:
EX - 11. 10. Access Code:
Enter Me 12. 11. Access Code:
13. 12. Access Code:
Ent 13. Access Code:
14. Access Code:
15. Access Code:
16. Access Code:
17. Access Code:
18. Access Code:
19. Access Code:
20. Access Code:
21. Exit Request input: 0
22. Alarm Bypass Input: 0
23. Alarm Dial Out: 0,0,0,0,0
24. Return
Enter Menu Selection >
```

1 to 20 - Access Codes

Enter up to twenty access codes and descriptions.
The access code can be up to six digits long and the description up to twenty characters long.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys: Enter Menu Selection >3
LM  2. 1. Key Enter Menu Selection >1
TI  3. 2. 1. Enter new keypad access code
AD  4. 3. 2. (1590) >7375
MS  5. 4. 3. Ok
NS  6. 5. 4. Enter new ID (Fred) >Joan
AT  7. 6. 5. Keypad Configuration Menu
SC  8. 7. 6.
DU  X. 8. 7.
NT  Ent 9. 8.
PIN 10. 9.
EX  11. 10.
Enter Me 12. 11.
13. 12.
Ent: 13.
14.
15. Access Code:
16. Access Code:
17. Access Code:
18. Access Code:
19. Access Code:
20. Access Code:
21. Exit Request input: 0
22. Alarm Bypass Input: 0
23. Alarm Dial Out: 0,0,0,0,0
24. Return
Enter Menu Selection >

```

21 - Exit Request Input

This input is used for the exit request function. Exit request devices provide a dry contact interface which signals a request-to-exit relay to unlock a door.

```
** System Menu/Help **
SS Enter Menu Selection > SC *****
CA ** Enter Menu Selection >1
KA 1. Sys: Enter Menu Selection >3
LM 2. 1. Ke: Enter Menu Selection >21
TI 3. 2. 1. Enter new exit request input
AD 4. 3. 2. (0)>4
MS 5. 4. 3. Ok
NS 6. 5. 4. Keypad Configuration Menu
AT 7. 6. 5.
SC 8. 7. 6. Access Code:
DU X. 8. 7. Access Code:
NT Ent 9. 8. Access Code:
PIN 10. 9. Access Code:
EX 11. 10. Access Code:
Enter Me 12. 11. Access Code:
13. 12. Access Code:
Ent: 13. Access Code:
14. Access Code:
15. Access Code:
16. Access Code:
17. Access Code:
18. Access Code:
19. Access Code:
20. Access Code:
21. Exit Request input: 0
22. Alarm Bypass Input: 0
23. Alarm Dial Out: 0,0,0,0,0
24. Return
Enter Menu Selection >
```

22 - Alarm Bypass Input

This feature is used in conjunction with the controlled access function of the Falcon. When enabled, the alarm circuit on the door is bypassed upon entry of this valid access code.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys: Enter Menu Selection >3
LM  2. 1. Key Enter Menu Selection >22
TI  3. 2. 1. Enter new alarm bypass input
AD  4. 3. 2. (0)>7
MS  5. 4. 3. Ok
NS  6. 5. 4. Keypad Configuration Menu
AT  7. 6. 5.
SC  8. 7. 6. Access Code:
DU  X. 8. 7. Access Code:
NT  Ent 9. 8. Access Code:
PINC 10. 9. Access Code:
EX  11. 10. Access Code:
Enter Me 12. 11. Access Code:
13. 12. Access Code:
Ent: 13. Access Code:
14. Access Code:
15. Access Code:
16. Access Code:
17. Access Code:
18. Access Code:
19. Access Code:
20. Access Code:
21. Exit Request input: 0
22. Alarm Bypass Input: 0
23. Alarm Dial Out: 0,0,0,0,0
24. Return
Enter Menu Selection >

```

23 - Alarm Dial Out

A user is given three attempts to enter the correct access code. After the third invalid attempt, an alarm is generated. Any five numbers of the sixteen can be selected for dial out. See the Modem Configuration Section to learn how to set up phone numbers.

```
** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  **  Enter Menu Selection >1
KA  1. Sys: Enter Menu Selection >3
LM  2. 1. Key: Enter Menu Selection >23
TI  3. 2. 1. Dial out alarm assignments
AD  4. 3. 2. (0=None, 1=PN1, 2=PN2, etc)
MS  5. 4. 3. Enter new alarm assignment >
NS  6. 5. 4. 2,5,9,12,13
AT  7. 6. 5. Ok
SC  8. 7. 6. Keypad Configuration Menu
DU  X. 8. 7. Access Code:
NT  Ent 9. 8. Access Code:
PINC 10. 9. Access Code:
EX  11. 10. Access Code:
Enter Me 12. 11. Access Code:
13. 12. Access Code:
Ent: 13. Access Code:
14. Access Code:
15. Access Code:
16. Access Code:
17. Access Code:
18. Access Code:
19. Access Code:
20. Access Code:
21. Exit Request input: 0
22. Alarm Bypass Input: 0
23. Alarm Dial Out: 0,0,0,0,0
24. Return
Enter Menu Selection >
```

24 - Return

This option returns control back to the System Configuration Menu.

```
** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys: Enter Menu Selection >3
LM  2. 1. Key Enter Menu Selection >24
TI  3. 2. 1. System Configuration Menu
AD  4. 3. 2.
MS  5. 4. 3. Access Code: 123456 John
NS  6. 5. 4. Access Code:
AT  7. 6. 5. Access Code:
SC  8. 7. 6. Access Code:
DU  X. 8. 7. Access Code:
NT  Ent 9. 8. Access Code:
PINC 10. 9. Access Code:
EX  11. 10. Access Code:
Enter Me 12. 11. Access Code:
13. 12. Access Code:
Ent: 13. Access Code:
14. Access Code:
15. Access Code:
16. Access Code:
17. Access Code:
18. Access Code:
19. Access Code:
20. Access Code:
21. Exit Request input: 0
22. Alarm Bypass Input: 0
23. Alarm Dial Out: 0,0,0,0,0
24. Return
Enter Menu Selection >
```


4 - Inputs

Displays the Input Configuration Menu and allows setup of all inputs. The system recognizes installed option cards and will automatically prompt for appropriate configuration data.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys Enter Menu Selection >4
LM  2. 1. Master Unit: RLE CR Wall Unit
TI  3. 2. Input Configuration Menu
AD  4. 3. Channel #A1 of 32
MS  5. 4. Current Readings: Raw = 11.652 mA
NS  6. 5. Calc = 46
AT  7. 6. 1. Type: 4-20
SC  8. 7. 2. Gain: 35
DU  X. 8. 3. Offset: -55
NT  Ent 9. 4. High Limit 2: 85
PINC 10. 5. High Limit 1: 80
EX  11. 6. Low Limit 1: 60
Enter Me 12. 7. Low Limit 2: 50
13. 8. Relay Cntrl: 0
Ent 9. 9. Unit of Measure: °F
10. Label: Room Temperature
11. Alarm Delay: 0 (Secs)
12. Hysteresis: 0
13. Alarm Dial Out: 1,0,0,0,0
14. BACnet Instance: 0
15. BACnet Units: 0
18. Email Recipients:
19. Alarm Disable Sch: None
20. Previous Channel
21. Next Channel
22. Return
Enter Menu Selection >

```

Per channel, select the appropriate number to modify inputs and either pick an item from a menu or type the value or description for the item selected. If an option card is present, the system will automatically recognize the number of points to configure.

Analog Points

Gain for 4-20mA Transducer
 (Sensor High Range – Sensor Low Range)/4

Offset for 4-20mA Transducer
 Sensor Low Range – Gain

Digital Points

The table represents control values for the output relays (K1 and K2) and optional relays (K3, K4, K5 and K6). Select the appropriate value of the relay to activate it, or add the respective values of the appropriate alarm condition to activate more than one output relay. Each input can have individual control values.


