



Elite Pump Controller

User Guide

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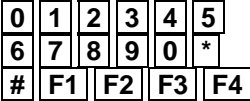




About this Guide

Conventions Used in this Guide

This guide is intended to describe how to install and configure the Elite Alarm Notification System.

To help you understand the information in this guide, a consistent set of documentation conventions are used to represent certain material.

The following table describes the typographic conventions used in this guide to help you locate and interpret information.

Convention	Description
<i>Italic text</i>	Indicates a parameter that you can set.
Courier font	Indicates messages shown on the EPC display or information printed on reports.
“Text enclosed in quotes”.	Indicates messages that EPC speaks.
Picture of key from front panel 	These keys are used when a special key on the front panel must be pressed to accomplish a task. EXAMPLE: Press   to enter RUN mode.
Small rectangular representation of key 	Indicates keys to press when entering parameter values at the keypad or when communicating with the EPC via a touch-tone telephone.
CAUTION 	This heading and icon in the margin indicates a special concern that you should take into consideration when performing an action. Cautions not followed could result in danger.
WARNING! 	This heading and icon in the margin indicates advice to heed when performing an action. Warnings not followed could result in damage to the equipment or personal harm.
NOTE 	This heading and icon in the margin indicates any exceptions or additional points to the topic being discussed.
EXAMPLE 	This heading and icon in the margin indicates that the text contains an illustration of a point being discussed.

What is the Elite Pump Controller?

The Elite Pump Controller provides:

- A pre-defined control scheme within the Elite for controlling 2 pumps.
- Pumps controlled for either a fill or drain application mode.
- Automatic alternation or lead/lag operation of pumps.
- Calculation of pump run times and starts.
- Reading of the Hand-Off-Auto (HOA) switch to take a pump out of service yet still compute pump run times.
- Support for either float-switches or level sensors for pump control.
- Detection and alarming of stuck lead, lag and off pump float-switches.
- Over temperature inputs for each pump that automatically turn off pumps.
- Remote interrogation and control via phone/cell.
- Menu-based setup of all pump control parameters.
- Support for additional alarming including: over temperature, seal failure, intrusion, etc.

Alarm options

By programming specific settings in the Elite, you define what conditions constitute an alarm and what action to perform when an alarm condition occurs. Actions supported by the Elite include:

- Calling phone and cell phones to deliver a user-specified alarm message.
- Calling pagers and alphanumeric pagers to provide alarm messages in digital and textual forms.
- Sending faxes that show the current state of all channels.
- Setting relays for local control or alarm annunciation.
- Setting local LEDs to alert personnel that channels are in alarm.

As people are informed of alarm conditions, they have the option to acknowledge the alarm, thus telling the Elite that the condition is understood and will be addressed.

As a remote monitoring system, the EPC allows you to call-in at any time and inquire about the status and current value of any or all conditions being monitored.

So, the EPC is your complete 24-hour a day, 7-day a week monitoring and notification system that allows you to turn your operations into unattended operations!



2

Installing the Elite Pump Controller

This chapter provides information on installing the Elite Pump Controller. Please read the entire chapter before starting the installation.

What is the Installation Process?

The EPC requires that I/O boards be located in specific locations depending on the type of level control scheme employed.

For float-switch level controls

SLOT Number	Board Type
10	Digital Input 8-channel
20	Relay Output 4-channel
30	Digital Input 8-channel

For level sensor controls

SLOT Number	Board Type
10	Digital Input 8-channel
20	Relay Output 4-channel
30	Digital Input 4-channel -or- Digital Input 8-channel
40	Analog Input 8-channel

Wiring

Wiring for the Elite Pump Controller is pre-defined for all of the required signals. The following shows the wiring for each of the pump control configurations.


Float-switch connections

	Chan #	Signal	Operation
Digital Input 8-channel	11	Pump 1 Auto mode	Normally Closed input. Closed – indicates pump is in AUTO mode Open – indicates pump is in HAND or OFF
	12	Pump 2 Auto mode	Normally Closed input. Closed – indicates pump is in AUTO mode Open – indicates pump is in HAND or OFF
	13	Pump 1 Hand/Off mode	Normally Open input. Closed – Elite turns Pump 1 On Open – Elite turns Pump 1 Off
	14	Pump 2 Hand/Off mode	Normally Open input. Closed – Elite turns Pump 1 On Open – Elite turns Pump 1 Off
	15	Pump 1 run time	Normally Open input. Signal indicating when pump 1 is actually running, the system computes run time and number of starts.
	16	Pump 2 run time	Normally Open input. Signal indicating when pump 2 is actually running, the system computes run time and number of starts.
	17	Pump 1 overtemp	Normally Open input. Closed – Pump 1 has an overtemp condition, Elite will keep Pump 1 off when the input is closed
	18	Pump 2 overtemp	Normally Open input. Closed – Pump 2 has an overtemp condition, Elite will keep Pump 2 off when the input is closed
Relay Output 4-channel	21	Pump 1 relay	Control output to turn pump on/off
	22	Pump 2 relay	Control output to turn pump on/off
	23	SPARE	Can be used for high/low level lights, etc.
	24	SPARE	
Digital Input 8-channel	31	Low alarm float switch	Normally Open input. Initiates low level alarm call.
	32	High alarm float switch	Normally Open input. Initiates high level alarm call.
	33	Lead/Lag Select	Normally Open input. Selects which pump is the lead pump, open for pump 1, closed for pump 2
	34	Motor 1 fault	Normally Closed input. Motor (pump) 1 will be shut off when this input goes open.
	35	Motor 2 fault	Normally Closed input. Motor (pump) 2 will be shut off when this input goes open.
	36	Lead float switch	Normally Open input.
	37	Lag float switch	Normally Open input.
	38	Off float switch	Normally Open input. Turns off both pumps.

Level sensor connections

	Chan #	Signal	Operation
Digital Input 8-channel	11	Pump 1 Auto mode	Normally Open input. Closed – indicates pump is in AUTO mode Open – indicates pump is in HAND or OFF
	12	Pump 2 Auto mode	Normally Open input. Closed – indicates pump is in AUTO mode Open – indicates pump is in HAND or OFF
	13	Pump 1 Hand/Off mode	Normally Open input. Closed – Elite turns Pump 1 On Open – Elite turns Pump 1 Off
	14	Pump 2 Hand/Off mode	Normally Open input. Closed – Elite turns Pump 1 On Open – Elite turns Pump 1 Off
	15	Pump 1 run time	Normally Open input. Signal indicating when pump 1 is actually running, the system computes run time and number of starts.
	16	Pump 2 run time	Normally Open input. Signal indicating when pump 2 is actually running, the system computes run time and number of starts.
	17	Pump 1 overtemp	Normally Open input. Closed – Pump 1 has an overtemp condition, Elite will keep Pump 1 off when the input is closed
	18	Pump 2 overtemp	Normally Open input. Closed – Pump 2 has an overtemp condition, Elite will keep Pump 1 off when the input is closed
Relay Output 4-channel	21	Pump 1 relay	Control output to turn pump on/off
	22	Pump 2 relay	Control output to turn pump on/off
	23	SPARE	
	24	SPARE	

Digital Input 8-channel	Digital Input 4-channel	31	Low alarm float switch	Normally Open input. Initiates low level alarm call. Turns on/off pump(s). See Float Failsafes page 15.
		32	High alarm float switch	Normally Open input. Initiates high level alarm call. Turns on/off pumps(s). See Float Failsafes page 15.
		33	Lead/Lag Select	Normally Open input. Selects which pump is the lead pump, open for pump 1, closed for pump 2
		34	SPARE	
	Digital Input 4-channel	35	SPARE	
		36	Motor 1 fault	Normally Closed input. Motor (pump) 1 will be shut off when this input goes open.
		37	Motor 2 fault	Normally Closed input. Motor (pump) 2 will be shut off when this input goes open.
		38	Phase fault	Normally Closed input. Motors 1 & 2 will be shut off when this input goes open.
	Analog Input 8-channel	41	Level sensor	Voltage or current from level sensor.
		42	SPARE	
		43	SPARE	
		44	SPARE	
45		SPARE		
46		SPARE		
47		SPARE		
48		SPARE		

NOTE 

Antx does NOT recommend using Digital Input channels 13 and 14 to have the Elite Pump Controller turn on the pumps when the HOA switches are turned to HAND.

The preferred solution is to have the HAND position totally bypass the EPC for control. The EPC will continue to compute pump run times and cycles though.

Duplex Pump Control Operation

The first time the pump controller option is enabled, the EPC automatically configures all I/O channels to default values allowing the pump controller to begin operation with minimal user interaction.

The basic information needed to configure the pump controller are:

- the type of application (fill or drain) and
- the type of sensor (level or float).

Once these are entered, the system automatically checks all the hardware to insure the appropriate I/O are in the correct slot. This check also looks to see if there is a display, which is required with the pump controller option. If any of these hardware checks fail, the pump controller option will not run.

All pump control configuration information is saved in permanent memory when the unit goes into the RUN mode.

Any time the pump controller configuration is changed (from PROGRAM mode only), the pump controller operation is suspended until the unit is returned to the RUN mode.

The pump controller operation is essentially the same for either the fill or drain application using either a level sensor or float switches. When a set point/float level is reached, a 'start delay' timer (user settable) is started. This timer forces the pump start condition to exist for the duration of the timer before the pump actually turns on.

During this 'start delay', the GRN LED on the PUMP RELAY card will blink indicating the start condition has been met and the pump will start after the delay time.

When the pump starts, the RED LED on the PUMP RELAY card will be on solid.

Over Temperature

The pump control provides separate inputs for Over Temperature for each pump. If these inputs are used and the Over Temperature condition exists, the corresponding pump is turned off.

As long as the Over Temperature condition exists, the pump will remain off.

Pump Max On Timers

Each pump control relay has a maximum on timer that can be set to automatically turn the pump off if it has continued to run for that length of time.

The timers are set individually per pump from 0 (no time limit) to 86400 seconds. These are set in the Pump Delays section of the Pump Control Setup. See Pump Delays page 23.

If the timers are set and they expire, the pump will turn off, regardless of the level settings.

Motor Faults

The pump control provides separate inputs for Motor Faults for each pump. If these inputs are used and the Motor Fault condition exists, the corresponding pump is turned off.

As long as the Motor Fault condition exists, the pump will remain off.

Alternation

These can be used for motor starters or any other input to shut the pumps off.

These inputs are only available if you have an 8-channel digital input card in slot 30.

After a pump cycle (pump on to pump off), a 'restart delay' allows a cool down period before the same pump is allowed to start again. All these delays are user settable.

When the off set point/float is reached, this is considered an 'end of cycle'. There are two schemes used for 'end of cycle'. The first is 'automatic alternation' in which the pump controller automatically alternates which pump is designated as the lead pump at the 'end of cycle'. The second is the 'lead/lag'. This scheme sets the lead pump via a switch input to the controller at the 'end of cycle'.

Float Switches

The system accepts five (5) float switch inputs – lead on, lag on, off, low and high alarm.

When using float switches, it is possible that a float switch will stick. If this happens to the lead float switch, this is detected when the level reaches the lag float and the system will attempt to turn both pumps on. A 'dual start delay' is used to prevent heavy electrical loads by staggering the start of both pumps.

Failsafes


The pump control will detect lead, lag, and off float switches. When any of these conditions is detected, the pump control will turn on or off pumps as appropriate.

Drain Application

Condition detected	Action performed
Lead float switch stuck	Lead and Lag pump started when Lag float switch detected
Lag float switch stuck	Lag pump started when High level alarm detected
Off float switch stuck	Both pumps turned off when Low level alarm detected.
Pump timer expires	If a maximum run timer is set for either pump and it expires, then that pump is turned off.

Fill Application

Condition detected	Action performed
Lead float switch stuck	Lead and Lag pump started when Lag float switch detected
Lag float switch stuck	Lag pump started when High level alarm detected
Off float switch stuck	Both pumps turned off when High level alarm detected.
Pump timer expires	If a maximum run timer is set for either pump and it expires, then that pump is turned off.

