VERTIV

Liebert® AC4

User Manual

Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures. For additional assistance, visit https://www.VertivCo.com/en-us/support/

TABLE OF CONTENTS

1 INTRODUCTION

The Liebert AC4 is ideal for coordinated control of systems with redundant equipment, such as multiple environmental units or pumps. When the Liebert AC4 controller detects an alarm in an operating device, the Liebert AC4 enables a standby device and controls the device in alarm as configured, either leaving that device operating or disabling it.

The Liebert AC4 controller can also balance usage of devices by rotating units through Operating and Standby modes according to a user-defined schedule. This helps keep redundant equipment operating efficiently and only when needed. The Liebert AC4 can perform routine testing of standby devices and alert personnel if a standby device fails an operating test and requires attention.

Another capability of the Liebert AC4 is monitoring the status of connected devices and keeping personnel apprised through local alarming.

The Liebert AC4 controller can interface with anything that closes an electrical contact. To improve process efficiency and troubleshooting, the controller tracks data in two types of logs: alarm and event. The Liebert AC4 has a local LCD interface and an RS232 interface.

When an alarm condition arises, the Liebert AC4 displays alarm information, sounds an audible alarm, changes the state of the common alarm relay and turns connected devices on or off according to user configuration. See Typical Configuration on page 9 for a more detailed example.

1.1 Methods of Viewing and Configuring the Liebert AC4

The Liebert AC4 features access through two interfaces that allow users to configure the unit, silence alarms, back up logs, and perform many other functions to keep a large or small operation running smoothly and safely.

- **LCD**—liquid crystal display on the front of the panel
- **Service Terminal Interface**—accessible via a computer connected directly to an RS232 port

These interfaces permit easy access and configuration of the Liebert AC4, allowing users to view data, silence alarms and have full access to information stored in the controller, including logs of alarms and events.

1.2 Data Logs

The two types of data logs—alarm history and event history—can be viewed on the LCD on the front of the Liebert AC4 or the Service Terminal Interface. The logs may also be downloaded to a computer through the Service Terminal Interface.

1.3 Available Alarms

The alarms available with the Liebert AC4 are:

- Discrete input alarm (for each digital input)
- Loss of power
- No standby available
- Standby device failed
- No restart available

1.4 Outside Enclosure Overview

The Liebert AC4 controller board comes in an enclosure that is 2-3/4" deep and has a built-in liquid crystal display (LCD) and a key lock, as shown in Figure 1.1 below. The enclosure is made of metal to accommodate secure conduit fittings and protect components against environmental debris.

Figure 1.1   Liebert AC4 enclosure—external features
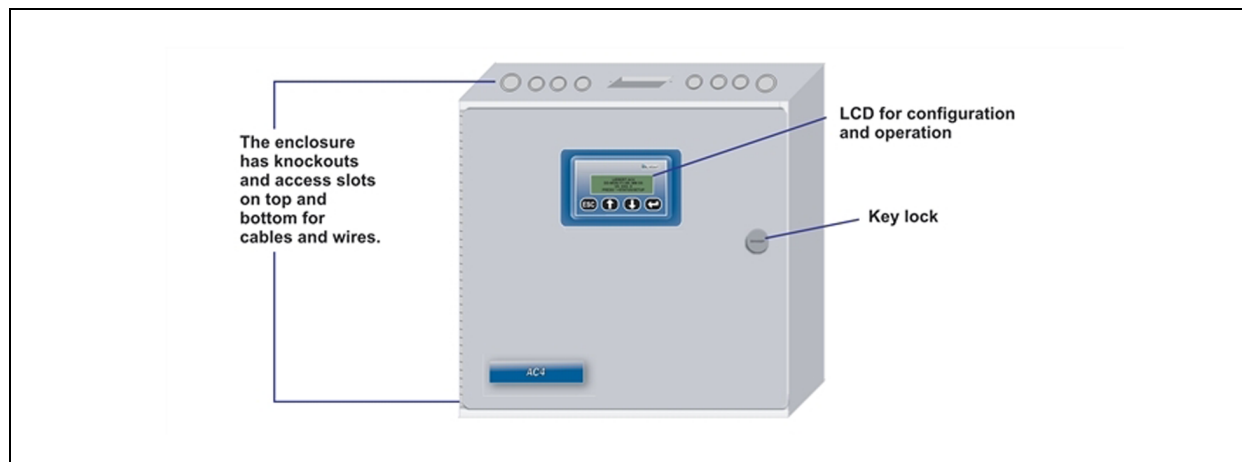
The enclosure must be secured to a wall, either flush-mounted or recessed in the wall, as described in Installation on page 15. Knockouts and access slots on the top and bottom allow easy connection of wires and cables (see Wiring and Connections on page 21) with either mounting type.