Examples:

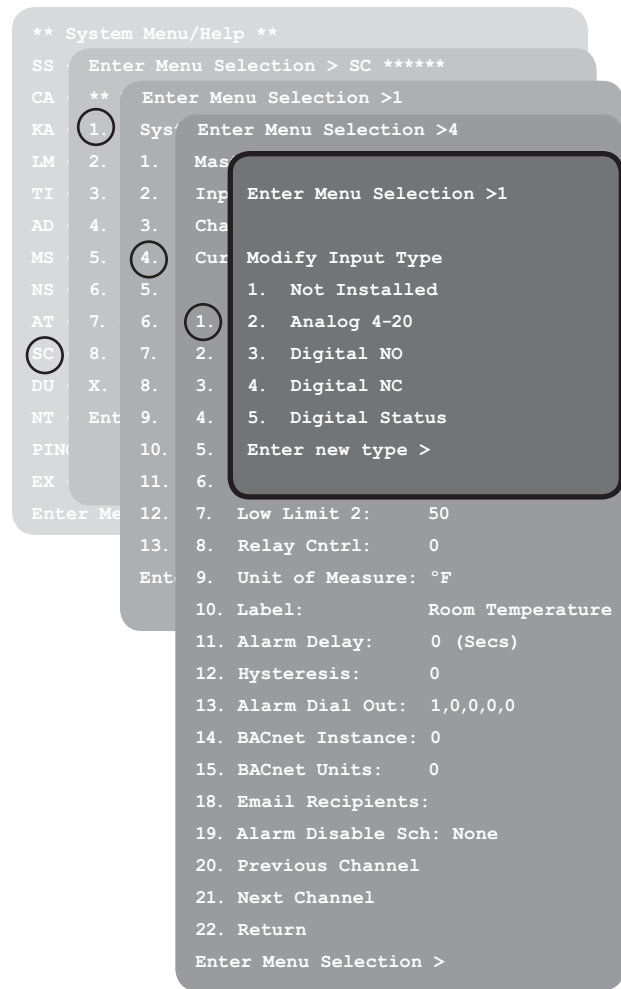
Relay Control: 2 - Activates relay K2 for either an analog 2nd Stage High Alarm or a dry contact change-of-state.

Relay Control: 64 - Activates relay K3 for an analog 2nd Stage Low Alarm.

Relay Control: 35 - Activates relays K1, K2, and K4 for either an analog 2nd Stage High Alarm or a dry contact change-of-state (1+2+32).

Relay Control: 10 - Activates relay K2 for either an analog 2nd Stage High or 2nd Stage Low Alarm (8+2).

 Press Enter (↵) to advance to next channel or ESC to abort and back up one menu level.



Relay	Alarm Condition	Value
K1	High2 Analog Alarm	1
K1	Low2 Analog Alarm	4
K1	Digital Alarm	1
K2	High2 Analog Alarm	2
K2	Low2 Analog Alarm	8
K2	Digital Alarm	2
K3	High2 Analog Alarm	16
K3	Low2 Analog Alarm	64
K3	Digital Alarm	16
K4	High2 Analog Alarm	32
K4	Low2 Analog Alarm	128
K4	Digital Alarm	32
K5	High2 Analog Alarm	256
K5	Low2 Analog Alarm	1024
K5	Digital Alarm	256
K6	High2 Analog Alarm	512
K6	Low2 Analog Alarm	2048
K6	Digital Alarm	512

5 - Relays

Displays the Relay Configuration Menu, where output relays are configured. The system recognizes installed option cards and will automatically prompt for appropriate number of relays to configure. Select the relay to configure and modify accordingly.

Type defines the relay state.

Timer is the number of seconds relay is active. 0=instant, -1=continuous.

Label is the 64 character relay description.

Previous relay backs up one relay.

Next relay displays the next relay.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys Enter Menu Selection >5
LM  2. 1.
TI  3. 2. Relay Configuration Menu
AD  4. 3. Relay #1 of 6
MS  5. 4. 1. Type: Normally Off
NS  6. 5. 2. Timer: -1
AT  7. 6. 3. Label: RELAY #1
SC  8. 7. 4. Schedule: None
DU  X. 8. 5. Previous Relay
NT  Ent 9. 6. Next Relay
PIN 10. 7. Return
EX 11. Enter Menu Selection >6
Enter Me 12.
13. Relay Configuration Menu
Ent Relay #2 of 6
1. Type: Keypad Control
2. Timer: 10
3. Label: RELAY #2
4. Schedule: None
5. Previous Relay
6. Next Relay
7. Return
Enter Menu Selection >
    
```

6 - Input Power

This option allows the user to monitor the input voltage that powers the Falcon. If the Falcon is powered by a voltage source that may be less than 20V, it should be monitored.

Menu Selection 1: 1=installed (monitoring on), 0=not installed (monitoring off).

Menu Selection 2: Trip point at which an alarm sounds.

Menu Selection 3: Numbers to call when in alarm state.

Menu Selection 4: Correct for any offset introduced by the measurement circuitry of the Falcon. The Falcon has its own meter which reads the voltage of incoming power. Measure the voltage with an independent meter and adjust this offset accordingly. The Falcon's meter may not read the most accurate voltage, due to the operation of the Falcon itself.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys Enter Menu Selection >6
LM  2. 1.
TI  3. 2. Battery Configuration Menu
AD  4. 3. 1. Alarm: Installed
MS  5. 4. 2. Low Voltage Trip Point: 21
NS  6. 5. 3. Alarm Dial Out: 1,6,7,0,0
AT  7. 6. 4. Input Voltage Offset: 0.54
SC  8. 7. 5. Return
DU  X. 8. Enter Menu Selection >
NT  Ent 9.
PIN 10. Slave Relays
EX 11. Schedules
Enter Me 12. BACnet
13. Exit & Save
Enter Menu Selection >
    
```

7 - Analog Averaging

Allows the user to change the averaging method for analog inputs. Normally, the system samples analog points once a second while keeping track of high and low values for each analog point. After sixty seconds, the average of these readings and the high and low values for these points are recorded in the minute log. To alter this method of averaging, change the value to one of the values listed in the parentheses. Zero or one maintains the method described above; a higher value changes the method of averaging and the manner by which high and low values are recorded.

An example of how averaging is altered and how it impacts high and low recordings is shown here.

- Analog averaging value is set to 5.
- The analog point is a temperature sensor.
- Temperature readings are displayed for an eleven second period:

```
70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 70, High Value = 70, Low Value = 70
```

```
70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 70, High Value = 70, Low Value = 70
```

```
70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 71, High Value = 71, Low Value = 70
```

```
70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 71, High Value = 71, Low Value = 70
```

```
70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 72, High Value = 72, Low Value = 70
```

```
70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 72, High Value = 72, Low Value = 70
```

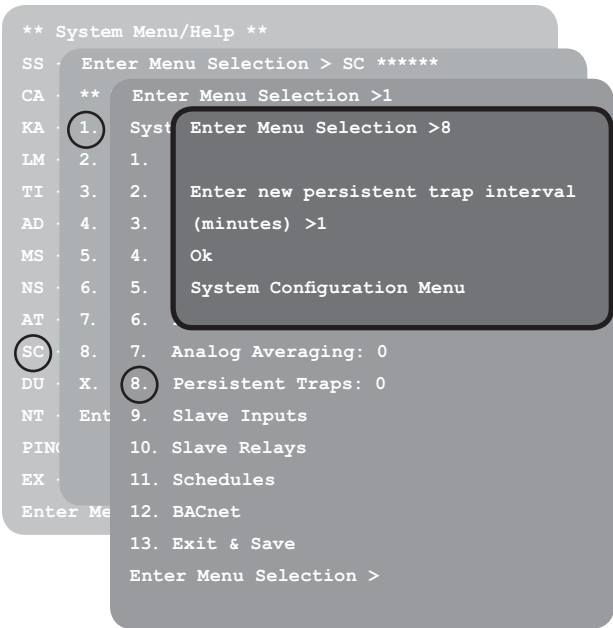
```
70, 70, 70, 71, 71, 72, 72, 73, 73, 74, 74
Average = 73, High Value = 73, Low Value = 70
```

Under normal conditions, the average reading would equal 71, the high value would equal 74, and the low value would equal 70. By changing the averaging method, the average reading ends up at 73, the high value at 73, and the low value for this example remains the same. In a sense, averaging slows down the sensor response and the rate of change. This parameter impacts all analog points.

```
** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  **  Enter Menu Selection >1
KA  1.  Sys  Enter Menu Selection >7
LM  2.  1.
TI  3.  2.  Enter new analog average value
AD  4.  3.  (1,2,3,4,5,6,10,15,20,30 or 60 seconds)
MS  5.  4.  >5
NS  6.  5.  Ok
AT  7.  6.  System Configuration Menu
SC  8.  7.  Analog Averaging: 0
DU  X.  8.  Persistent Traps: 0
NT  Ent 9.  Slave Inputs
PIN  10. Slave Relays
EX  11. Schedules
Enter Me 12. BACnet
        13. Exit & Save
        Enter Menu Selection >
```

8 - Persistent Traps

A system parameter that enables the Falcon to issue continuous SNMP alarm traps until an Alarm Acknowledgement is received by the Falcon. The parameter is a user-defined time interval that is set in minutes. This feature only applies to network applications.