Level Sensor	When using a level sensor input, all the set points for lead pump on, lag pump on, pumps off, hi alarm, and lo alarm are user settable.
NOTE 	<p>If you enter the PROGRAMming mode, all pumps will continue to be controlled as you make programming changes.</p> <p>If the system is Disarmed, all pumps are turned off and the pump control will not resume until the system returns to the Armed state.</p>
Phase Fault	<p>Additional digital inputs are provided for each pump, which can be used to accumulate other pump starts and pump run times.</p> <p>In the level sensor configuration, a Phase Fault input going open will cause both pumps to be shut off and stay off until the condition clears. An alarm is generated and an alarm callout will occur.</p> <p>This input is only available if an 8-channel digital input card is located in slot 30.</p>
Float Failsafes	<p>Inputs are provided for High and Low Level float switch backups in the event that the level sensor becomes inoperable.</p> <p>Either, both or none of these inputs can be used. The Pump Control can be configured according to the following schemes.</p> <p>High and Low Level float backup</p> <p>In a drain application, the High level float switch turns both pumps on and performs an alarm call out if desired. The Low level float switch turns both pumps off and performs an alarm call out if desired.</p> <p>In a fill application, the Low level float switch turns both pumps on and performs an alarm call out if desired. The High level float switch turns both pumps off and performs an alarm call out if desired.</p> <p>High Level float backup only</p> <p>In a drain application, the High level float switch turns both pumps on and performs an alarm call out if desired. The pumps are turned off when the Pulse Duration associated with each pump control relay expires. The Pulse Duration is programmable from 1-86400 seconds.</p> <p>In a fill application, the High level float switch turns both pumps off and performs an alarm call out if desired.</p> <p>Low Level float backup only</p> <p>In a drain application, the Low level float switch turns both pumps off and performs an alarm call out if desired.</p> <p>In a fill application, the Low level float switch turns both pumps on and performs an alarm call out if desired. The pumps are turned off when the Pulse Duration associated with each pump control relay expires. The Pulse Duration is programmable from 1-86400 seconds.</p>

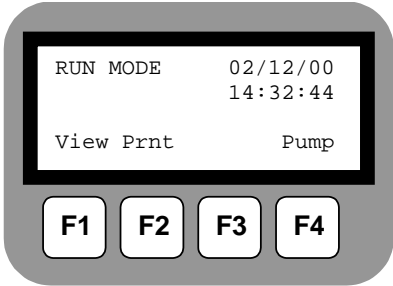
4

Displaying pump control status in real time

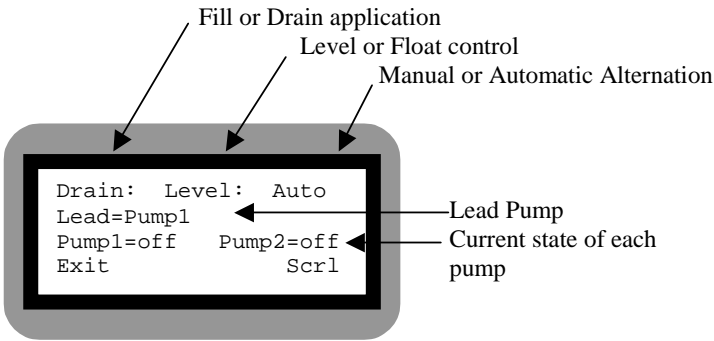
A common mode to leave the EPC in is constantly displaying the status of the pump control. There are two modes within the Display Pump function: scrolling and paused.

To start displaying values, the EPC must be in RUN mode.

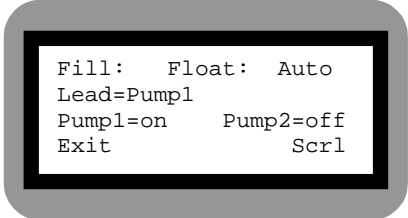
Press the **F4** key (above the **F4** key on the display is the word Pump).



The display changes to provide the following information:



Or



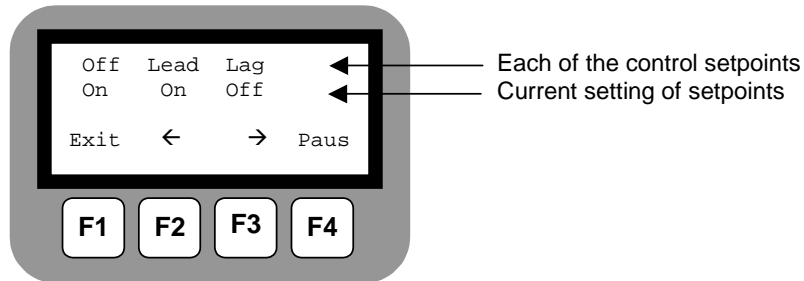
Scrolling Mode

The scrolling mode moves through all the current settings for the pump control. The display will cycle through 4 displays:

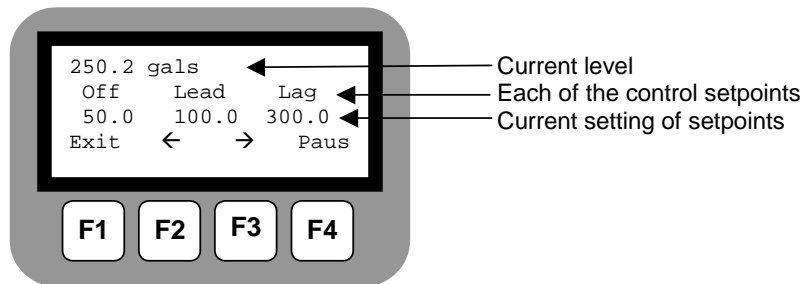
Overall pump control status HOA switch position Pump 1 Status Pump 2 Status

Press the **F4** key to start the scrolling display. Press the **F4** key again to Pause the display.

Overall pump control status for Float sensor

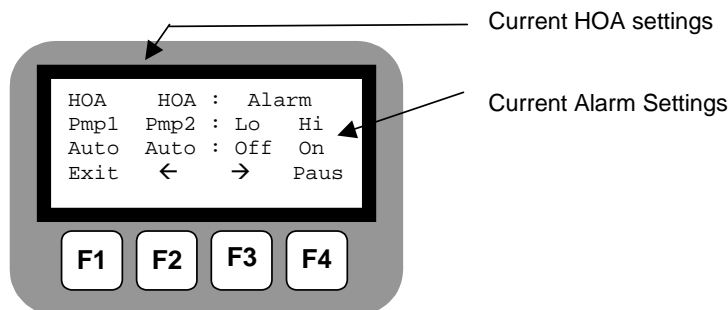


Overall pump control status for Level sensor



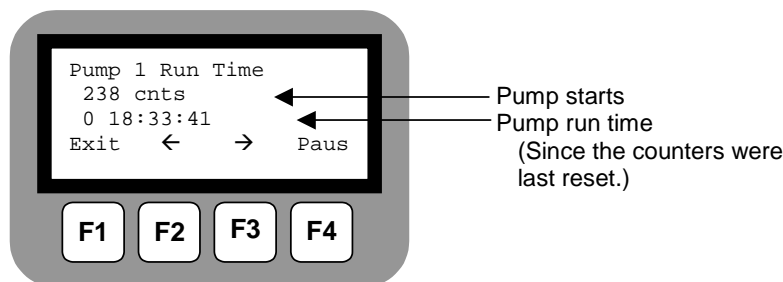
HOA switch status

After a few seconds, the HOA switch status is displayed. You can pause to stay on this display by pressing the **F4** key. You can use the **F2** and **F3** key to move to the next or previous screen while paused.



Pump 1&2 status

After a few seconds, the Pump 1 status will be displayed. You can pause to stay on this display by pressing the **F4** key.



5

Programming the Pump Control

This section describes the steps, guidelines, tips and step-by-step instructions for programming the Duplex Pump Control Option.



Entering PROGramming Mode

This section describes how to enter programming mode from the front panel and from a remote Touch-Tone telephone.

To enter PROGramming mode from the top of the menu:

Press .

EPC responds with “Program mode activated. System ready. Enter selection.” Any time you hear or see “System ready; Enter selection”,

select option  to enter the Options then press  for Pump Configuration.

Making changes and selections

To cancel an entry:


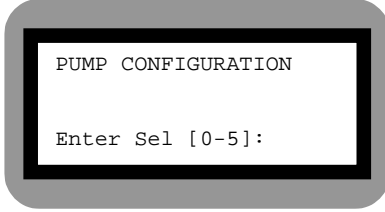
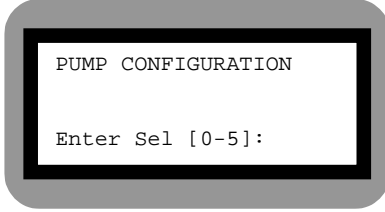
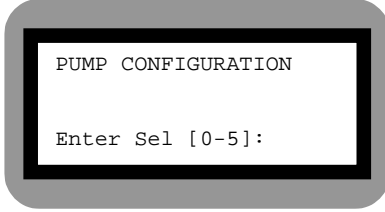
Press .

The “System ready” message appears in the display.



Start again.

EPC clears the display if there is a pause of one (1) minute during a programming session.

Pump Control Settings

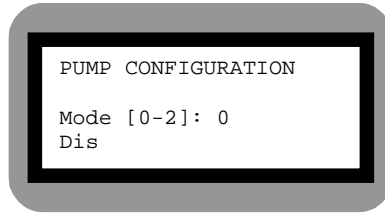
<p>Description </p>	<p>This section describes how to set up the pump control selections. You can specify the following:</p> <ul style="list-style-type: none"> 0 - Mode Set the system to control for a fill or drain application. 1 - Alternation Set the system to automatically alternate between pumps or to always turn on a specific lead pump first. 2 - Sensor Type Specify the control based on float-switches or level sensor. 3 - Pump Delays Specify the time delays to wait before starting pumps for various conditions and maximum run times for each pump. 4 - Level Sensor Specify the type of analog input signal that the level sensor has and the scaling and engineering units. 5 - Setpoints For level sensors only, specify the setpoints for turning pumps on, off and for alarms. 						
<p>Menu Sequence →</p>	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">What you enter:</td> <td style="width: 50%;">What EPC displays:</td> </tr> <tr> <td style="text-align: center;"> <div style="border: 1px solid black; border-radius: 10px; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">2</div> </td> <td style="text-align: center;">  </td> </tr> <tr> <td colspan="2" style="text-align: center;"> 0 - 5 (selections 0 – 5) </td> </tr> </table>	What you enter:	What EPC displays:	<div style="border: 1px solid black; border-radius: 10px; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">2</div>		0 - 5 (selections 0 – 5)	
What you enter:	What EPC displays:						
<div style="border: 1px solid black; border-radius: 10px; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">2</div>							
0 - 5 (selections 0 – 5)							

Mode (0)

<p>Description </p>	<p>This selection allows you to select the control mode:</p> <ul style="list-style-type: none"> • 0 – Disabled • 1 – Fill – the pumps will be turned on to fill the tank to maintain a certain level • 2 – Drain – the pumps will be turned on to empty the tank to maintain a certain level. 								
<p>Field Summary </p>	<table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Field</th> <th style="text-align: left;">Range</th> <th style="text-align: left;">Factory Setting</th> </tr> </thead> <tbody> <tr> <td>Mode</td> <td>(0-2)</td> <td>0 - disabled</td> </tr> </tbody> </table> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">What you enter:</td> <td style="width: 50%;">What EPC displays:</td> </tr> </table>	Field	Range	Factory Setting	Mode	(0-2)	0 - disabled	What you enter:	What EPC displays:
Field	Range	Factory Setting							
Mode	(0-2)	0 - disabled							
What you enter:	What EPC displays:								

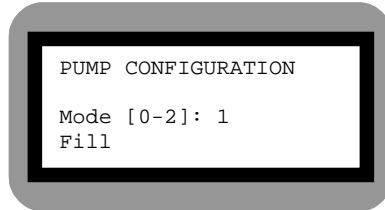
Menu Sequence →

0



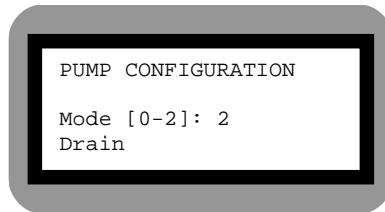
To enable Fill mode

1



To enable Drain mode

2



Alternation (1)

Description

This selection determines if the Elite will control the pumps in an alternating scheme or strictly a lead-lag scheme.

0 – Alternate – the Elite alternates starting pump 1 and pump 2 each time an ‘end-of-cycle’ occurs. See Alternation page 14.

1 – Lead-Lag – the Elite always starts the pump designated as the lead pump each time an ‘end-of-cycle’ occurs. See Alternation page 14.

Field Summary

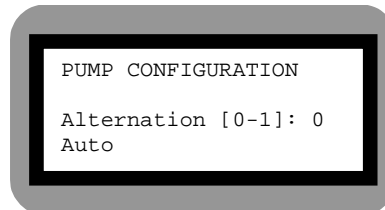
Field	Range	Factory Setting
Alternation	0-1	0 – Automatic Alternate

What you enter:

What EPC displays:

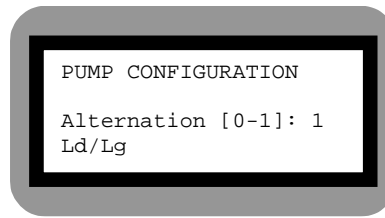
Menu Sequence →

1



To enable Lead-Lag

1



Sensor Type (2)

Description

This selection lets you specify the type of sensor used to detect level conditions.

0 – Float-switch – specifies that float switches are used for determining Low Alarm, Lead Pump On, Lag Pump On, All Off and High Alarm conditions.

1 – Level – specifies that a level sensor that produces an analog signal is used for determining the tank level for Low Alarm, Lead Pump On, Lag Pump On, All Off and High Alarm conditions.

Field Summary

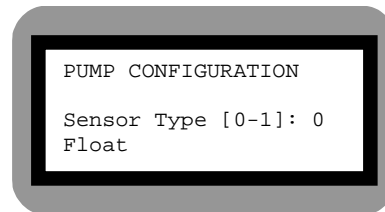
Field	Range	Factory Setting
Sensor Type	0-1	0 - Float

What you enter:

What EPC displays:

Menu Sequence →

2

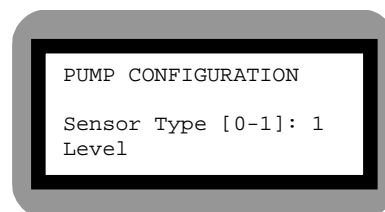


To enable Float control

0

To enable a Level Sensor

1



Pump Delays (3)

Description 

Start Delay -This specifies the amount of time to wait prior to starting either pump when the condition is met for the pump to be started.

For example, when the Lead Pump On condition is met, the Elite will wait the *Start Delay* number of seconds before the lead pump is turned on.