Figure 1.2   Liebert AC4 enclosure—internal features
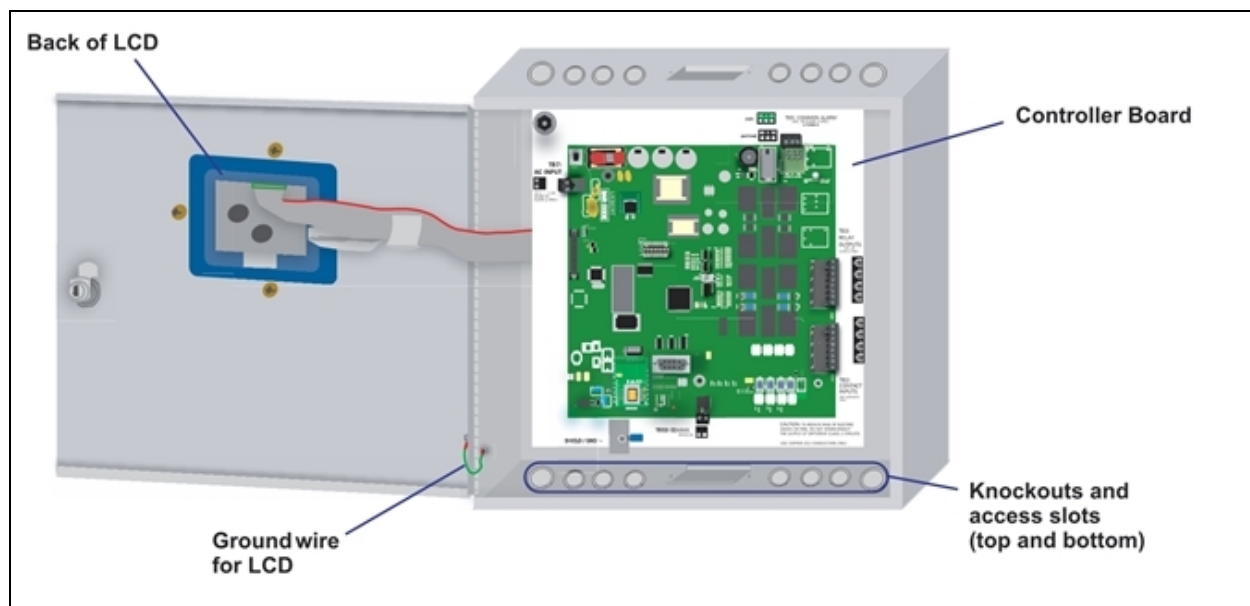
1.5 Typical Configuration

Figure 1.3 below shows an example of external devices connected to the Liebert AC4 controller board. There may be up to four devices connected to the four digital inputs and four digital outputs. Remote access is available through the Service Terminal Interface.