9 - Slave Inputs

This menu provides a means to configure any slave unit input through the configuration port of the master unit. Slave inputs are modified one channel at a time. After modification, the changes must be downloaded to the slave unit in order for the changes to take effect. The data fields and parameters are identical to the analog/digital inputs described earlier in this manual. The example below shows how the slave units are accessed.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys Enter Menu Selection >9
LM  2. 1.
TI  3. 2. Unit2: comproom4
AD  4. 3. Unit3: NA
MS  5. 4. Unit4: NA
NS  6. 5. Unit5: NA
AT  7. 6.
SC  8. 7. Slave configuration: Enter slave
DU  X. 8. number (2-5) >2
NT  Ent 9.
PIN  10. Slave Unit: comproom4
EX  11. Gathering data from unit .. done
Enter Me 12. Input Configuration Menu
13. Channel #A1 of 20
Ent 14. Current Readings: Raw = 0.000 mA Calc
= 22
1. Type: 4-20
2. Gain: 25
3. Offset: 22
4. High Limit 2: 200
5. High Limit 1: 100
6. Low Limit 1: -2147483647
7. Low Limit 2: -2147483647
8. Relay Cntrl; 1
9. Unit of Measure: Deg C
10. Label: Temp. in Room
11. Alarm Delay: 0 (Secs)
12. Hysteresis: 0
13. Alarm Dial Out: 0,0,0,0,0
14. BACnet Instance:
15. BACnet Units:
18. Email Recipients:
19. Alarm Disable Sch: None
20. Previous Channel
21. Next Channel
22. Return
DL. Download Changes to Module
Enter Menu Selection >

```

10 - Slave Relays

Option 10 configures output relays on slave units via the master unit. Slave relays are modified one channel at a time. After modification, the changes must be downloaded to the Slave Unit in order for the changes to take effect. The data fields and parameters are identical to the Relay Configuration Menu described earlier in this manual.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys Enter Menu Selection >10
LM  2. 1.
TI  3. 2. Unit2: comproom4
AD  4. 3. Unit3: NA
MS  5. 4. Unit4: NA
NS  6. 5. Unit5: NA
AT  7. 6.
SC  8. 7. Slave configuration: Enter slave
DU  X. 8. number (2-5) >2
NT  Ent 9.
PING 10. Slave Unit: comproom4
EX - Exi 11. Gathering data from unit .. done
12.
13. Relay Configuration Menu
Ent Relay #1 of 6
1. Type: Normally Off
2. Timer: -1
3. Label: RELAY #1
4. Schedule:
5. Previous Relay
6. Next Relay
7. Return
DL. Download Changes to Module
Enter Menu Selection >

```

11 - Schedules

Option 11 establishes a schedule to operate individual relays. Through this configuration, relays will turn on and off according to a specific schedule.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys Enter Menu Selection >11
LM  2. 1. Schedule Configuration Menu
TI  3. 2. 1. Sch A Begin DOW: Sunday
AD  4. 3. 2. Sch A End DOW: Sunday
MS  5. 4. 3. Sch A Begin Time: 12:00
NS  6. 5. 4. Sch A End Time: 04:00
AT  7. 6. 5. Sch B Begin DOW: Wednesday
SC  8. 7. 6. Sch B End DOW: Wednesday
DU  X. 8. 7. Sch B Begin Time: 18:00
NT  Ent 9. 8. Sch B End Time: 20:00
PING 10. 9. Return
EX - Exi 11. Enter Menu Selection >
Enter Me 12.
13. Exit & Save
Enter Menu Selection >

```

12 - BACNet

BACNet is an ASHRAE protocol that allows the Falcon to communicate with building management systems. This screen is used to convey the unique name of the Falcon to the building management system, so they can communicate with each other. Each Falcon on the network must have its own unique name and device ID.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys Enter Menu Selection >12
LM  2. 1.
TI  3. 2.
AD  4. 3.
MS  5. 4.
NS  6. 5.
AT  7. 6.
SC  8. 7.
DU  X. 8. Persistent Traps: 0
NT  Ent 9. Slave Inputs
PIN  10. Slave Relays
EX  11. Schedules
Enter Me 12. BACnet
        13. Exit & Save
        Enter Menu Selection >

```

```

** BACnet Config Menu **
1. Enter new BACnet device name:
2. Enter new BACnet device ID: 0
x. Exit
Enter Menu Selection >

```

13 - Exit & Save

Option 13 saves all modifications and returns the user to the Main Configuration Menu.

```

** System Menu/Help **
SS  Enter Menu Selection > SC *****
CA  ** Enter Menu Selection >1
KA  1. Sys Enter Menu Selection >13
LM  2. 1.
TI  3. 2.
AD  4. 3.
MS  5. 4.
NS  6. 5.
AT  7. 6.
SC  8. 7.
DU  X. 8. Persistent Traps: 0
NT  Ent 9. Slave Inputs
PIN  10. Slave Relays
EX  11. Schedules
Enter Me 12. BACnet
        13. Exit & Save
        Enter Menu Selection >

```

```

Enter Menu Selection >13
ERASING BLOCK =
COPYING DATA TO FLASH BLOCK 1 =
** Main Configuration Menu **

```


2 - IP Configuration Menu

This menu is used to establish SNMP interaction with the network. The Falcon must be set up with an IP address, mask, and default route. These addresses can be obtained from the Network Administrator.

To enable the SNMP receiving stations (create communities), the Falcon MIB, provided on a diskette with every unit, must be loaded on a system(s) running a Network Operating System (NOS). This MIB is compiled through standard functions of the NOS. Consult with the Network Administrator for proper installation of the Falcon MIB on the NOS. Once the MIB is loaded, the Falcon Unit(s) can be discovered and configured over the network. For proper operation, the IP addresses configured in the Falcon communities must match the IP addresses on the receiving stations.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >2
KA - 1. ** IP Config Menu MAC = 00:90:5B:02:01:1C**
LM - 2. -i Lan IP Address      = 10.0.0.129
TI - 3. -m Net Mask          = 255.255.255.0
AD - 4. -d Default Route     = 10.0.0.252
MS - 5. -u Web User ID       = falcon
NS - 6. -r Web Password Read =
AT - 7. -w Web Password R/W  =
SC - 8. -f Web Refresh Rate  = 30
DU - X. -s PPP Server IP Addr = 0.0.0.0
NT - Ent -c PPP Client Ip Addr = 0.0.0.0
PING - -z Max Seg Size (TCP) = 1436
EX - -h HTTP Port (TCP)     = 0
Enter Me Communities
# IP Addr      String      Access  Trap
1 172.29.58.56 rlecompa  read   no
2 252.46.273.52 rlecompb  read   no
3 Empty
4 Empty
5 Empty
6 Empty
7 Empty
8 Empty

-q Quit
-x Exit & Save
Enter Menu Selection >

```



Save Modifications:

To save all modifications, choose x - Exit & Save. Choosing q - Quit or ESC will abort all changes before returning to the System Configuration Menu.

Communities are computers that receive SNMP traps from the Falcon and interact with the Falcon over the network.

To add a computer to the communities list, select a menu number posted as “empty.” Enter the receiving computer’s **IP address**, a **string** that identifies the computer, the type of network access the machine will have (**r** - read, **w** - read/write, **n** - none), and whether the computer will receive traps or not (**y** - yes, **n** - no). Separate each of these items with a space and press the **Enter** (↵) **key** when done. The newly configured community member will appear in the appropriate space in the community listing.

Type **delete** to remove an existing community.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >2
KA - 1. ** Enter Menu Selection >3
LM - 2. -i Enter community #3
TI - 3. -m IPaddr string access(r/w/n) trap(y/n)
AD - 4. -d (type "delete" to erase entry)
MS - 5. -r 127.224.56.52 rlecompc w y
NS - 6. -w
AT - 7. -f ** IP Config Menu MAC = 00:90:5B:02:01:
SC - 8. Cor 1C**
DU - X. # 1 -i Lan IP Address = 10.0.0.129
NT - Ent Tra -m Net Mask = 255.255.255.0
PING 1 1 -d Default Route = 10.0.0.252
EX - Exi 2 2 -u Web User ID =falcon
Enter Me 3 -r Web Password Read =
4 -w Web Password R/W =
5 -f Web Refresh Rate = 30
6 -s PPP Server IP Addr = 0.0.0.0
7 -c PPP Client Ip Addr = 0.0.0.0
8 -z Max Seg Size (TCP) = 1436
-h HTTP Port (TCP) = 0
-q Communities
-x # IP Addr String Access Trap
Ent 1 172.29.58.56 rlecompa read no
2 252.46.273.52 rlecompb read no
3 Empty
4 Empty
5 Empty
6 Empty
7 Empty
8 Empty

-q Quit
-x Exit & Save
Enter Menu Selection >

```

3 - Modem Configuration Menu

This menu allows configuration of the modem for dial-in and dial-out functions. Dial-in functions include remote access for inquiry, data uploads, I/O configuration, and alarm acknowledgement. Dial-Out functions include: numeric and alphanumeric paging, heartbeat communications check, and ASCII string messaging to remote PCs. Up to sixteen numbers can be configured. Numbers are dialed immediately once an alarm is detected.