Restart Delay - This selection lets you specify the amount of time to wait between stopping a pump and restarting it.

Dual Start Delay - This selection specifies a delay between starting both pumps at the same time. The Elite will start both pumps, but will wait the Dual Start Delay after starting the lead pump before starting the lag pump.

Pump Max On Times – The maximum amount of time that a pump will run when turned on. This can be used as an failsafe for a pump in the event that a level sensor or float switch fails to turn a pump off.

Field Summary 

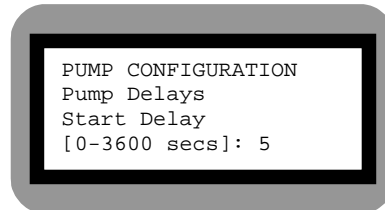
Field	Range	Factory Setting
Start Delay	0-3600 seconds	5
Restart Delay	0-3600 seconds	10
Dual Start Delay	0-3600 seconds	15
Pump 1 Max On Time	0-86400 seconds	0 (no max time set)
Pump 2 Max On Time	0-86400 seconds	0 (no max time set)

Menu Sequence →

What you enter:

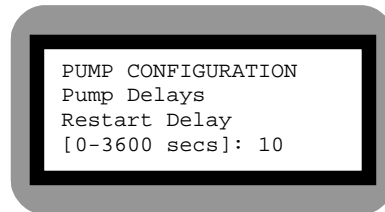
What EPC displays:

3



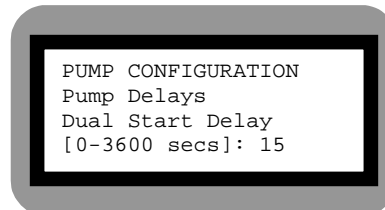
Start Delay

0 - 3 6 0 0 seconds

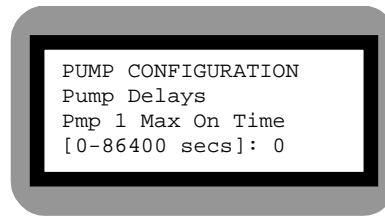


Restart Delay

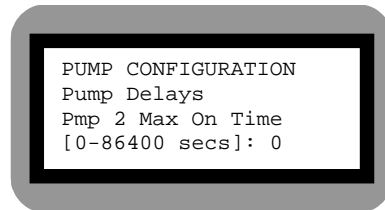
0 - 3 6 0 0 seconds



Dual Start Delay **0** - **3** **6** **0** **0** seconds



Pmp 1 Max On Time **0** - **8** **6** **4** **0** **0** seconds



Pmp 2 Max On Time **0** - **8** **6** **4** **0** **0** seconds

Level Sensor (4)

Description

This selection lets you specify the type of analog signal coming from the sensor, and the conversion to engineering unit values.

Input Type	Type of signal, current or voltage
Decimal Position	Number of digits to the right of the decimal after converted to engineering units
Engineering Units	The units that the signal represents –typically feet, gallons, meters, liters, etc.
Zero Scale	The value of the signal at the lowest input level. For example, if the signal is a 4-20 ma, this is the value at 4ma. The zero scale is specified in engineering units with the appropriate digits to the right of the decimal.
Full Scale	The value of the signal at the highest input level. For example, if the signal is a 4-20 ma, this is the value at 20ma. The full scale is specified in engineering units with the appropriate digits to the right of the decimal.
Zero Sign	If the value of the <i>Zero Scale</i> should be negative, then set this value to 0, otherwise it is 1.

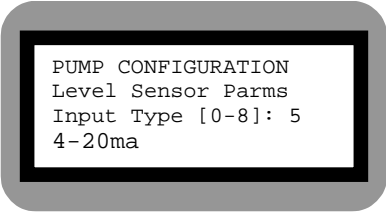
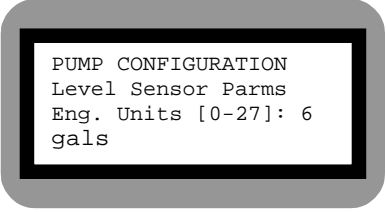
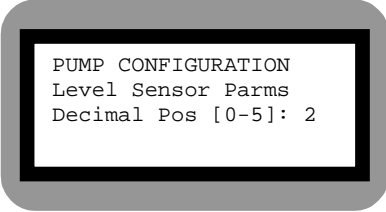
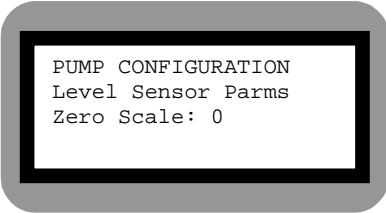
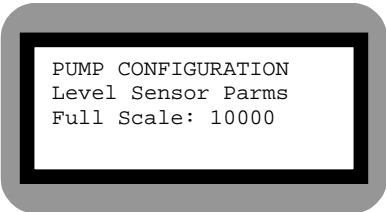
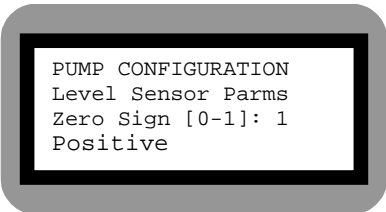
Field Summary

Field	Range	Factory Setting
Input Type	0-8	5 – 4-20ma
Decimal Position	0-5	2
Engineering Units	0-27	6 - gallons
Zero Scale	0-99999	0
Full Scale	0-99999	10000
Zero Sign	0-1	1 - positive

What you enter:

What EPC displays:

Menu Sequence →


	4	
<i>Input Type</i>	0 - 8	<p>0 - 0-1V 5 - 4-20ma 1 - 0-5V 6 - +/- 1V 2 - 1-5V 7 - +/- 5V 3 - 0-10V 8 - +/- 10V 4 - 0-20ma</p>
<i>Engineering Units</i>	0 - 2 7	
	<p>0 - disabled 6 - gal 7 - l 19 - in 20 - ft 21 - m</p>	
<i>Decimal Position</i>	0 - 5	
<i>Zero Scale</i>	0 - 9 9 9 9 9	
<i>Full Scale</i>	0 - 9 9 9 9 9	
<i>Zero Sign</i>	<p>0 for negative sign 1 for positive sign</p>	

Setpoints (5)

Description 

This selection specifies the setpoints for turning pumps on/off and for alarm conditions.

Enter # key to step through the settings to go to the desired setpoint to enter.

NOTE: To disable any value, press the  button.

Field Summary 

Field	Range	Factory Setting
Lead Setpoint	0-99999 (in eng. units)	Disabled (Reset button)
Lag Setpoint	0-99999 (in eng. units)	Disabled (Reset button)
All Off Setpoint	0-99999 (in eng. units)	Disabled (Reset button)
Low Alarm Setpoint	0-99999 (in eng. units)	Disabled (Reset button)
High Alarm Setpoint	0-99999 (in eng. units)	Disabled (Reset button)

Menu Sequence →

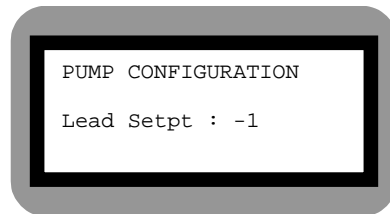
5

Lead Setpoint

0 - 9 9 9 9 9

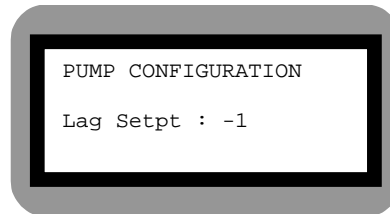
NOTE: enter the value with the decimals you have specified.

For example, if you specified 2 digits to the right of the decimal point, then the value 500 would be entered as 50000



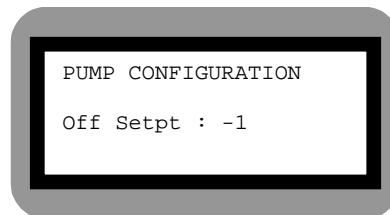
Lag Setpoint

0 - 9 9 9 9 9



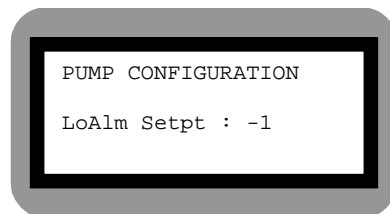
All Off Setpoint

0 - 9 9 9 9 9



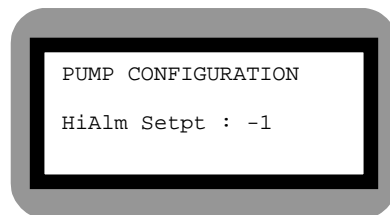
Low Alarm Setpoint

0 - 9 9 9 9 9



High Alarm Setpoint

0 - 9 9 9 9 9



Alarm Dialing Quick Start

This chapter provides step-by-step instructions on how to:

- Program a list of phone numbers
- Program an alarm message (optional)
- Program for a daily fax report (optional)
- Setting up an additional Analog Input (optional)
- Pocket Reference card with easy commands for common functions
- Test the system

In addition, this chapter lists the default values that come shipped with the EPC.

Default Values

The Elite is shipped with factory-configured default settings that make it usable when it is installed.

All digital input channels are enabled to *Call on Alarm*, have a 3 second *Alarm Delay*, are Normally Open and use *Telephone List 1*.

All analog input channels are disabled. Their default settings are set to 4-20ma signals, converted to 0 to 100.00 percent, to *Call on Alarm* violations with the *Low Alarm* set to disabled and the *High Alarm* set to disabled and use Telephone List 1.

All relay channels are disabled.

Telephone List 1 is configured with all phone numbers being disabled.

Programming telephone numbers


This section describes how to program one or more primary telephone numbers. For each telephone number you program, you enter the *List Number*, the *List Position*, and then the *Telephone Number*.


For each List, you can enter up to 16 telephone numbers.

To program telephone numbers:

What you do:

Press   (PROG mode)

Press  (Phone Setup)


Press  (Primary Phone List)

Press  


Press  



Press  (Telephone Number)

Enter a telephone number to call,

followed by .

TO MAKE MORE TELEPHONE

ENTRIES, Press  to move up the menu and repeat as above.

When finished, Press  

What EPC says:

“Programming mode activated. System ready. Enter selection.”

“Phone setup. Enter selection.”

“Enter Primary List number [1-16] or press Pound (#) to exit.”

Note: Only use a Primary Phone List if you always want the same people called at any time of day.

Note: Use Primary and Secondary Phone List if you want different people called based on time of day.

“Primary List 1. Enter list position [1-16].”

“Primary List 1. Position 1. Enter selection [0-3].”

“The telephone number is disabled. Press Pound (#) if OK or enter a new number.”

“The new telephone number is <number entered>.”

“Primary List 1, Position 1. Enter selection.”

“Primary List 1. Enter list position [1-16].”

Put EPC into Run mode.

Programming an alarm message (optional)

When any input channel goes into alarm, the Elite calls the number you entered in *Telephone List 1*, Position 1 and delivers a factory-programmed message. However, you can record your own alarm messages. These instructions describe how to record a message for Channel 11. All channels have 2 digits, (01-05) for system and (11-68) for I/O channels.

The microphone is located behind the grille on the top right of the front panel. It turns on automatically when the tone prompt sounds, and turns off at the end of the recording period, or when you press the # key. Speak clearly about 6 inches from the microphone.

Unlike other program changes, your customized messages are saved as you record them. When you finish, you hear the message that you recorded played back. You can keep that entry or record it again.

To program an alarm message:

What you do:


Press   (PROG mode)

Press  (Channel Configuration)


Press  

Press  (Alarm Message)

Press 

Speak your message into the microphone,
then press 

TO MAKE MORE CHANNEL

MESSAGES, Press  to back up the menu to the Enter channel number selection.

Press .

Press  when you finish programming to put EPC into RUN mode.

What EPC says:

“Programming mode activated. System ready. Enter selection.”

“Channel configuration. Enter channel number” [01-68]

“Digital input channel 11. Enter selection.” [0-7]

“The alarm message is <disabled>/<message>. Press Pound (#) if OK or press 1 to record a new message.”

“After the tone, speak your message, then press # when finished.”

(Tone sounds.) “The new alarm message is <message you spoke>.”

“The normal message is disabled. Press # if OK or press 1 to record a new message.”

“Channel configuration. Enter channel number” [01-68]

“Program mode activated. System ready. Enter selection.”

NOTE 

























Your settings are not saved until you put the Elite into RUN mode.

Programming for a daily fax report (optional)

The EPC can provide a fax report daily that provides a snapshot of all channels being monitored. This report lets you know that the Elite is operating correctly, and also provides valuable diagnostic information about your equipment being monitored.

This example will set up for a fax to be sent every morning at 8:00am.