Figure 1.3 Typical Configuration
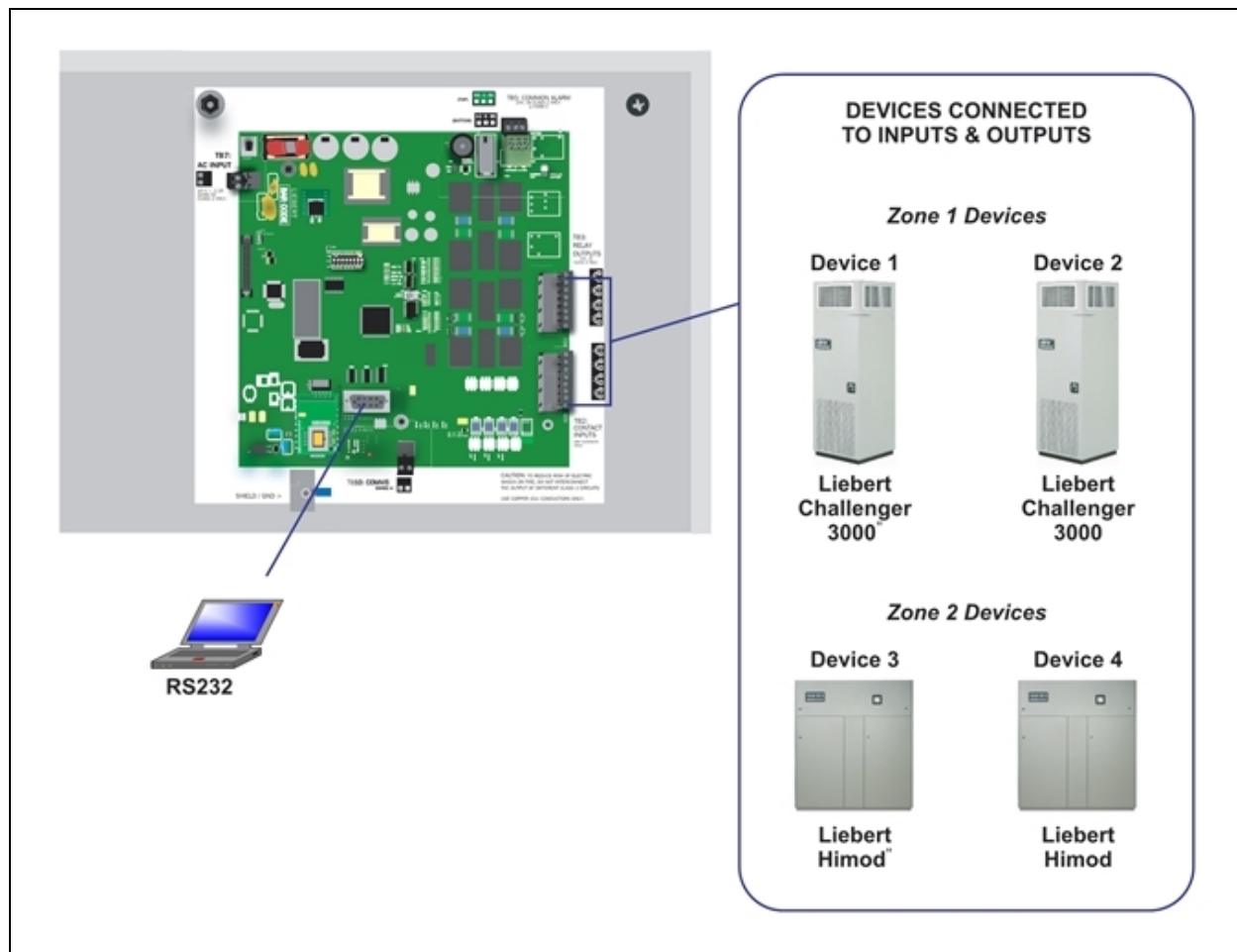
1.6 Controller Board Overview

The Liebert AC4 controller board has connectors for four digital inputs and four digital outputs, as shown below. The board comes complete with light emitting diodes (LEDs) to display the status of connected devices, a serial communications port, a power connection and other features necessary to control your operation.

A - Power On/Off switch

B - Audible horn

C - Audible horn jumper

D - Common Alarm connectors

P - 24VAC power connector

O - LCD contrast adjustment

N - LCD connector

M - DIP switch 1

L - Serial interface connector (RS232/EIA574)

E - Digital output status LEDs

F - Manual Override Switch (outputs)