Option **i** changes the initialization string. This string is sent to the modem after power up and termination of a phone call. The string can be a maximum of 38 characters. **&c1** and **&d3** are **mandatory**. **s0=1** sets the modem to answer after one ring.

Option **f** sets a dial prefix. Enter a specific Hayes compatible command or dial modifier here. This entry supports a maximum of 38 characters. The default is set to **atdt**.

Option **pn** displays the Phone Number Configuration Menu. This menu offers a variety of different configuration options.

Option **1** on the Phone Number Configuration Menu identifies which type of device the Falcon will call. Use the **text** option to dial a PC receiving ASCII strings. Use the **numeric pager** option for numeric pager setup. Use the **alphanumeric pager** option for alphanumeric pager setup. Select **FalconView** to dial a PC running FalconView software.

Option **2** allows entry of a pager service number for the numeric and alphanumeric pager entries. Each comma after the pager number represents a two second delay. This delay is used to allow enough time for the pager service to answer before requesting the pager ID. Experimentation with the proper number of commas may be necessary, as the time delay needed before the request for the pager ID will vary from service to service.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >3
KA - 1.
LM - 2. ** Modem Config Menu **
TI - 3. -i Enter new initialization string:
AD - 4. at&d3&c1s0=1
MS - 5. -f Enter new dial prefix: atdt
NS - 6. -pn Phone numbers
AT - 7. -pd Enter new pager deliveries: 1
SC - 8. -pi Enter new pager interval: 5
DU - X. (Minutes)
NT - Ent -pa Enter Pager No Ack Alarm: 0
PING - -pb Enter Pager Baud Rate: 1200
EX - -pu Pager Unsuccessful Traps: No
Enter Me -pr Pager Resend Enabled: No
-pw Enter new modem password: rletech
-r Enter new redial attempts: 10
-v Enter new redial interval: 1
(Minutes)
-h Enter new comm check phone: 0
-t Enter new comm check time:
-a Force alarm ack code:
-q quit
-x Exit & Save (Warning: This will disconnect & initialize the modem)
Enter Menu Selection >

```

```


** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >3
KA - 1.
LM - 2. ** Enter Menu Selection >pn
TI - 3. -i Phone Number Configuration Menu
AD - 4. Number 1 of 15
MS - 5. -f 1. Type: Alpha-Numeric
NS - 6. -pn Pager
AT - 7. -pd 2. Number: 18008418837,,
SC - 8. -pi 3. Pager Id: 9702278874
DU - X. 4. Acknowledge code: 464
NT - Ent -pa 5. Dial back on RTN: Yes
PING - -pb 7. Next
EX - -pu 8. Return
Enter Me -pi Enter Menu Selection>
-pw Enter new modem password: rletech
-r Enter new redial attempts: 10
-v Enter new redial interval: 1
(Minutes)
-h Enter new comm check phone: 0
-t Enter new comm check time:
-a Force alarm ack code:
-q quit
-x Exit & Save (Warning: This will disconnect & initialize the modem)
Enter Menu Selection >

```

Option 3 allows entry of a pager ID. This is mandatory for numeric and alphanumeric pagers.

Alphanumeric pager - This ID is sent to the paging service along with all queued alarm messages. The ID is the unique PIN for a specific pager. The ID may be a maximum of 16 characters.

Numeric pager - The ID may be configured to deliver different numeric messages. The ID can contain 15 characters: any combination of the numerals 0-9, and a * or #. These are the only characters that will be transmitted to the paging service.

 Each paging service interprets * and # differently. Before using these characters, consult the paging service to see how they are interpreted and when they should be used.

A \$ can be added or inserted anywhere into the message string. This is converted into a 5 digit alarm code: **XYZZZ**.

X - binary alarm condition: 1=on, 0=return to normal (RTN)

Y - multi-drop address of the Falcon (0-4)

ZZZ - alarm ID number - see reference table

An effective numeric page depends largely on the parameters established by the paging service. Experimentation may be required to achieve desired results.

Option 4 configures an acknowledgement code - any number, up to six digits, used to acknowledge receipt of an alarm and to terminate any additional call outs for this phone number.

Option 5 designates whether to call this number again once the alarm condition returns to normal.

Option 7 moves the interface ahead to configure the next phone number in the system. Sixteen total numbers may be configured.



Save Modifications:

To save all modifications, choose **x** - **Exit & Save**. Choosing **q** - **Quit** or **ESC** will abort all changes before returning to the System Configuration Menu.

ERASING BLOCK = and **COPYING DATA TO FLASH BLOCK 2 =** messages indicate the new settings are now stored in flash memory.



Acknowledge an Alarm:

1. Dial Falcon from any phone.
2. Wait for the computer tone.
3. Enter acknowledgement code followed by the # **key**.

Other settings available from the Modem Configuration Menu:

Option **pd** designates the number of times to call the pager until the alarm is acknowledged - 1 to 255. Pagers are called in sequence. For example, if **pd** is set to 3 and pagers 1, 7, and 10 are programmed to be notified, the Falcon dials 1, 7, 10, 1, 7, 10, 1, 7, 10. As soon as the alarm is acknowledged, the Falcon quits dialing the pagers with that particular access code. Pagers with different access codes are still dialed.

pi allots the number of minutes to wait between redials.

pa establishes a number to call if the alarm isn't acknowledged (**pi** time - 1). A numbered contact (one through 16) designates the number to call.

pb designates the pager baud rate.

Pager Unsuccessful Traps will allow the Falcon to send an SNMP trap to the NMS if set to **YES**.

Pager Resend will send all unacknowledged alarms in the Alarm History menu if set to **YES**. It will only send the last unacknowledged alarm if set at **NO**.

pw defines a remote access password, seven characters max.

r sets a number of times to call a number until the call is successful, from one to 255.

v establishes the number of minutes to wait between redials, from one to 255.

h defines a numbered contact (one through 16) to call to check communications.

t sets a time (24 hour format) to make the communications check.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >3
KA - 1.
LM - 2. ** Enter Menu Selection >pd
TI - 3. -i Enter new pager deliveries: 5
AD - 4.
MS - 5. -f Enter Menu Selection >pi
NS - 6. -pi Enter new pager interval: 10
AT - 7. -pd
SC - 8. -pi Enter Menu Selection >pa
DU - X. -pi Enter Pager No Ack Alarm: 6
NT - Ent -pa
PING - -pi
EX - -pi
Enter Me - -pi
-pw
-r Enter Menu Selection >pu
-v Pager Unsuccessful traps: Yes/No
-h Enter Menu Selection >pr
-t Pager Resend Enabled: Yes/No
-a
-q Enter Menu Selection >pw
-x Enter new modem password: pass4
con
Ent Enter Menu Selection >r
Enter new redial attempts: 4
Enter Menu Selection >v
Enter new redial interval: 3
Enter Menu Selection >h
Enter new comm check phone: 0
Enter Menu Selection >t
Enter new com check time:(HH:MM):01:00
Enter Menu Selection >a
Force alarm ack code:

```

a acknowledges all unacknowledged alarms. This acts as a master code and can override all other alarm acknowledge codes.