To program for a fax report:

What you do:	What EPC says:
Press   (PROG mode)	“Programming mode activated. System ready. Enter selection.”
Press  (Schedules)	“Schedules. Enter selection” [0-2]
Press 	“Status Notification Schedule. The telephone list is disabled. Press # if OK, 0 to disable, or enter a new telephone list” [0-16]
Press  	“The new telephone list is sixteen. Telephone list sixteen has no numbers. The status notification start time is 8 hours, 00 minutes. Press # if OK or enter a new start hour. ”
Press 	“Enter a new start minute or press # to exit..”
Press 	“The repeat interval is 1440 minutes. Press # if OK or enter a new value.”
Press 	“Schedules. Enter selection.” [0-2]
Press   (Phone Setup)	“Phone Setup. Enter selection.” [0-5]
Press 	“Primary phone list. Enter list number.” [1-16]
Press  	“Primary list 16. Enter list position.” [1-16]
Press  	“Primary list 16, position 1. Enter selection.” [0-3]
Press 	“The telephone number is disabled. Press # if OK or enter a new number.”
Enter <your fax number> followed by	“The telephone number is <your fax number> fax. Primary list 16, position 1. Enter selection.” [0-3]
  	
Press 	“The Notify Once selection is disabled. Press # if OK, 0 to disable or 1 to enable.”
Press 	“The new Notify Once selection is enabled. Primary list 16, position 1. Enter selection.” [0-3]
Press   when you finish programming to put EPC into RUN mode.	

NOTE 

Your settings are not saved until you put the EPC into RUN mode.

Setting up an Analog Input (optional)

Analog input channels are disabled when shipped. The LEDs are off for each disabled channel.

To enable an analog input channel, you must change the Channel Mode to either Status Only or Call on Alarm.

To enable an analog input channel:

What you do:

Press   (PROG mode)

Press  (Channel Configuration)

Press  

What EPC says:

“Programming mode activated. System ready. Enter selection.”


“Channel configuration. Enter channel number”
[01-68]

“Analog input channel 21. Enter selection.” [0-7]










If your input is current

If your input is voltage – follow these steps

Press  (Channel Conversion)

Press  (Input Type)

Press

 0-1V	 0-10V	 +/- 1V
 0-5V	 0-20ma	 +/- 5V
 1-5V	 4-20ma	 +/- 10V

“Channel Conversion. Enter selection” [0-2]

“Input type, the current setting is 4-20ma. Press # if OK or enter a new value.” [0-8]

“The new Input Type is x-x Volts.”

“Channel Conversion. Enter selection.”

Press   (RUN mode)

“RUN mode activated”

To verify an analog input channel without a display:

What you do:

Press   (System Status)

Press  

Press  (HOME)

What EPC says:

“System Status. Enter channel number”

“Analog input channel 21. The current value is xxx.xx”

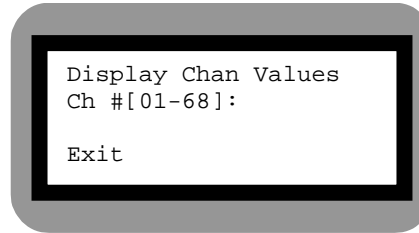
“RUN mode activated”

To verify an analog input channel using the display:

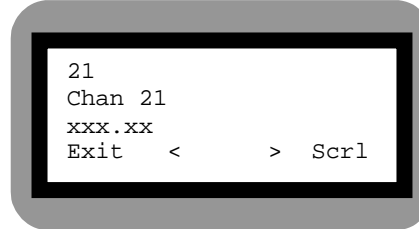
What you do:

What EPC shows:

Press **F1** to View the analog values on the display.



Press **2** **1**
Run PROG



Press **F1** to Exit.

Setting up an Relay Output (optional)

Relay output channels are disabled when shipped. The LEDs are off for each disabled channel. To enable a relay output channel, you must change the Channel Mode to Status Only or Call on Alarm.

To enable a relay output channel:

What you do:

What EPC says:

Press **1** (PROG mode)
PROG

“Programming mode activated. System ready. Enter selection.”

Press **9** (Channel Configuration)

“Channel configuration. Enter channel number”

Press **3** **1**
PROG

“Relay channel 31. Enter selection.” [0-4]

Press **2** (Channel Mode)
Run

“The current Channel Mode is disabled. Press # if OK or enter a new selection” [0-1]

Press **1**
PROG

“The new Channel Mode is Status Only” “Enter selection”

Press **2** (RUN Mode)
Run

“RUN mode activated”

To test a relay output channel:

Press **7** (Activate Relays)

“Activate Relay. Enter relay number”

Press **3** **1**
PROG

“Relay channel 31 is de-energized. Press # to exit, 0 to de-energize or 1 to energize”

Press **1** (turn relay on)
PROG

“Relay channel 31 is energized.”

Press (RUN Mode)

“RUN mode activated”

EPC – Pocket Reference

How to Set Phone Numbers

Position 1	HOME 1 4 0 1 1 0 (#)
Position 2	HOME 1 4 0 1 2 0 (#)
Position x	HOME 1 4 0 1 x 0 (#)

How to Set Alarm Messages

System ID	HOME 1 3 0 (msg)
Channel 11	HOME 1 9 11 1 (msg)
Channel 12	HOME 1 9 12 1 (msg)
Channel xx	HOME 1 9 xx 1 (msg)

How to Set Alarm Delays

All chans (xx secs)	HOME 9 11 3 *4 xx #
Channel 4 (2 secs)	HOME 9 11 3 *4 xx #

Taking channel xx in/out of service

Out of Service	HOME 9 xx 2 1
In Service	HOME 9 xx 2 2

How to Set Normally Open/Closed

Channel 11 (open)	HOME 1 9 11 0
Channel 12 (closed)	HOME 1 9 12 1
Channel xx (open)	HOME 1 9 xx 0


How to Acknowledge Alarms

Locally	Press the ACK key
Remotely	Press 9 when asked

How to enter Program or Run mode

Program Mode	HOME 1
Run Mode	HOME 2

How to call Customer Service

From Elite keypad	* 
Via phone	877-686-2689

How to Use the Elite Pump Controller

This section describes the various parts of the EPC front panel.

- How to use the keypad
- Front-panel lights (System LEDs)
- Channel LEDs
- Display
- I/O Cards

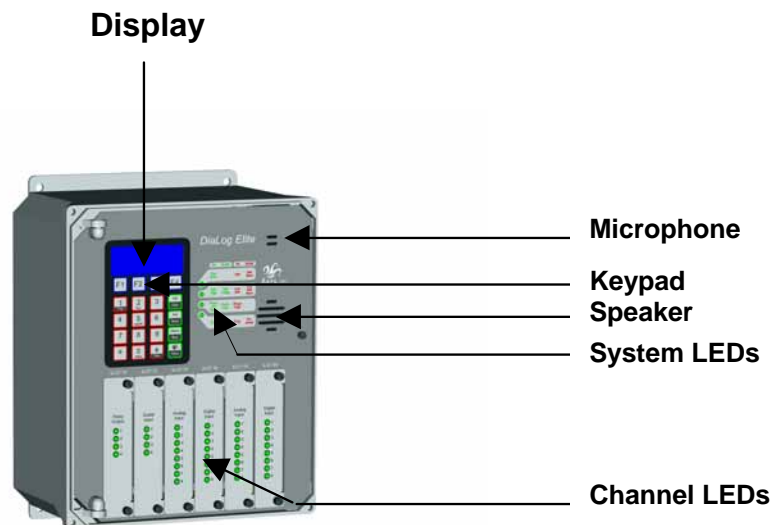


Figure 1. Front panel

How to use the Keypad

The red keys

EXAMPLE ➤

The green keys

EXAMPLE ➤

The blue keys

Key summary

The keypad allows functions to be performed locally by pressing individual keys or sequences of keys. The keypad is divided into several sections, each with its own color.

The **RED** keys are the typical phone-pad keys and are used to enter numbers to navigate through menus, enter phone numbers, and select various options when programming. Several of the **RED** keys are split, where the top of the key has a number or symbol and the bottom of the key provides a function.



The 5 key has SpkrPh at the bottom, providing access to the *Speaker Phone* function.

The **GREEN** keys provide quick single-key operation for specific functions. Each of the **GREEN** keys is split:

- The top of key indicates the operation performed when the system is in RUN mode, and
- The bottom of the key indicates what operation is performed when the system is in PROGramming mode.



The Disarm/Bksp key allows you to disarm the system when in RUN mode and erase the previous key entry when in PROGramming mode.

The **BLUE** keys, or Function keys, are only operational when a display is present in the EPC. The bottom row of the display has text above each key that defines the function that is performed when that F-key is pressed.

Below is a listing of each key in RUN mode and in PROGramming mode.

RED keys

Key	When in RUN mode	When in PROGramming mode
	Puts the EPC into the PROGramming mode	
		At the top level of the menu, puts the EPC into RUN mode. When not at the top of the menu, functions like a
		System Status
		Phone
	Enables the speaker phone	
		Schedules
	Enables activation/de-activation of specified relays	

	9		9 Channel Configuration
	0 Status	Speaks status of specified channels. Displays status if display is present.	0
	*		*
	# Enter		Completes entry or backs up the menu.
	Ack Clear	Acknowledges all unacknowledged alarms	Clears any entry made for the specified function
GREEN keys	Arm Reset	Enables call-out of alarms	Resets the entry made to the factory default value
	Disarm Bksp	Disables call-out of alarms	Erases the previous key entry
	Home		Puts the EPC at the top of the selection menu
BLUE keys	F1	Soft key – specific function is displayed above the key on the display.	
	F2		
	F3		
	F4		

Front Panel Light Indicators

System LEDs

The LEDs associated with the System provide information about the primary power source, battery condition, telephone line condition, and the mode of the EPC.

System LEDs are located to the left of the keypad.

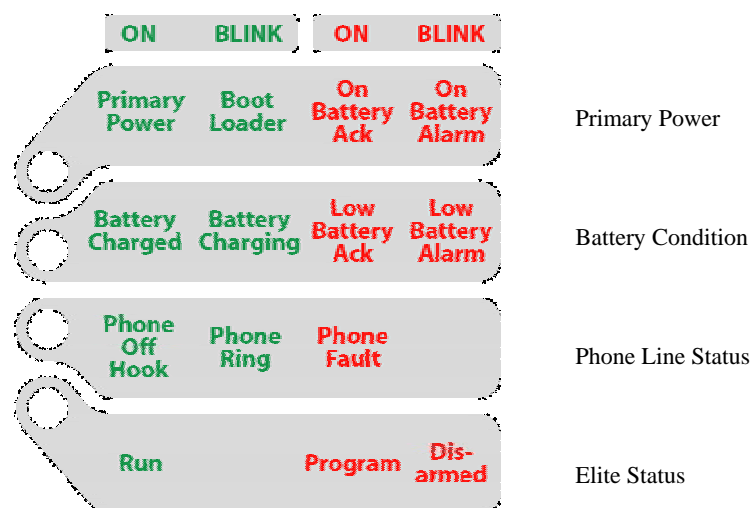


Figure 2. System LEDs

Each LED can have five unique states, which are described in the table below.

LED	Off	Solid Green	Blinking Green	Solid Red	Blinking Red
Primary Power	Elite is off	Elite is being powered through the Primary Power source (either 120/240 VAC or 15VDC)	In Bootloader	Elite is being powered by the internal backup battery, appropriate personnel have been notified and they have acknowledged the condition.	Elite is being powered by the internal battery and appropriate personnel are being notified. The alarm condition is unacknowledged
Battery Condition	No battery or connection to battery has failed	Battery is fully charged	Battery is being charged	Battery is low, appropriate personnel have been notified and they have acknowledged the condition.	Battery is low. Alarm is unacknowledged.
Phone Line Status		Off hook	Ring detected	Line fault – no dial tone has been detected.	
Elite Status		In RUN mode		In PROGRAMming mode	Disarmed – Elite does not call out on alarms or status notification

PROGramming and RUN modes

The Elite has two modes: PROGramming and RUN. PROGramming mode is for programming, while RUN is for normal operating.

To enter PROGramming from RUN mode:

Press .

To enter RUN from PROGramming mode:

Press .

When the EPC is first powered up, it is in PROGramming mode, unless an *Access Code* is programmed, then it is in RUN mode. The Elite Status indicator is a constant **RED**, and the Elite prompts with the following message if the access code is disabled:

“This is DiaLog Elite, Program mode activated. System is armed. System ready. Enter selection.”

NOTE 

The EPC must be in RUN mode in order to make alarm calls. Additionally, your programming is not saved in non-volatile memory until the EPC is put into RUN mode.

Slot and Channel numbering

Input/Output channels are numbered from 11-68, where the tens digit is the Slot number and the units digit is the individual channel on the individual cards. For example, the third channel on the Analog card in Slot 20 is Channel 23.

System channels are numbered 01-05.

Channel LEDs

There are separate multi-color LEDs for each channel on each I/O board. The state of the LEDs indicate different conditions of the input or output. The following table describes the states of the LEDs for each type of I/O board.

Channel LEDs are located at the bottom of the unit.

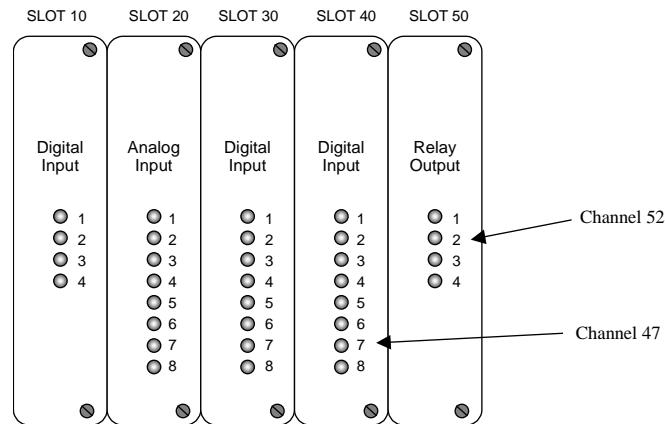


Figure 3. Channel LEDs

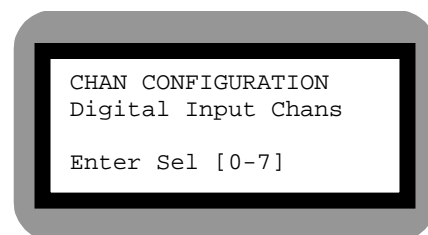
Board Type	Off	Solid Green	Blinking Green	Solid Red	Blinking Red
Digital Input	Channel is not configured	Channel is configured	Channel is in the alarm condition, but the call-out criteria have not been met.	Channel is in alarm and has been acknowledged.	Channel is in alarm and is unacknowledged.
Analog Input	Channel is not configured	Channel is configured	Channel is in the alarm condition, but the call-out criteria have not been met.	Channel is in alarm and has been acknowledged.	Channel is in alarm and is unacknowledged.
Relay Output	Channel is not configured	Relay is de-energized		Relay is energized	

Using the Display

The display is a VFD, or Vacuum Fluorescent Display, which is visible in ambient light conditions as well as at night. The Display is an optional component that presents the user with prompts, helpful information, and some functions that are only available if a display is present.

In PROGramming mode, the display shows the current position in the menu structure, the current value for an entry, and what options are available for the specific entry being programmed.

In Program Mode

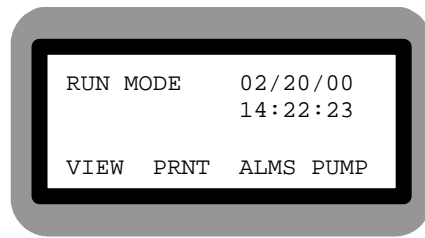


EXAMPLE ➤

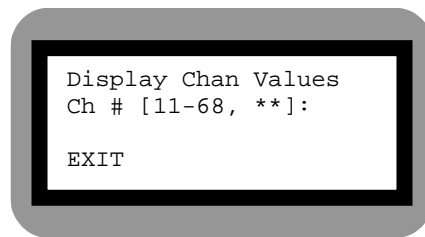
In Run Mode

The display above shows that the user is in the Channel Configuration, Digital Input Channel section of the menu. Valid entries from 0-7 are allowed.

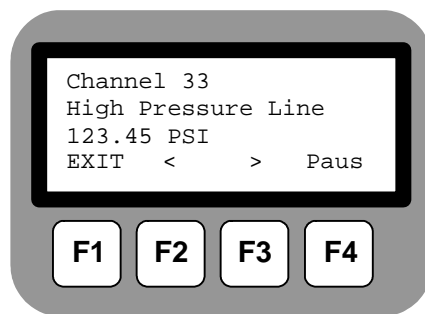
In RUN mode, the display shows the current date/time and options for the soft **F1**-**F4** keys.



When the VIEW key (**F1**) is pressed, the display changes to:



Enter a valid analog channel number to have it displayed. The EPC does not speak your entry if it is valid or invalid.

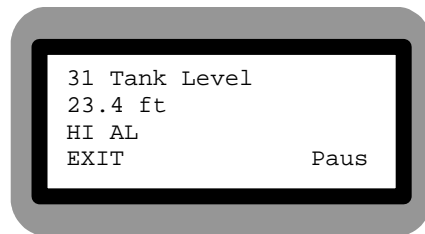


Pressing the Paus (**F4**) key causes the display to stop on a single channel and continue displaying that channel's value. Pressing the Scrl (**F4**) key then causes the display to resume scrolling through all active analog channels.

Functions that can only be performed if a display is present include:

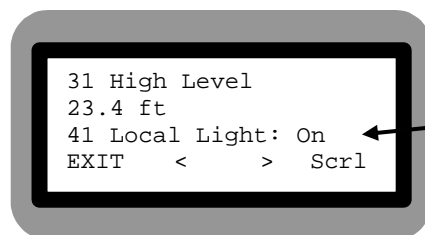
- Viewing analog and digital values
- Entering alphanumeric system ID and channel names
- Printing the Event log, I/O configuration and System configuration

Automatic Alarm Screen



If any channel goes into alarm, the Alarm Screen is automatically displayed. All channels that are in alarm are automatically shown one at a time.

For example, Channel 31 is monitoring Tank Level, which is at 23.4 feet, has exceeded the High (HI) limit and is in alarm (AL).



Pressing the Paus (**F4**) key pauses the screen on a particular channel of interest.

Displays all relays being controlled and the relay states.

Complete Programming Capabilities

The EPC can be programmed in three ways:

- from the keypad,
- over a telephone, or
- using the Web-based software over the Internet.

When you call EPC, it needs to determine if you are a person or a computer calling in. It does this by asking you to “Press a key to continue” and giving you 5 seconds to press any key on your phone.

You then hear a System Status report followed by three beeps. Wait for all three beeps to sound, then press **#**. Press **1** (PROGramaing) at the “System ready” prompt to begin programming.

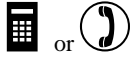
The front panel keypad includes five shortcut keys to speed up programming:



You can perform the same functions at a remote telephone using combinations of the standard 12 keys. When you use ***** (Star) with another key, press ***** then press the numeric key.













	Over the Phone	Function
	* or 8 or 9	In RUN mode: acknowledges channels in alarm according to the Call in Acknowledge setting.
	* 2	Cancel the entry and restore the factory setting.
	* 6	Cancel the entry being made, retain the present setting and return to the top of the menu for the “System ready” prompt.
	#	Enters the value or ends the current input.
	* 4	In RUN mode, prevents the EPC from calling out.
		When in Speakerphone mode: Increase the microphone sensitivity level.
		When in Speakerphone mode: Decrease the microphone sensitivity level.
		When in Speakerphone mode: Increase the speaker volume.
		When in Speakerphone mode: Decrease the speaker volume.

Entering and editing data







Keypad or Phone

The shortcut programming keys and their remote equivalents are used for entering data and editing entries. For example:

- Press  or Pound () immediately after a “Press Pound (#) if OK” prompt to retain the present value in a parameter. This key also allows you to move back up the menu tree.
- Press  or Pound () to terminate a numerical entry such as a telephone number, delay, or limit, when you enter fewer than the maximum number of digits.
- Press  ( ) to cancel an entry and exit to the “System ready. Enter selection” prompt. This also takes you to the top of the menu..
- Press  or ( ) at the “Enter new selection” prompt to restore the factory setting and return to the previous prompt.
- Press  in the middle of an entry to clear the keystrokes and return the current prompt.
- Press  to delete the previous character.

With the exception of the shortcut keys, and the requirement that you press # (ENTER) to start programming from a remote phone, EPC programming is identical both at the front panel and from remote telephones.

Table 1 shows all the programming selections, organized into four main areas:

- Setup 
- Phone Settings 
- Schedules 
- Channel Configuration 

Global Settings

The Global option provides a quick method to set all entries to a specific value. The Global option can be used to set Channel parameters, Phone parameters, and Telephone List Schedule parameters.

The Global option works for an individual parameter at a time.

To enable the Global option, you enter prior to entering your new parameter value. When global is enabled you hear “Global Enabled”. After you enter your new parameter setting you hear “Global Disabled”.

Example ➤

To set all of the Digital Inputs Alarm Delay to 15 seconds, you would enter the following:

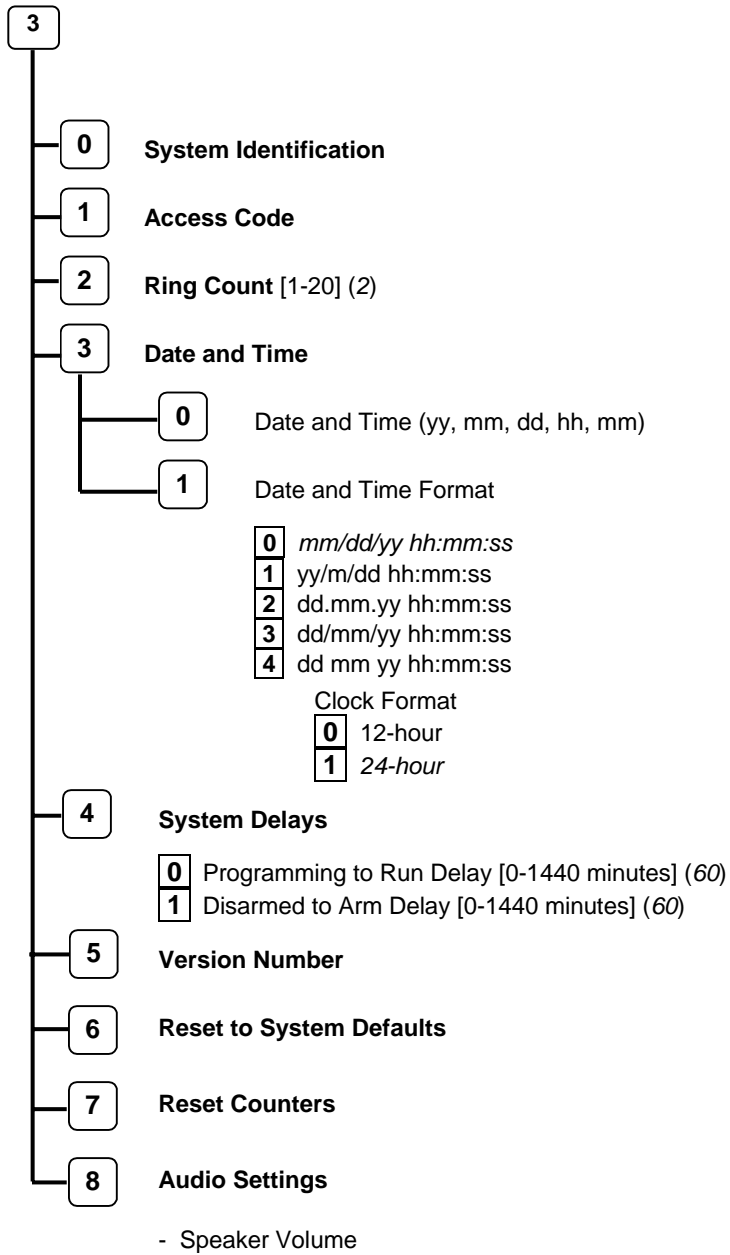
<input type="text" value="9"/>	Channel Configuration
<input type="text" value="n"/> <input type="text" value="n"/>	any channel number that is a digital channel
<input type="text" value="3"/>	Alarm Delay
<input type="text" value="*"/> <input type="text" value="4"/>	“Global Enabled”
<input type="text" value="1"/> <input type="text" value="5"/> <input type="text" value="#"/>	“Global Disabled”

Working your way through the programming selections

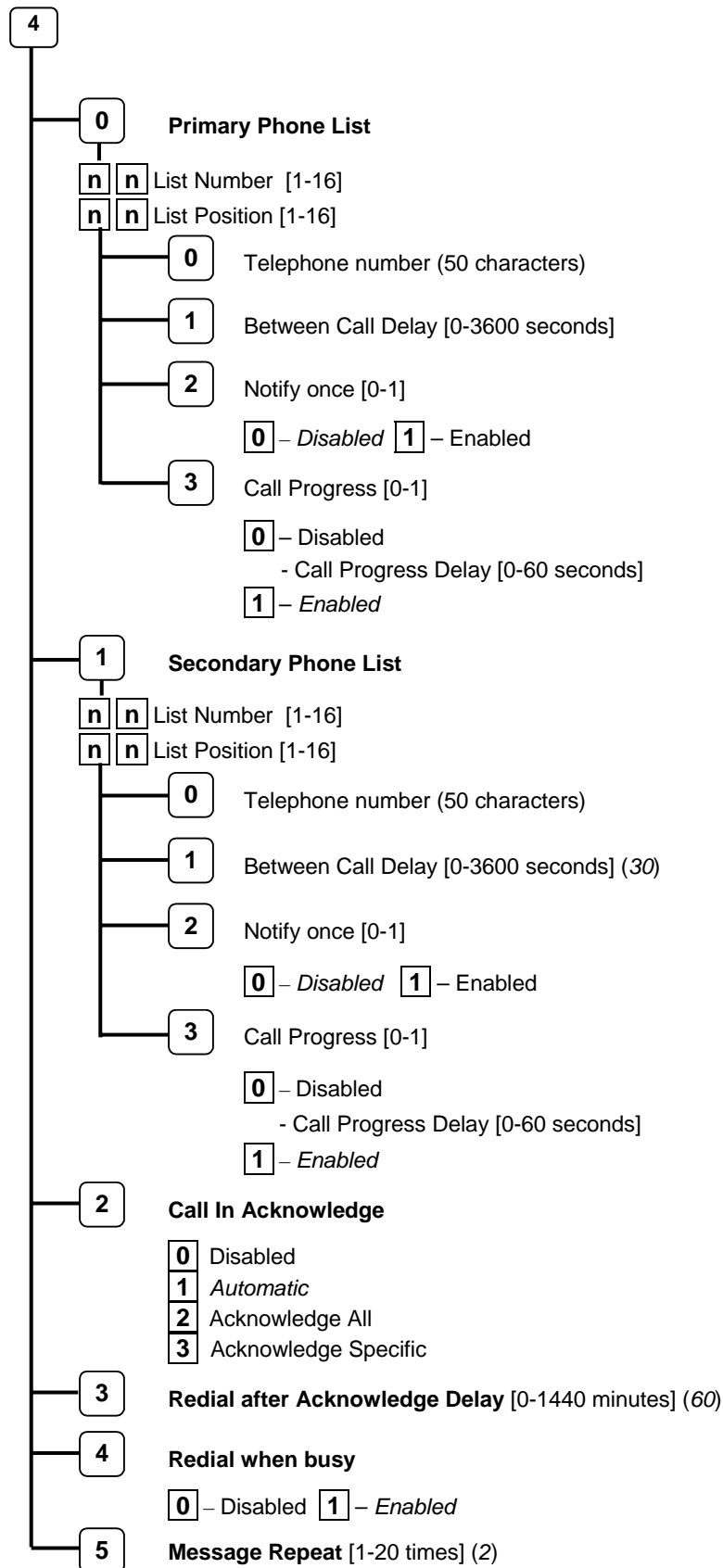
You select an area, then make selections within the area. For example, press to select **Setup**, then any key - for a **Setup** selection. When you finish programming a selection, you remain in the **Setup** area, and EPC prompts you to make another **Setup** selection. You do not have to press again to select **Setup**; if you do press , you hear the “Date and Time. Enter selection” prompt.