Falcon Alarm ID Reference Tables

Analog Inputs 1 through 10

Channel	Condition	ID
AL Channel 1	High Limit 1	001
AL Channel 1	Low Limit 1	002
AL Channel 1	High Limit 2	003
AL Channel 1	Low Limit 2	004
AL Channel 2	High Limit 1	005
AL Channel 2	Low Limit 1	006
AL Channel 2	High Limit 2	007
AL Channel 2	Low Limit 2	008
AL Channel 3	High Limit 1	009
AL Channel 3	Low Limit 1	010
AL Channel 3	High Limit 2	011
AL Channel 3	Low Limit 2	012
AL Channel 4	High Limit 1	013
AL Channel 4	Low Limit 1	014
AL Channel 4	High Limit 2	015
AL Channel 4	Low Limit 2	016
AL Channel 5	High Limit 1	017
AL Channel 5	Low Limit 1	018
AL Channel 5	High Limit 2	019
AL Channel 5	Low Limit 2	020
AL Channel 6	High Limit 1	021
AL Channel 6	Low Limit 1	022
AL Channel 6	High Limit 2	023
AL Channel 6	Low Limit 2	024
AL Channel 7	High Limit 1	025
AL Channel 7	Low Limit 1	026
AL Channel 7	High Limit 2	027
AL Channel 7	Low Limit 2	028
AL Channel 8	High Limit 1	029
AL Channel 8	Low Limit 1	030
AL Channel 8	High Limit 2	031
AL Channel 8	Low Limit 2	032
AL Channel 9	High Limit 1	033
AL Channel 9	Low Limit 1	034
AL Channel 9	High Limit 2	035
AL Channel 9	Low Limit 2	036
AL Channel 10	High Limit 1	037
AL Channel 10	Low Limit 1	038
AL Channel 10	High Limit 2	039
AL Channel 10	Low Limit 2	040

Analog Inputs 11 through 20

Channel	Condition	ID
AL Channel 11	High Limit 1	041
AL Channel 11	Low Limit 1	042
AL Channel 11	High Limit 2	043
AL Channel 11	Low Limit 2	044
AL Channel 12	High Limit 1	045
AL Channel 12	Low Limit 1	046
AL Channel 12	High Limit 2	047
AL Channel 12	Low Limit 2	048
AL Channel 13	High Limit 1	049
AL Channel 13	Low Limit 1	050
AL Channel 13	High Limit 2	051
AL Channel 13	Low Limit 2	052
AL Channel 14	High Limit 1	053
AL Channel 14	Low Limit 1	054
AL Channel 14	High Limit 2	055
AL Channel 14	Low Limit 2	056
AL Channel 15	High Limit 1	057
AL Channel 15	Low Limit 1	058
AL Channel 15	High Limit 2	059
AL Channel 15	Low Limit 2	060
AL Channel 16	High Limit 1	061
AL Channel 16	Low Limit 1	062
AL Channel 16	High Limit 2	063
AL Channel 16	Low Limit 2	064
AL Channel 17	High Limit 1	065
AL Channel 17	Low Limit 1	066
AL Channel 17	High Limit 2	067
AL Channel 17	Low Limit 2	068
AL Channel 18	High Limit 1	069
AL Channel 18	Low Limit 1	070
AL Channel 18	High Limit 2	071
AL Channel 18	Low Limit 2	072
AL Channel 19	High Limit 1	073
AL Channel 19	Low Limit 1	074
AL Channel 19	High Limit 2	075
AL Channel 19	Low Limit 2	076
AL Channel 20	High Limit 1	077
AL Channel 20	Low Limit 1	078
AL Channel 20	High Limit 2	079
AL Channel 20	Low Limit 2	080

Falcon Alarm ID Reference Tables

Digital Input Assignments

Channel	Condition	ID
DI Channel 1	On/Off	081
DI Channel 2	On/Off	082
DI Channel 3	On/Off	083
DI Channel 4	On/Off	084
DI Channel 5	On/Off	085
DI Channel 6	On/Off	086
DI Channel 7	On/Off	087
DI Channel 8	On/Off	088
DI Channel 9	On/Off	089
DI Channel 10	On/Off	090
DI Channel 11	On/Off	091
DI Channel 12	On/Off	092
DI Channel 13	On/Off	093
DI Channel 14	On/Off	094
DI Channel 15	On/Off	095
DI Channel 16	On/Off	096
DI Channel 17	On/Off	097
DI Channel 18	On/Off	098
DI Channel 19	On/Off	099
DI Channel 20	On/Off	100
DI Channel 21	On/Off	101
DI Channel 22	On/Off	102
DI Channel 23	On/Off	103
DI Channel 24	On/Off	104
DI Channel 25	On/Off	105
DI Channel 26	On/Off	106
DI Channel 27	On/Off	107
DI Channel 28	On/Off	108
DI Channel 29	On/Off	109
DI Channel 30	On/Off	110
DI Channel 31	On/Off	111
DI Channel 32	On/Off	112

Special Assignments

Condition	ID
Slave Unit Offline	113
On Battery	114
Low Battery	115
Access Denied	116
Alarm Not Acknowledged	117

4 - EIA-485 Configuration Menu

This menu is used to create polling addresses for units wired in series on the EIA-485 bus, as well as the communications baud rate for the bus. Before entering addresses, ensure each unit's SW2 is set properly. Refer to page 12 for proper settings. Each address must be a unique number from 2 through 254. The Master EIA-485 Menu is only accessible through Falcon units configured as master units.

Option **1** is the polling address. The polling address must consist of unique numbers from 2 to 254. This entry must match the slave unit settings.

Option **2** sets the baud rate. 9600 is the default baud rate setting.

Option **3** configures the alarm to dial out upon a communications loss. When prompted to enter the new alarm assignment, select any five of the 16 previously programmed phone numbers to dial.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - **
KA - 1. Enter Menu Selection >4
LM - 2.
TI - 3. ** Master EIA-485 Config Menu **
AD - 4. 1. Poll Address (2,3,4,5,0)
MS - 5. 2. Baud Rate (9600)
NS - 6. 3. Dial Out Alarm (0,0,0,0,0)
AT - 7. 4. Exit
SC - 8. Enter Menu Selection >1
DU - X. Enter New EIA-485 Poll Address(s) >2,3,4,5
NT - Ent
PING ** Master EIA-485 Config Menu **
EX - 1. Poll Address (2,3,4,5,0)
Enter Me 2. Baud Rate (9600)
3. Dial Out Alarm (0,0,0,0,0)
4. Exit
Enter Menu Selection >2
Enter New Baud Rate 1200, 2400 or 9600>9600

** Master EIA-485 Config Menu **
1. Poll Address (2,3,4,5,0)
2. Baud Rate (9600)
3. Dial Out Alarm (0,0,0,0,0)
4. Exit
Enter Menu Selection >3
Dial out alarm assignments (0=None, 1=PN1,
2=PN2, etc)
Enter new alarm assignment > 5,8,10
Ok

** Master EIA-485 Config Menu **
1. Poll Address (2,3,4,5,0)
2. Baud Rate (9600)
3. Dial Out Alarm (5,8,10,0,0)
4. Exit
Enter Menu Selection >4
ERASING BLOCK =
COPYING DATA TO FLASH BLOCK 2 =

** Main Configuration Menu **

```


The Slave EIA-485 Configuration Menu is only accessible through units configured as slave units.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >4
KA - 1.
LM - 2.  ** Slave EIA-485 Config Menu **
TI - 3.  1. Slave Address (0)
AD - 4.  2. Baud Rate (9600)
MS - 5.  4. Exit
NS - 6.  Enter Menu Selection >1
AT - 7.
SC - 8.  Enter New EIA-485 Address >2
DU - X.
NT - Ent ** Slave EIA-485 Config Menu **
PING 1. Slave Address (2)
EX - 2. Baud Rate (9600)
Enter Me 4. Exit
Enter Menu Selection >2

Enter New Baud Rate 1200, 2400 or 9600>2400

** Slave EIA-485 Config Menu **
1. Slave Address (2)
2. Baud Rate (2400)
4. Exit
Enter Menu Selection >4
ERASING BLOCK =
COPYING DATA TO FLASH BLOCK 2 =

** Main Configuration Menu **

```

5 - Factory Menu

This menu provides a means to change the MAC address and erase the user configuration stored in flash memory. This area is password protected. If you are familiar with MAC assignments and configuring the Falcon, contact RLE Technologies for the password to this menu.



WARNING!

Once you receive the password for this menu, you assume full responsibility for the system configuration and proper MAC addressing of the Falcon.

```
** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >5
KA - 1.
LM - 2. Enter the Factory Password >pass11
TI - 3.
AD - 4. ** Factory Menu MAC = 00:90:5B:00:00:22 **
MS - 5. -m Enter new MAC address
NS - 6. -z Erase user Flash Memory
AT - 7.
SC - 8. -x Exit
DU - X. Enter Menu Selection >
NT - Ent
PING
EX - Exit to Bootloader
Enter Menu Selection >
```

6 - Load/Save Configuration Data Menu

This menu allows user configurations to be saved and reloaded onto other Falcons. The example below shows how Windows HyperTerminal application software is used to perform the load/save functions. Before starting, make sure the HyperTerminal properties are set correctly to perform load/save.