To move back up the menu tree, press the key.

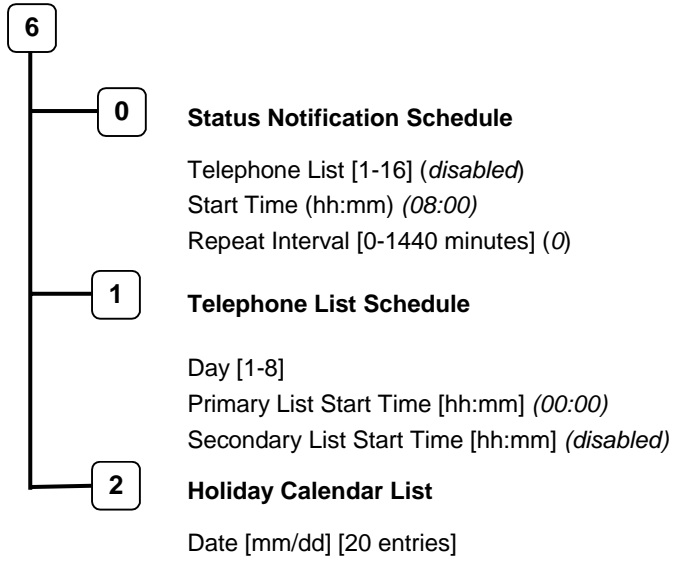
System Setup



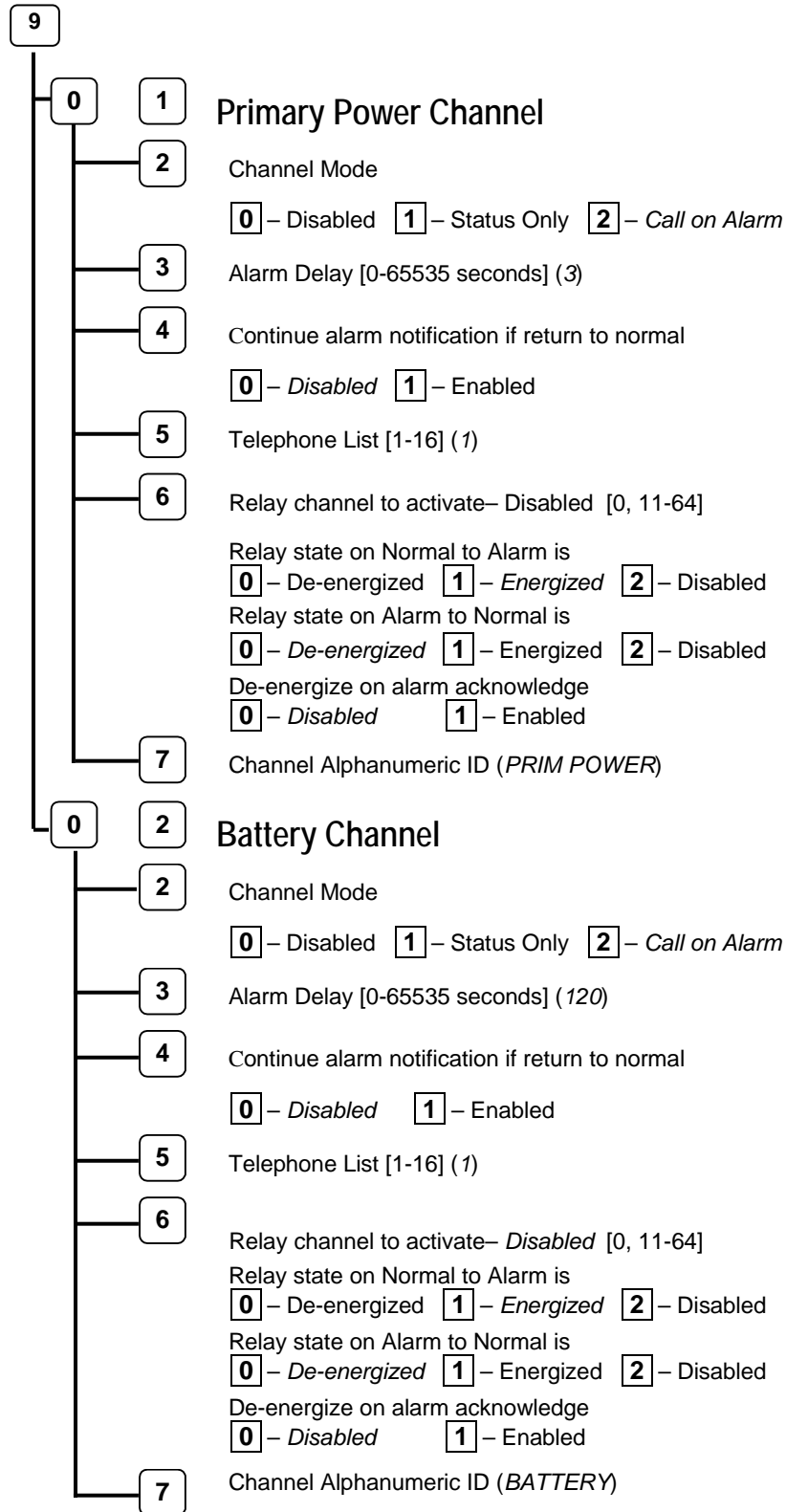
Phone Setup



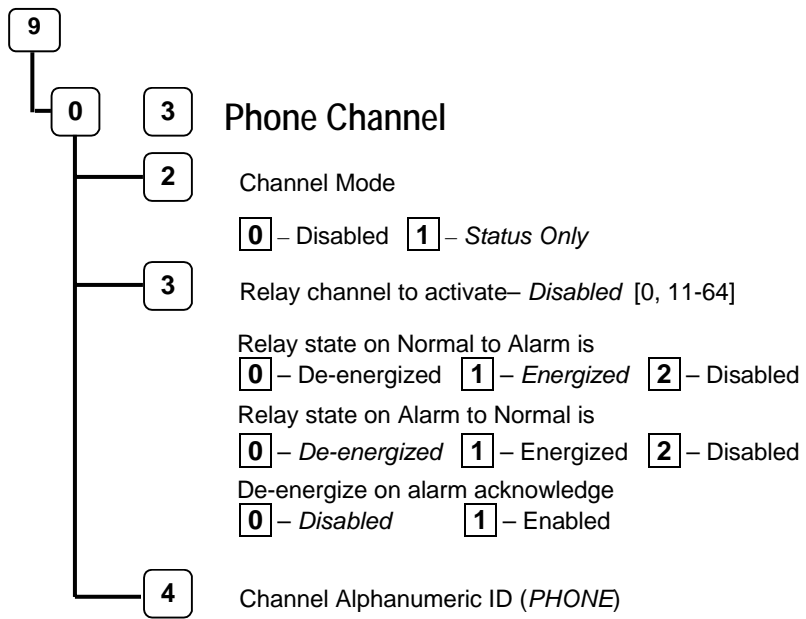
Schedules



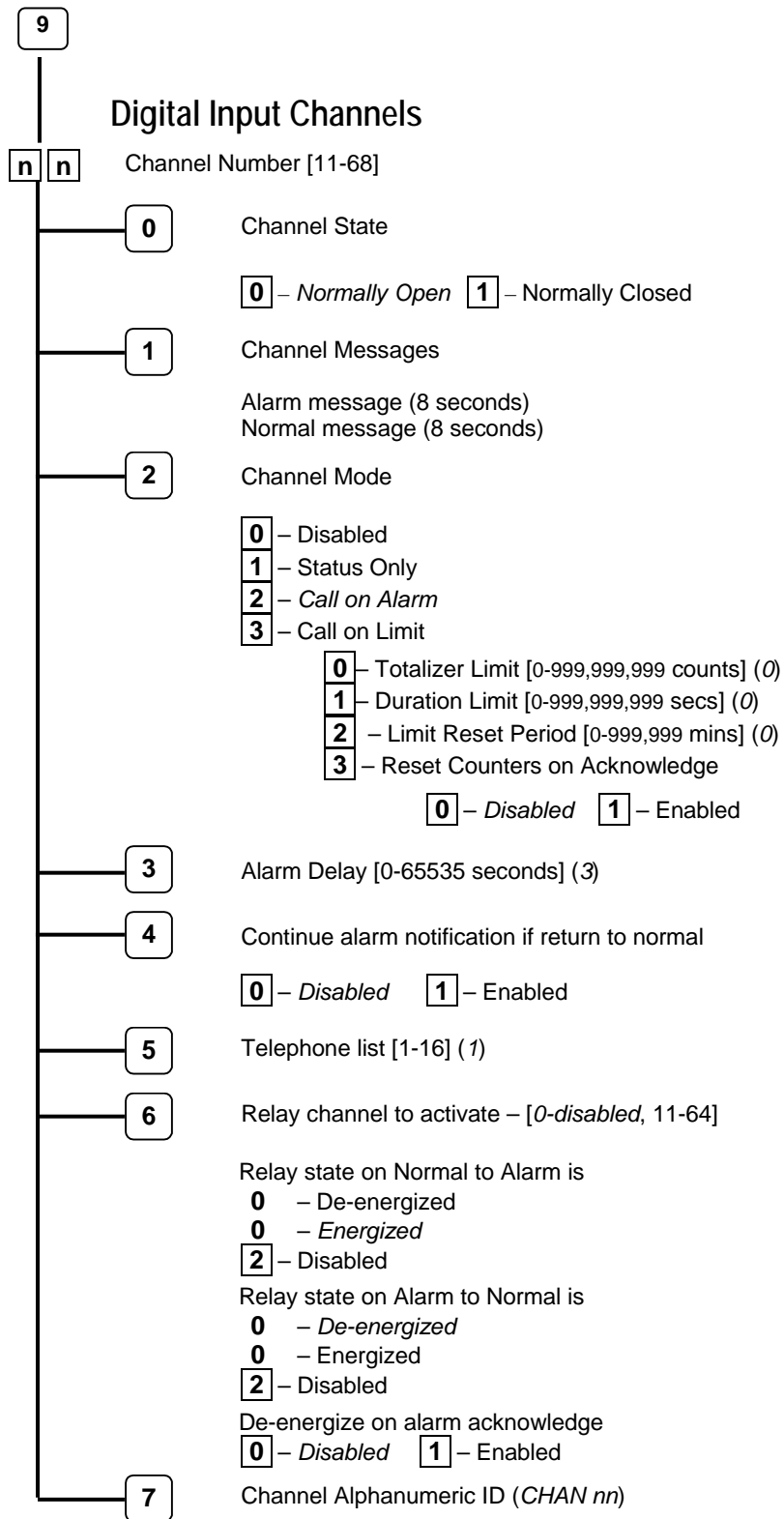
Channel Configuration



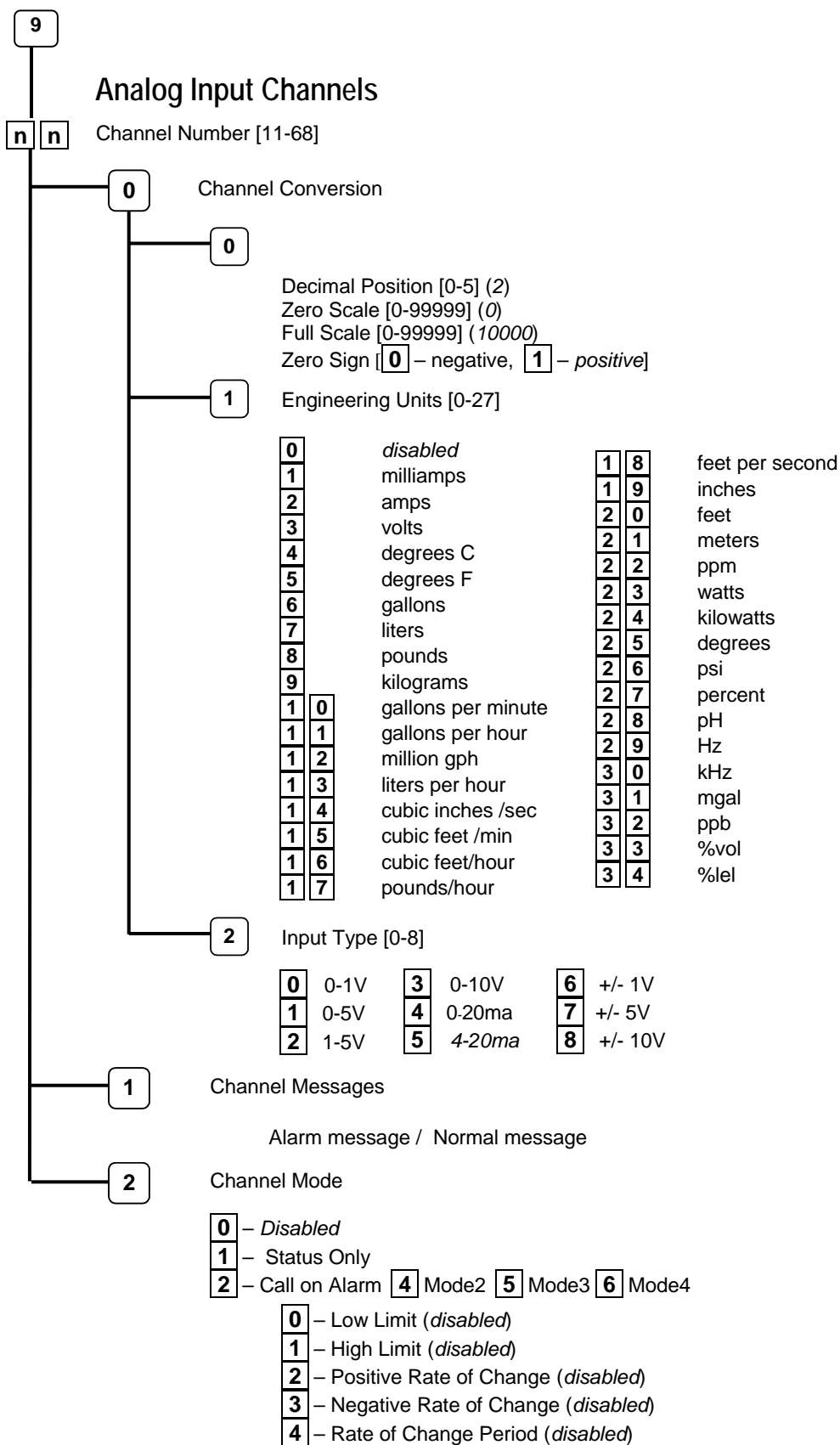
Channel Configuration

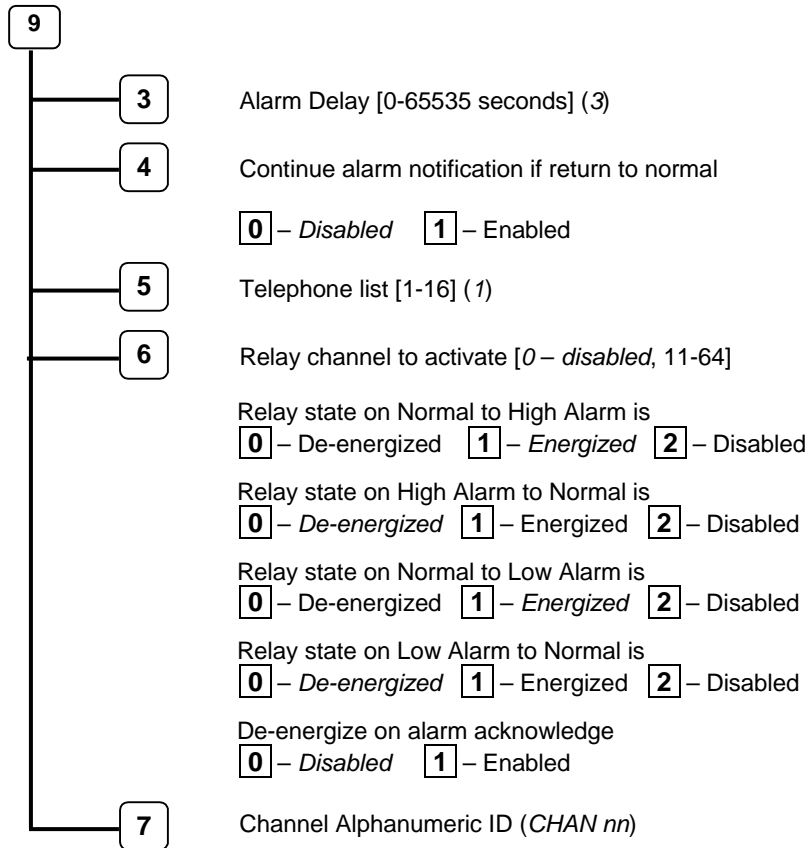


Channel Configuration

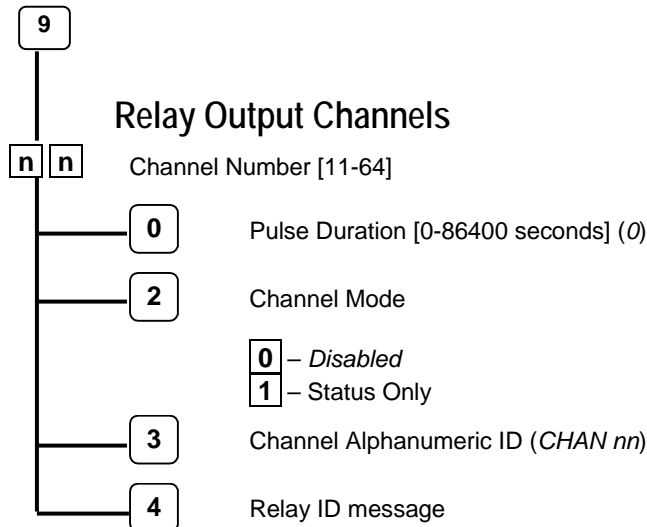


Channel Configuration





Channel Configuration



How alarms are presented

When a channel goes from the normal state to the alarm state, one or more of several notification methods are activated. Alarms can be presented in any of the following ways:

- A local LED changes color from **Green** to **Green** Blinking, then to **Red** Blinking
- Local activation of a specified relay
- Call out to a phone, pager, alphanumeric pager or fax
- Call out to the Web
- Printout to a local printer

Local LEDs

Each channel has an LED that is used to indicate the current status of that channel.

Color	Definition
Constant Green	Channel is normal
Blinking Green	Channel is in alarm condition but has not met the Alarm Delay period
Blinking Red	Channel is in alarm, associated call-outs are being or have been performed, associated relays have been activated, and alarm has NOT been acknowledged.
Constant Red	Channel is in alarm and has been acknowledged.

Telephone Calls



Each channel can have a telephone list that is called when an alarm occurs. There are a total of 16 different telephone lists that can be used for any channel. The phone lists are prioritized based on number, with *Telephone List 1* being the highest priority and *Telephone List 16* being the lowest priority.

When a channel goes into alarm, the first number on the specified phone list is called. If the line is busy or there is no answer after 30 seconds, the EPC dials the next number on the list. It continues this sequence until:

- The person answering the call acknowledges the alarm by pressing the *****, **8** or **9** key on a Touch-Tone telephone within 5 seconds after the EPC requests an acknowledgment, or
- All calls are completed and all phone numbers were set to *Notify Once*, or
- The alarms are acknowledged via a call-in, or
- The alarms are acknowledged locally via the keypad.

Line Seizure

Line seizure is automatically performed by the EPC in the event that a call is in progress on the extension phone attached to the EPC. If a call is in progress on an extension attached to the second phone jack on the EPC, the EPC disconnects that call, waits for a dial-tone, and makes a new call.

Calls delivered to phones

When a call is delivered to a telephone or cell phone, the EPC delivers the *System Identification* message followed by the Channel number, followed by the *Channel Message*, then it says "Please acknowledge." This sequence is repeated the number of times specified in *Message Repeats*; the factory setting is 2.

The person answering the call acknowledges it by pressing the *****, **8** or **9** key on a Touch-Tone telephone within 5 seconds after Elite requests an acknowledgement.

EPC accepts a return call as an acknowledgement of all alarms if you enable the *Call In*

Calls delivered to pagers

Acknowledge feature. The call must come during the 30-second *Between Calls Delay*, or EPC calls the next number on the list. You can increase or decrease the *Between Calls Delay* period.

If an alarm clears during the *Between Calls Delay*, the call-out sequence for that alarm is automatically cancelled.

Once an acknowledgement is received, Elite goes into a 60-minute *Redial After Acknowledge Delay*. This delay can be increased or decreased. If the alarm is not cleared by the end of this period, Elite repeats the calling sequence.