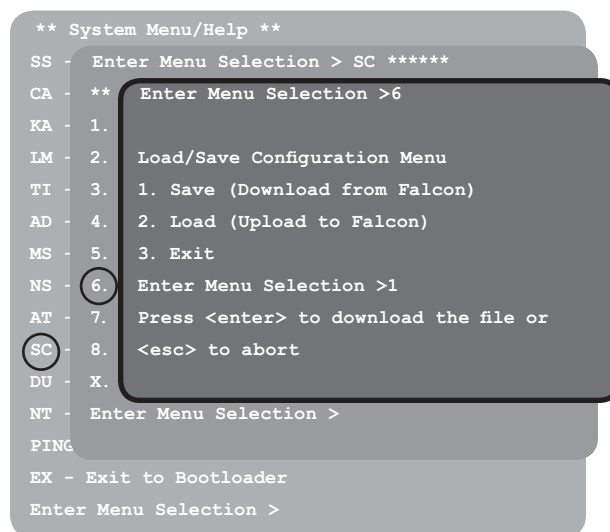
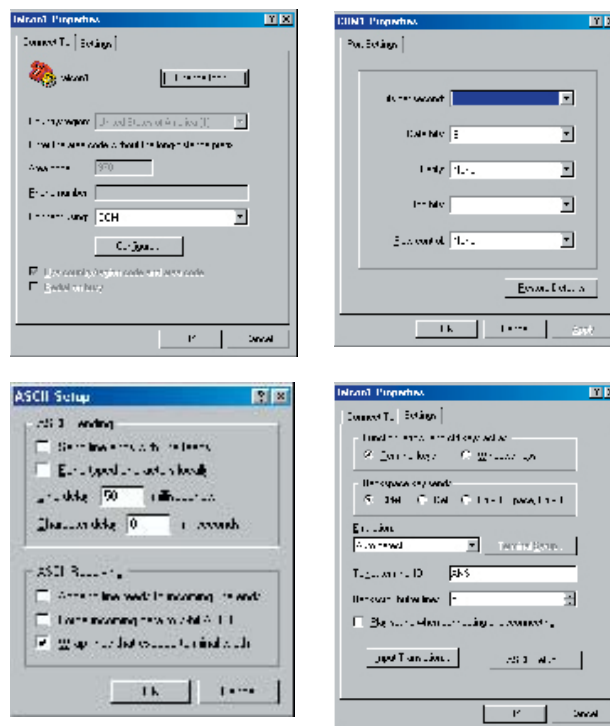
Select the **Properties** menu (under **File**) to establish a Direct Connection through an available COM Port. This port should be set to **9600 Baud**, **8 Data bits**, **NO Parity**, **1 Stop bit**, and **NO Flow** control. Once this is complete, select the **Settings** tab for additional changes.

The parameters under the **Settings** tab and **ASCII Setup** tab should reflect what is shown here.

To save configuration settings, select option **1** from the Load/Save Configuration Data Menu. Then select **Transfer/Capture Text file** from the menu at the top of the HyperTerminal screen. Specify a name by which to save the file and click on the **Start** button.

Press the **Enter** (**↵**) key on the keyboard and the download will begin. Wait until the line display stops and then select **Transfer/Capture Text/Stop** from the menu at the top of the HyperTerminal screen. Press the **Enter** (**↵**) key to return to the Load/Save Configuration Menu.

Before the configuration can be loaded onto other Falcons, it must be checked for accuracy. Blank spaces or unwanted characters, such as the “*Press <enter> to download the file*” text, may be saved into the beginning of the configuration file. Open the file in notepad and examine the first few lines. Simply delete any characters that were accidentally embedded into the file.



To load settings, go to the Falcon onto which the configuration will be loaded. Log into the Falcon through HyperTerminal. Navigate to the screen shown here.

Select option **2** from the Load/Save Configuration Menu and press the **Enter** (↵) key. Then select **Transfer/Send Text File** from the menu at the top of the HyperTerminal screen. Locate the correct configuration file, select **Open**, and then press the **Enter** (↵) key. Wait until the Upload Complete message is displayed, press **Enter** (↵), and **3** to exit.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Load/Save Configuration Menu
KA - 1. 1. Save (Download from Falcon)
LM - 2. 2. Load (Upload to Falcon)
TI - 3. 3. Exit
AD - 4. Enter Menu Selection >2
MS - 5.
NS - 6. Send the config file or <esc> to abort
AT - 7.
SC - 8. E-Mail, SMTP Config Menu
DU - X. Exit
NT - Enter Menu Selection >
PING - Ping on IP address
EX - Exit to Bootloader
Enter Menu Selection >

```

7 - Configuration Password

This screen allows the user to password protect the configuration section of the Falcon firmware. The password can be any combination of 7 numbers and/or characters.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >7
KA - 1.
LM - 2. Enter a New Configuration Password >pswd123
TI - 3. Confirm New Configuration Password >pswd123
AD - 4.
MS - 5. New password confirmed .. saving changes
NS - 6. ERASING BLOCK =
AT - 7. COPYING DATA TO FLASH BLOCK 1 =
SC - 8.
DU - X. ** Main Configuration Menu **
NT - Ent
PING -
EX - Exit to Bootloader
Enter Menu Selection >

```

8 - E-mail, SMTP Config Menu

This screen allows the user to configure e-mail and mail server (SMTP) parameters.

Enter **q** to abort changes and return to the System Configuration Menu.

Enter **x** to save changes and return to the System Configuration menu.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >8
KA - 1.
LM - 2. ** E-Mail Config Menu **
TI - 3. -n Network Access Type = None
AD - 4. -u DUN User Name = rlefalcon1
MS - 5. -w DUN Password = rlepass1
NS - 6. -p Primary DNS Server = 0.0.0.0
AT - 7. -s Secondary DNS Server = 0.0.0.0
SC - 8. -a Mail (SMTP) Server =
DU - X. -b Mail Sender Address =
NT - Ent -j Mail Subject =
PING - P -l Mail Recipient (1) = jsmith@user.com
EX - Exi -2 Mail Recipient (2) = jones@global.com
Enter Me -3 Mail Recipient (3) =
-4 Mail Recipient (4) =
-5 Mail Recipient (5) =
-6 Mail Recipient (6) =
-7 Mail Recipient (7) =
-8 Mail Recipient (8) =
-t Smtip Authentication = LOGIN
-m Smtip Username = vze58c8x@verizon.net
-r Smtip Password =mgeups005
-q Quit
-x Exit & Save
Enter Menu Selection >

```

x - Exit

Exit the System Configuration Menu and return to the Main System Menu.

```

** System Menu/Help **
SS - Enter Menu Selection > SC *****
CA - ** Enter Menu Selection >x
KA - 1.
LM - 2. ** System Menu/Help **
TI - 3. SS - System Status
AD - 4. CA - Current Alarms
MS - 5. KA - Kill All Alarms
NS - 6. LM - Log Menu
AT - 7. TI - Display Date/Time
SC - 8. AD - ADC Input Values
DU - X. MS - Modem Stats
NT - Ent NS - Network Stats
PING - P AT - Arp Table
EX - Exi SC - System Config
Enter Me DU - Dump Network Packets
NT - Network Trace
PING - Ping an IP Address
EX - Exit to Bootloader

```

Part Four

Remote Access

Chapter Nine Configure Remote Access 79

Chapter Nine

Configure Remote Access

The Falcon system can be remotely accessed with any terminal emulation software package or with RLE's FalconView application software. To establish a proper dial-out session, set the appropriate modem port as follows:

- 33.6K baud
- NO parity
- 8 bits
- 1 stop bit
- (2400/N/8/1)
- No software or hardware flow control

Once the proper settings are made, dial the phone number assigned to the Falcon. Once communication is established, press **Enter** (↵). A **Logon>>** prompt will appear on the screen. Type the login, press **Enter** (↵), type the password, press **Enter** (↵); the session will begin. Type a **question mark** (?) to view the System Menu. To terminate the session, execute the command in the software package that disconnects the modem.

The commands for accessing the system remotely are identical to the ones described earlier in this manual. There is, however, a limited command set for remote access. The screen at the left shows the available commands.

System Configuration is limited to the System Menu section, the Modem Configuration section, and the Configuration Password section. It is important to note that in the Modem section, if **x Exit & Save (Warning: This will disconnect & initialize the modem)** is selected to save information, the Falcon will reinitialize its modem and terminate the connection.

Pages can be acknowledged by phone number during a remote access session by entering **aa** followed by the alarm acknowledgement code for that phone number.

```

** System Menu/Help **
SS - System Status
CA - Current Alarms
KA - Kill All Alarms
LM - Log Menu
TI - Display Date/Time
AD - ADC Input Values
MS - Modem Stats
SC - System Config

```

Part Five

PPP Access

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Chapter Ten

Configure PPP

Point-to-point protocol (PPP) is an alternate method that may be used to communicate with the Falcon. PPP can only be used through a modem, over a phone line.

The Falcon and the user's computer must both be configured in order for PPP to work. To configure the Falcon:

1. Access the Falcon's web interface. Click on the **Configuration** link. Enter the correct **user name** and **password** (if necessary). From the Configuration Menu, click on the **System** link. On the System Configuration page, click on the **IP Configuration Menu** link.
2. The IP Configuration page lists the IP addresses configured on the Falcon. Both the **PPP Server** and **PPP Assignment** fields need to be completed in order for PPP to work.

PPP Server assigns an IP address to the Falcon for PPP communications. Any IP address may be used, as long as it is not in the same subnet as the Falcon's primary IP address. A good example of an IP address to use is:

192.168.1.2

Use this address to view the Falcon web interface through a browser when communicating with the Falcon through PPP.

PPP Assignment tells the Falcon what IP address to assign to the PC the user dials in from. Again, any IP address may be used, as long as it is in the same subnet as the **PPP Server** IP address. A good example of an IP address to use for the **PPP Assignment** is:

192.168.1.3

Now the user is ready to configure the PC they will be dialing in from. These directions were written from a Windows 2000 machine. To configure the PC:

1. Click on **Start**, then **Settings**, then **Network and Dial-up Connections**. When the Network and Dial-up Connection window appears, click on **Make New Connection**.
2. Click the **Next** button to begin the Wizard.
3. Select **Dial-up to private network** and click the **Next** button.
4. Type in the **phone number** of the phone line that connects to the Falcon. Select the **Use dialing rules** checkbox and enter the appropriate **area code** and **country code**. Click the **Next** button.
5. Decide if the connection should be available to all users or just this user, and select the appropriate option. Click the **Next** button.
6. Name the connection and add a shortcut to the desktop. Click the **Finish** button. Use this desktop shortcut to establish a PPP connection with the Falcon.

Part Six

Firmware Uploads

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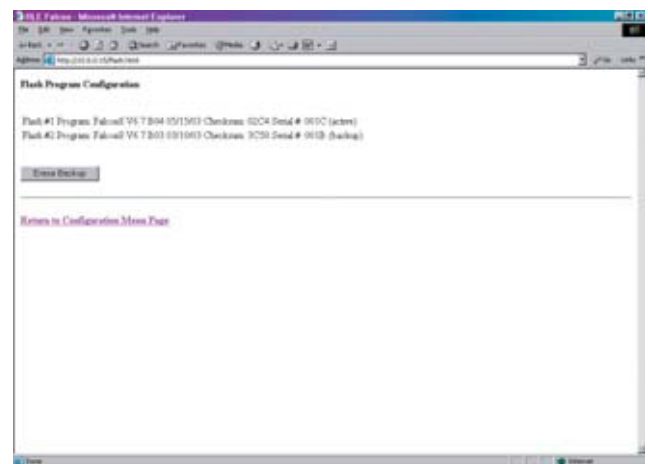
Chapter Eleven

Upload via TFTP Client

Preferred Method - Does not work with PPP connection

1. If you do not have a TFTP client, download one from the Internet. RLE recommends the Walusoft freeware client, available at www.walusoft.co.uk/download.htm. A TFTP server application may download with the client. Only install the TFTP client on your PC.
2. Download the most recent version of firmware appropriate for your Falcon from the RLE web site: www.rletech.com/support/index.html. Save it to the C:\ drive of your computer. Do not change the name of the file. The name of the file, as downloaded from the RLE web site, must remain the same. It is important that you confirm the correct version of firmware before you download and attempt to install it. The Falcon's MAC ID is printed on a sticker on the bottom of the unit. Falcons with MAC IDs from 00.90.5B.02.00.00 and above accept different firmware than other Falcons. **DO NOT ATTEMPT TO LOAD THE WRONG FIRMWARE ONTO A FALCON!** If you have any questions regarding firmware compatibility, contact RLE.
3. The Falcon can only accept two copies of firmware at a time. Before a new version can be uploaded, the oldest version must be deleted. To do this, access the **Flash Program** link on the **Configuration Menu** of the Falcon's web interface. Click the **Erase Backup** button to erase the oldest version of firmware.

It will take approximately ten seconds for the firmware to be erased. A confirmation screen will appear once the firmware has



Erase oldest version of firmware.

Chapter Twelve

Upload via EIA-232 Port

1. Connect a terminal emulator to the Falcon as detailed in section 1.2 of this manual.
2. Firmware updates can be started two ways:
 - a. After power-up, a ten second window provides the user an opportunity to press a key to abort the Flash Main Program from executing, OR
 - b. From the Main Menu, the user can enter **EX** to begin the firmware update process.
3. The Main program must be erased before an upload can be performed. To erase the code, the user must enter the **ERASE PRGM** command, after a second or so, the screen will update with an "OK".
4. The user then enters a **LOAD XMODEM** command. The firmware file is chosen from the PC directory and uploaded using the Xmodem-1k protocol. The file must be binary and have a .bin extension.
5. After the file has been uploaded, the user may then enter the **RUN** command or power down the Falcon and then turn it back on.

Appendices

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Appendix A Option Card

Product Codes

Description	Product Code
Falcon with eight universal inputs and two relay outputs/24VDC	FMS8
Falcon with eight universal inputs and two relay outputs/48VDC	FMS8-48
Falcon with eight universal inputs, 12 digital inputs, and six relay outputs/24VDC	FMS20
Falcon with eight universal inputs, 12 digital inputs, and six relay outputs/48VDC	FMS20-48
Falcon with 20 universal inputs and six relay outputs/24VDC	FMS20-U
Falcon with 20 universal inputs and six relay outputs/48VDC	FMS20-U-48
Falcon with eight universal inputs, 24 digital inputs, and two relay outputs/24VDC	FMS32
Falcon with eight universal inputs, 24 digital inputs, and two relay outputs/48VDC	FMS32-48

Installation

Option cards may be installed by the manufacturer at the time of the initial product order, or may be ordered at a later date and installed by the customer. If a customer orders an option card after they have possession of the Falcon unit, they must install the option card themselves.

The Falcon's option card is shipped with a ribbon cable and one screw. To install a Falcon option card:

1. Remove the four screws that secure the lid to the Falcon. Lift off the lid.
2. Remove the sticker, labeled "Falcon 12 Channel Expansion Card Option" from the back of the lid.
3. Align the holes in the option card with the four posts and one screw setting on the main Falcon unit. Make sure the two double rows of pins align next to each other, and the green inputs point toward the rear of the unit.
4. Snap the option card onto the four posts and secure the provided screw into the remaining hole. Once the card snaps into place, it is very difficult to remove. Do not be tempted to overlook installation of the screw. This

screw grounds the option card, and is critical to the Falcon's performance.

5. The main Falcon board must now be connected to the option card. The two are connected with a ribbon cable, provided by the manufacturer. The ends of the ribbon cable are keyed, which means they will only fit onto the two double rows of pins - one on the main board, one on the option card - in one direction. Align the keyed sides of the ribbon cable with the notches in the plastic surrounding the rows of pins, and push down securely. Always place and remove the ribbon cable with a straight up and down motion. Pulling the cable to one side or another will bend the pins in the connectors and damage the boards.
6. Installation is complete. Place the lid back on the Falcon and secure it with four screws.

Convert Current Input Channels to Voltage Input Channels

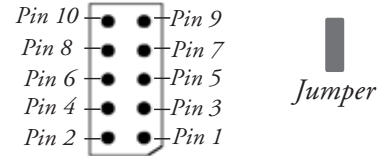
When the Falcon's optional 12 channel universal input card is delivered to the customer, its channels are configured for current inputs (4-20 mA). Some

sensors, however, may require voltage input channels (0-5V or 0-10V). The customer may manually reconfigure any or all current input channels as voltage input channels if necessary.

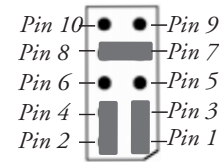