If a channel with a higher alarm priority (i.e. uses a lower number phone list) goes into alarm during a call-out, the lower priority call sequence is interrupted within 10 seconds after EPC terminates the current call. When Elite gets an acknowledgement of the higher priority alarm, it restarts the calling sequence for the lower priority alarm. If channels with the same priority are in alarm at the same time, EPC delivers the alarm messages for all these channels. The system automatically updates its messages during a notification call to reflect a new alarm.

When the call is delivered to a pager, the EPC sends its *System Identification* number and the number(s) of the channel(s) in alarm, in Touch-Tone form instead of a voice message. The channel number is separated from the ID number by a dash. For example, if the System ID number is 1234 and Channel 7 is in alarm, this message appears on the pager's display: 1234-7. If two or more channels are in alarm, they are separated from each other with dashes. For example: 1234-7-8.

The numbers are sent just once (the *Message Repeat* parameter is not applicable). Occasionally, outside interference may cause extraneous characters to appear on the pager's LCD. For example, if EPC's ID is 9024 and Channels 1, 3 and 7 are in alarm, and if you entered the pager terminal number as 6172750300*7123, the following appears on the pager display: 123 9024 1-3-7.

Some paging terminals answer with a spoken message instead of the usual three beeps. In this case, you need to time the message and then insert the appropriate number of 2-second delay characters (*9) after the pager character at the end of the terminal phone number. For example, if the paging terminal has a 6-second message, enter: 6172750300*7*9*9*9.

The person who receives the notification on a pager can acknowledge the alarm with a phone call, if you enable *Call In Acknowledge*. To allow time for the recipient to get to a telephone, you may need to program a *Between Calls Delay* of 2 minutes or more.

NOTE

If the EPC is having trouble recognizing that the call has been answered, you may want to disable *Call Progress* and specify a *Call Progress Delay* for the pager phone number. This causes the EPC to process the phone call based on time, instead of whether the call has been answered.

Calls delivered to alphanumeric pagers

When the call is delivered to an alphanumeric pager, the EPC sends its *System Alphanumeric Identification* and the number(s) and *Channel Name* of the channel(s) in alarm, via TAP, an alphanumeric protocol supported by almost all pager companies. The channel number is separated from the ID by a dash.

The issuing of alarm messages to pagers is recorded in the event log.

EXAMPLE

If the parameters for channel 7 were set up as follows:

Parameter	Entry
<i>System Alphanumeric ID</i>	NORTHWEST FACILITY
<i>Channel Name (7)</i>	NO 2 TANK LEVEL
<i>High Alarm Limit</i>	100.0
<i>Engineering Units</i>	6 (GALS)

then this message appears on the pager's display:

Calls delivered to Faxes

EXAMPLE

NORTHWEST FACILITY-7 NO 2 TANK LEVEL HI 101.5 GALS.

The numbers are sent just once (the *Message Repeat* parameter is not applicable).

The person who receives the notification on a pager can acknowledge the alarm with a phone call, if you enable *Call In Acknowledge*. To allow time for the recipient to get to a telephone, you may need to program a *Between Calls Delay* of 2 minutes or more.

When the call is delivered to a fax machine or a fax card on a PC, the EPC sends information on all the channels in alarm at that time. The EPC sends the report using Class 2 fax protocol, so any device that can accept this protocol receives the report.

The delivery to a fax machine is recorded in the event log.