The headers on the option card are labeled P9 through P20. Each number corresponds with a channel: P9 corresponds with channel 9, P10 with channel 10, etc. Each header has two parallel columns of five pins. Some pins are connected with jumpers. Changing these header settings converts a current channel to a voltage channel and vice versa.

To configure a header as a **current channel (4-20mA)**, connect pins 1 and 3 with one jumper. Connect pins 2 and 4 with another jumper. Connect pins 7 and 8 with a third jumper. *Option cards are shipped from the factory with all headers configured as current channels.*

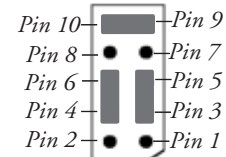
To configure a header as a **voltage channel (0-5V or 0-10V)**, connect pins 3 and 5 with one jumper. Connect pins 4 and 6 with another jumper. Connect pins 9 and 10 with a third jumper.



Header with two columns of five pins



Header configured as a current channel



Header configured as a voltage channel

Appendix B

Technical Specifications

Dimensions	16.8"W x 1.8"H x 7.9"D (427mmW x 46mmH x 201mmD)
Weight	6lbs. (2.72kg)
Operating Environment	32°F to 158°F (0°C to 70°C) 5% to 95% RH, non-condensing 10,000' (3048m) max.
Storage Temperature	-4°F to 185°F (-20°C to 85°C)
Power	24VDC model: 24VDC ± 10%, 800mA max. 48VDC model: 36VDC to 72VDC, 500mA max.
Keypad Interface	3000VAC rms optically installed
Universal Inputs	Eight Inputs Analog: 4-20mA - 12 Bit A/D conversion Digital: Dry contact Transient Suppression - 600W peak pulse power dissipation on 10/1000uS waveform Overvoltage tolerant to ± 16.5V Fused input: 300mA resettable fuse
Optional Digital Inputs	3000VAC rms optically isolated
Digital Outputs	2 - dry contact form "C" Contact rating: 1 Amp @ 24VDC/0.5A @ 120VAC, resistive
Internal Modem	FCC part 68 approved Isolation: 1500VAC rms isolation barrier Baud rate: 33.6Kbps standard 2100V peak surge protection
Communications	EIA-232 port: 3000VAC rms optically isolated, 15kV ESD protection EIA-485 port: 3000VAC rms optically isolated, transient suppression - 600W peak pulse power, dissipation on 10/1000uS waveform Ethernet 10BaseT port: SNMP V1 support, UDP command set, 1500VAC rms isolation
Internal Hardware	16 Bit 68HC16Z1 Microprocessor 64K ROM; 256K/512K Flash Memory 128K RAM; 32/128K NVRAM Real-time clock
Option Cards	EXP12: 12 digital inputs, 4 relay (digital) outputs EXP12-U: 12 universal inputs, 4 relay (digital) outputs EXP24-L: 24 digital inputs

Appendix C

4-20mA Gain/Offset Reference Chart

Falcon Analog 4-20mA Gain/Offset Numbers

4-20mA Gain / Offset Conversion Formula

GAIN = Range of the sensor (High Value – Low Value) / 4 = Gain

OFFSET = Sensor Low Value – Gain = Offset

Example: (TH140 Humidity)

GAIN = (Sensor High Value (**100**) – Sensor Low Value (**0**) / 4 = **25**

OFFSET = (Sensor Low Value (**0**) – GAIN (**25**) = **-25**

RLE #	Transducer Type	Range	Gain	Offset
Temperature				
TH140 (White Case)	Temperature	50°F - 95°F	11	39
	Temperature	32°F - 122°F	22	11
	Humidity	0% - 100% R.H.	25	-25
TH140 – OLD (Beige Case)	Temperature	-20° - 120°F	35	-55
	Humidity	0% - 100% R.H.	25	-25
T120 (White Case)	Temperature	50°F - 95°F	11	39
	Temperature	32°F - 122°F	22	11
T120 – OLD (Beige Case)	Temperature	-20°F - 120°F	35	-55
Current				
CT55	Current	0 – 5 Amps	1	-1
		0 – 55 Amps	13	-13
CT20	Current	0 – 30 Amps	7	-7
		0 – 60 Amps	15	-15
		0 – 120 Amps	30	-30
CT200	Current	0 – 20 Amps	5	-5
		0 – 200 Amps	50	-50
CT300	Current	0 – 100 Amps	25	-25
		0 – 300 Amps	75	-75
Voltage				
PT300	Voltage – Single Phase	0 – 300 VAC	75	-75
3PT300	Voltage – Three Phase	0 – 300 VAC	75	-75
PT600	Voltage – Single Phase	0 – 600 VAC	150	-150
3PT600	Voltage – Three Phase	0 – 600 VAC	150	-150
LD5000 4-20mA				
LD5000	Leak Detection, 4-20mA Output, (Calc. in ft.)	0 – 500 Feet	143	-179
		0 – 1000 Feet	286	-357
		0 – 1500 Feet	429	-536
		0 – 2000 Feet	571	-714
		0 – 2500 Feet	714	-893
		0 – 3000 Feet	857	-1071
		0 – 3500 Feet	1000	-1250
		0 – 4000 Feet	1143	-1429
		0 – 4500 Feet	1286	-1607
		0 – 5000 Feet	1429	-1786

Warranty Statement

Seller warrants to the Ultimate Purchaser (the purchaser who buys for use and not for resale) that all products furnished under this order and which are manufactured by Seller will conform to final specifications, drawings, samples and other written descriptions approved in writing by Seller, and will be free from defects in materials and workmanship. These warranties shall remain in effect for a period of twelve (12) months after delivery to the Ultimate Purchaser. If the Seller installs the equipment or supplies technical direction of installation by contract, said one year shall run from the completion of installation, provided installation is not unreasonably delayed by Ultimate Purchaser. Parts replaced or repaired in the warranty period shall carry the unexpired portion of the original warranty. A unit placed with the purchaser on consignment and then later purchased will be warranted for twelve (12) months from the time the Seller receives notification of the Purchaser's intent to purchase said consigned item. The foregoing is in its entirety is subject to the provision that in no case will the total warranty period extend beyond 18 months from date Seller ships equipment from point of manufacture.

Products are NOT life and safety certified. In no event shall the Seller be liable for loss, damage, or expense directly or indirectly arising from the use of the units, or from any other cause, except as expressly stated in this warranty. Seller makes no warranties, express or implied, including any warranty as to merchantability or fitness for a particular purpose or use. Seller is not liable for and Purchaser waives any right of action it has or may have against Seller for any consequential or special damages arising out of any breach of warranty, and for any damages Purchaser may claim for damage to any property or injury or death to any person arising out of its purchase or the use, operation, or maintenance of the product. Seller will not be liable for any labor subcontracted or performed by Purchaser for preparation of warranted item for return to Seller's factory or for preparation work for field repair or replacement. Invoicing of Seller for labor either performed or subcontracted by Purchaser will not be considered as a liability by the Seller.

The liability of Seller hereunder is limited to replacing or repairing at Seller's factory or on the job site at Seller's option, any part or parts which have been returned to the Seller and which are defective or do not conform to such specifications, drawings or other written descriptions; provided that such part or parts are returned by the Ultimate Purchaser within ninety (90) days after such defect is discovered. The Seller shall have the sole right to determine if the parts are to be repaired at the job site or whether they are to be returned to the factory for repair or replacement. All items returned to Seller for repair or replacement must be sent freight, prepaid to its factory. Purchaser must obtain Seller's Return Goods Authorization prior to returning items. The above conditions must be met if warranty is to be valid. Seller will not be liable for any damage done by unauthorized repair work, unauthorized replacement parts, from any misapplication of the item, or for damage due to accident, abuse, or act of God.

This warranty shall be exclusive of any and all other warranties express or implied and may be modified only by writing signed by any officer of the Seller. This warranty shall extend to the Ultimate Purchaser but to no one else. Accessories supplied by Seller but manufactured by others carry any warranty the manufacturers have made to Seller and which can be passed on to the Ultimate Purchaser.

Seller makes no warranty with respect to whether the products sold hereunder infringe any patent, U.S. or foreign, and Purchaser represents that any specially ordered products do not infringe any patent. Purchaser agrees to indemnify and hold Seller harmless from any liability by virtue of any patent claims where Purchaser has ordered a product conforming to Purchaser's specifications, or conforming to Purchaser's specific design.

Purchaser has not relied and shall not rely on any oral representation regarding the Product sold hereunder and any oral representation shall not bind Seller and shall not be part of any warranty.



208 Commerce Drive
Fort Collins, CO 80524
800.518.1519
970.484.6510
970.484.6650 FAX
www.rletech.com

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