If several digital and analog channels were in alarm, the following fax could be issued:

```

12/01/00 09:45

DIALOG ELITE 12345678901234567890

** STATUS Report **

S01 Primary Supply                15.1 volts
S02 Battery Supply                13.2 volts
S03 Phone                          0.0
S04 Temperature                   27.8 degC
S05 Aux Supply                    24.1 volts

D21 Access Door                   Al Ak      Op
D22 Pump 1 Run Time                122 cnts  0 01:07:14
D23 Pump 1 Overheat                Op
D24 Chan 24                        Op

A31 Pump 1 Flow Rate                255 gpm  .223 mgal
A32 Tank 1 Level                   230.00 feet
A33 Reservoir Temp                 Al   Lo   33.98 degF
A34 Chan 34                        Dis
A35 Chan 35                        Dis
A36 Chan 36                        Dis
A37 Chan 37                        Dis
A38 Chan 38                        Dis

R51 Pump 1                          Op
R52 Pump 2                          Op
R53 Remote Pump 1                   Op
R54 Remote Pump 2                   Op

```

Ak – Acknowledged alarm

Al – In alarm

Op – Digital input channel is Open

Cl – Digital input channel is Closed

TL – Digital Totalizer Limit alarm

DL – Digital Duration Limit alarm







Lo – Analog Low limit alarm

Hi – Analog High limit alarm

+R – Analog Positive Rate of Change alarm

-R – Analog Negative Rate of Change alarm

How to Acknowledge Alarms

	<p>Alarms can only be acknowledged from RUN mode. They can be acknowledged in three ways:</p> <ul style="list-style-type: none"> • Locally using the keypad, • Remotely when an alarm message call-out is received, or • Remotely by calling into the EPC. <p>In all cases, when an alarm is acknowledged no further call-outs are made to inform people or systems that alarm conditions exist.</p>
<p>Locally from the keyboard</p> 	<p>At the front panel, press the  key to acknowledge a channel that is in alarm. All channels that are in alarm are acknowledged at the same time. The Red blinking LED channel indicator changes to Red steady On, indicating that the specific channel is still in alarm, but has been acknowledged.</p>
<p>Remotely when called</p> 	<p>When you receive an alarm notification call at a remote telephone, EPC delivers the message, “Please acknowledge”, and waits 5 seconds for you to enter <input type="text" value="*"/>, <input type="text" value="8"/> or <input type="text" value="9"/> (Acknowledge).</p>
<p>NOTE </p>	<p>Wait until EPC has finished speaking to acknowledge the call. If EPC does not receive an Acknowledge signal, it repeats, “Please acknowledge” and waits another 5 seconds. It repeats this message sequence and then hangs up and waits for a return call.</p>
<p>Caller ID</p> <p>Remotely when dialing in</p> 	<p>If EPC receives an Acknowledge signal, it says, “Alarms acknowledged”, beeps three times and waits 5 seconds for you to press <input type="text" value="#"/> to begin programming.</p> <p>Your <input type="text" value="*"/>, <input type="text" value="8"/> or <input type="text" value="9"/> signal acknowledges only the alarm message(s) you received.</p> <p>On the other hand, if <i>Call In Acknowledge</i> is enabled, a call-in made during the <i>Between Calls Delay</i> acknowledges alarms as specified by the <i>Call in Acknowledge</i> settings.</p> <p>If the phone line that is used by the EPC has Caller ID enabled from the local phone company, then the EPC records the Caller ID of every call it receives in the Status Log. This includes calls that are received by the EPC for alarm acknowledgement.</p>
<p>Depending on the setting of <i>Call in Acknowledge</i>, the EPC allows you to acknowledge no alarms, all alarms or specific alarms.</p> <p>When making a call to the EPC, the DiaLog goes through a simple process to verify that you are a person and not a computer. The EPC answers the phone after 2 rings, or the number specified by <i>Ring Count</i> and says, “Press any key to continue”. Anytime during this message or within 5 seconds after the message you can press any key on a Touch-Tone phone to inform the EPC that a person is making this call.</p>	
<p>NOTE </p>	<p>If you do not press the # key within 5 seconds, you will hear “Call complete, good-bye.” The EPC will then hang up.</p>
<p>Acknowledging alarms from PROGramming mode</p>	<p>If the EPC is in PROGramming mode, it delivers the message</p> <p>“Program mode active. Enter selection”.</p> <p>No alarms can be acknowledged from PROGramming mode.</p>

How to Prevent the EPC from Calling Out (Disarming)

Locally





When personnel are performing maintenance on equipment being monitored by the EPC, it is desired to prevent the EPC from calling out alarms or activating relays.

This is accomplished by Disarming the EPC by pressing the  key on the local keypad.

Remotely



When the EPC is in RUN mode, pressing   on your phone handset toggles the **ARM/DISARM** setting. The EPC responds by saying either “System is disarmed” or “System is armed”.

The EPC continues to process alarms, illuminate LEDs, write to the Event Log and answer call-ins, but it does not initiate any call outs. Alarms are not called out, and Status Notification calls are not made.

Relays can be activated when the EPC is Disarmed from the following methods:

- Activate Relay Command – either locally or remotely
- Activation from a Modbus command from another EPC or from a SCADA package.

NOTE 

The *Disarm to Arm Delay* can be used to specify an amount of time that the EPC stays Disarmed until it is automatically returned to Armed mode.

Displaying analog and digital values in real time

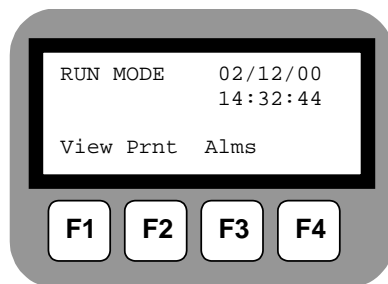
A common mode to leave the EPC in is constantly displaying the value of analog and digital channels. This is particularly useful when you are installing and calibrating analog sensors. There are two modes within the Display Channel function: scrolling and paused.

NOTE 

You must have a display installed for this function to be operational.

To start displaying values, the EPC must be in RUN mode.

Press the  key (above the  key on the display is the word View).



The display changes to the following and says “Display channel values. Enter channel selection or press ********** for all channels.”

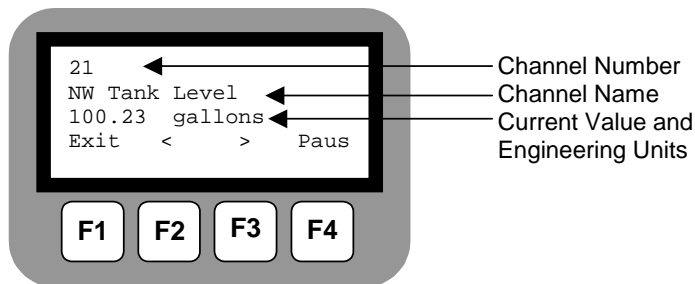
To display a single channel continuously, enter the analog or digital channel number. If a channel number is entered that is not an analog channel, the EPC says, “Invalid entry, please reenter”.

To display all channels in a scrolling fashion, press ********** followed by the **#** key.

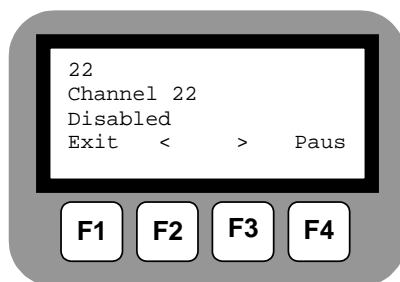


Scrolling Mode

The scrolling mode moves through all analog channels, whether configured or disabled, displaying the *Channel Number*, *Channel Name*, *Current Value* and *Engineering Units*. This mode runs continuously starting at the lowest numbered analog channel, displaying one channel at a time, up through the last analog channel and then repeating the sequence. The display looks like the following:



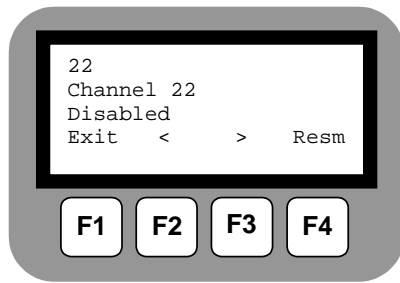
The EPC display stays on each analog channel for a few seconds and then go to the next channel. If a channel is not configured, the display shows:



To exit Display Analog Values, press the **F1** key. Above this key is the word `Exit` on the display.

To stop on a specific channel and have it displayed continuously, press the **F4** key, above this key is the word `Paus` for pause. When you do this, the display looks like:

To move forwards or backwards, press the **F3** or **F2** keys respectively.





When you have finished looking at this specific channel, you can press **F1** to exit or **F4** to resume scrolling through all of the analog channels.

Calling Antx Customer Service

The EPC has a built-in feature that allows you to easily call the Antx customer service line.

To call Antx customer service:

- While in RUN mode, press  .

The EPC places a toll-free speakerphone call directly to Antx.

Pump Control How To and Questions

This section provides some How To tips and answers to frequently asked questions.

Run pumps manually

Turn the HOA switch to the Hand mode to turn the pump on.

If the Hand switch contact is connected to the Elite, the Elite will turn the pump on.

If the Hand switch contact is NOT connected to the Elite, there should be external wiring that will turn the pump on.

Take a pump out of service

Turn the HOA switch to the Off mode. This will cause the Auto input on the Elite to go open, disabling the pump from control by the Elite.

Take a faulty float out of service

Disable the channel with the faulty float switch.

HOME 1	Enter PROGramming mode
9	Channel configuration
nn	Enter channel number of faulty float switch
2	Channel mode
0	Disable channel – LED for that channel will go out
HOME 2	Return to RUN mode

Adjust level setpoints

Enter the programming mode, select the setpoint(s) to adjust and enter a new value.

HOME 1	Enter PROGramming mode
8	Pump Configuration
5	Setpoints
nnnnn	Lead setpoint, enter new value or # if no change
nnnnn	Lag setpoint, enter new value or # if no change
nnnnn	Off setpoint, enter new value or # if no change
nnnnn	Low Alarm setpoint, enter new value or # if no change
nnnnn	High Alarm setpoint, enter new value or # if no change
HOME 2	Return to RUN mode

Turn off pump control

To temporarily turn off the pump control, press the DISARM key.

The Elite will say how many minutes until it is automatically rearmed. The default is 60 minutes. This can be adjusted by:

HOME 1	Enter PROGRAMming mode
3	System Setup
4	System Delays
#	Skip the Program to Run Delay
nnnn	Disarm to Arm Delay – 1-1440 minutes
HOME 2	Return to RUN mode

To permanently turn off the pump control, Disable from the Pump Control menu.

HOME 1	Enter PROGRAMming mode
8	Pump Control
0	Mode
0	Disarm
HOME 2	Return to RUN mode

Question	<i>What to do when a level sensor is inoperable and will require some time before it will be working?</i>
Answer	<p>If you have a High and Low level float switch as a failsafe – disable each of the Lead, Lag and All Off setpoints by pressing the Reset button for each entry. This will cause the controller to control based on the high and low level failsafe switches.</p> <p>If you have only a High or a Low level float switch as a failsafe - disable each of the Lead, Lag and All Off setpoints by pressing the Reset button for each entry. This will allow the High or Low level float switch to turn the pumps on. To turn the pump off, you must set the Max Pump Timers for each of the pumps to a time value that allows for sufficient pumping to occur without damaging the pumps.</p>
Question	<i>What does a blinking green light mean on the relays?</i>
Answer	<p>Level conditions exist for the pump to start and a Restart Delay, Dual Start Delay or Start Delay timer is counting down.</p> <p>When the timer has expired, the pump will start.</p>
Question	<i>Can the HOA switch be external to the Elite Pump Controller?</i>
Answer	<p>Yes, if you do not connect any input to the Hand/Off Mode input (channels 13 and 14), then the Elite will not attempt to turn a pump on when not in Auto.</p> <p>This allows you to connect the HOA switch externally and have it operate how you desire.</p> <p>For example, if you want the Hand mode to turn the pump on regardless of level, then you must wire it externally.</p>
Question	<i>Why does the pump turn off when in Hand mode?</i>
Answer	<p>The pump will turn off if the level indicates that the pump should be turned off or an Over Temperature condition.</p> <p>For example, in a Drain application, the pump will go off when All Off or Low Alarm are active.</p> <p>In a Fill application, the pump will go off when All Off or High Alarm are active.</p>
Question	<i>Can I turn the pumps on/off remotely?</i>
Answer	<p>Yes, by using the Activate Relays command – 7. This can be performed from either RUN or PROG mode. If it is performed from RUN mode and an Access Code is programmed, you have to enter the Access Code before energizing or de-energizing the relay.</p> <p>It is advisable to program voice messages for each pump if you plan on doing this. That way the Elite will say your message – ‘Pump 1’ prior to turning the pump on/off so that you can confirm you have the correct pump.</p>
Question	<i>Can I reset the pump run time counters?</i>
Answer	<p>Yes, use the Reset Counters function under System Setup. The Elite will ask you to specify which channel you are resetting the counters for.</p> <p>Pump 1 Run Time is channel 15, Pump 2 Run Time is channel 16.</p>
Question	<i>What happens when a level sensor goes out in an open loop condition?</i>

Answer

The response is different depending on whether you have a Drain or Fill application.

In a Drain application, where you are controlling the level by draining a vessel, an open loop sensor will indicate that the vessel is below empty. The Low Alarm will activate and initiate an alarm callout sequence. Any running pumps will be stopped.

In a Fill application, where you are controlling the level by filling a vessel, an open loop sensor will indicate that the vessel is below empty. The Low Alarm will activate and initiate an alarm callout sequence. Both pumps will be started and continue running until one of the following occurs:

a High Level Float Backup is encountered (*)

the Pump Max Run Timer expires (**)

the pump is put into Off mode

the Elite is Disarmed

the Elite Pump Control is disabled

(*) the pump will restart when the High Level Float Backup clears and the Restart Delay expires

(**) the pump will restart when the Restart Delay expires.

Question

How can I get the pump run times and pump starts on a printout?

Answer

You can have a Status Report faxed or sent to a remote modem on a daily basis or have that information automatically uploaded to the internet using DiaLogOnline.

Appendix A

Diagnositics

EPC startup LED status

When the EPC is starting up from a power up or application startup condition, the system LEDs are used to indicate the current state of the startup sequence. The following table shows the various states.

The EPC does not stop when a failure is detected, but logs the condition in the error log and attempts to start the application completely.

The ↑ indicates that the LED is the same condition as the previous test above that light, either Green Blink or Red Blink.

State	PRIM PWR LED	BATT LED	PHONE LED	RUN/PROG LED
SRAM test in progress	Rapid sequencing of each LED Green then Red			
LED test	All LEDs blink Green three (3) times then blink Red three (3) times			
SRAM test passed	Green Blink three (3) times	Off	Off	Off
SRAM test failed	Red Blink	Off	Off	Off
Flash init in progress	↑	Green Blink three (3) times	Off	Off
Flash init failed	↑	Red Blink	Off	Off
Voice Library test in progress	↑	↑	Green Blink three (3) times	Off
Voice Library test failed	↑	↑	Red Blink three (3) times	Off
Voice Expansion Memory Detected	↑	↑	↑	Green Blink three (3) times
Voice Library test failed	↑	↑	↑	Red Blink three (3) times

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