G - Digital output connectors

H - Status LEDs

I - Digital output loss-of-power jumper

J - Digital input connectors

K - Digital input status LEDs

Table 1.1

Controller board components

Item	Description	For more information, see:
A - Power On/Off switch	Power switch for the controller board.	Connect Power to the Liebert AC4 on page 18
B - Audible horn	Provides audible notification when an alarm occurs.	N/A
C - Audible horn jumper	Jumper to disable the audible horn (factory default is enabled).	N/A
D - Common Alarm connectors	The two common alarm connections are used to connect to a secondary warning device such as a horn, light or Building Management System (BMS). When an alarm is present, the contacts close and the external warning device is activated/notified. The common alarm contacts may be configured to be reset with the Silence button/command.	Wiring and Connections on page 21 Connecting Common Alarm Outputs on page 24 Setup System - Setup Common Alarm on page 48
E - Digital output status LEDs	Each output has an LED to indicate its status: ON/OFF (energized/de-energized).	LED Indicators below
F - Manual Override Switch (outputs)	Placing the switch in the ON position will turn ON, or energize, all four outputs simultaneously. This switch removes all automatic output control from the Liebert AC4.	Override Output on page 64
G - Digital output connectors	Each of the four output connections is a two-state point: ON/OFF (energized/de-energized). An example of a field digital output is a Liebert Environmental unit's remote shutdown input.	Wiring and Connections on page 21 Connecting Digital Outputs on page 23 View Output Status on page 36 Setup System - Setup Outputs on page 50
H - Status LEDs	Indicates the operational status of the controller board.	LED Indicators below
I - Digital output loss-of-power jumper	One of four output jumpers. Each digital output has a jumper to set the *fail-safe* position of the output point when power fails. The OFF position makes the contact Normally Open (factory default). The ON position makes the contact Normally Closed. Note: The jumper position has no effect on the contact when the Liebert AC4 has power.	Setting the Digital Output Jumpers on page 23 Configure Output for Loss of Power ("Fail-Safe") on page 52
J - Digital input connectors	Each of the four input connections is a two-state point: ON/OFF (energized/de-energized). An example of a field digital input is a Liebert Environmental unit's common alarm relay output.	Wiring and Connections on page 21 Connecting Digital Inputs on page 22 View Input Status on page 35 Setup System - Setup Inputs on page 44
K - Digital input status LEDs	Each input has an LED to indicate its status: ON/OFF (energized/de-energized).	LED Indicators below
L - Serial interface connector (RS232/EIA574)	Connection for laptop or video terminal. Used for configuration and monitoring using the Service Terminal Interface. Requires a null modem cable for connectivity (P/N 201258P1).	RS232 Connector on page 24 Connecting to the Service Terminal Interface on page 70
M - DIP switch 1	DIP switch used for resetting password to default.	Change Password on page 53
N - LCD connector	Connection for the LCD on the enclosure door.	N/A
O - LCD contrast adjustment	Adjustment contrast for the LCD on the enclosure door.	N/A
P - 24VAC power connector	Power connection for the controller. Requires 24VAC.	Connect Power to the Liebert AC4 on page 18

1.7 LED Indicators

The Liebert AC4 controller board has LED indicators that show the status of inputs, outputs and the common alarm
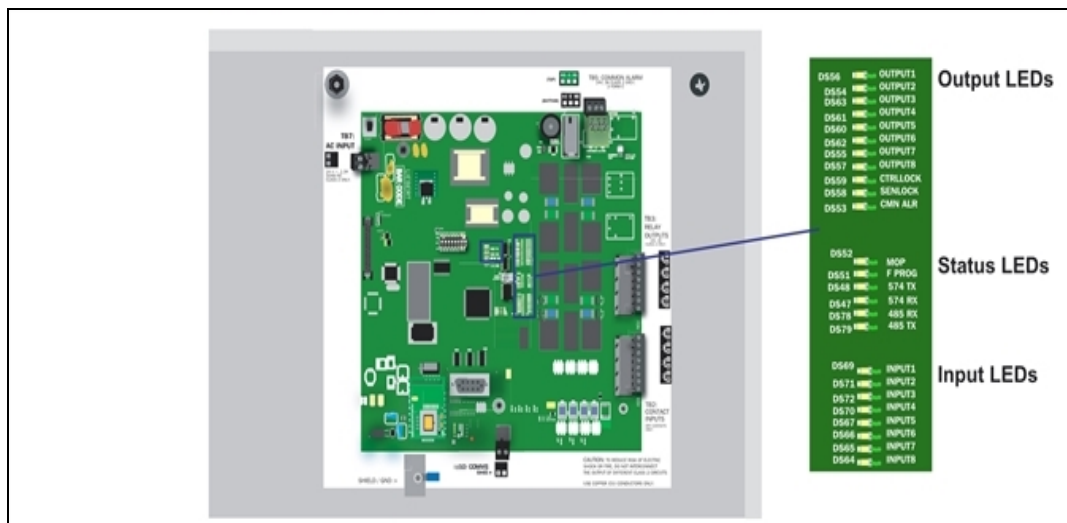
Table 1.2   LED indicators summary

LED Type	LED	Color	Description
EIA422 LEDs	422 TX	Green	Liebert AC4 is transmitting information over the EIA422 port
	422 RX	Green	Liebert AC4 is receiving information over the EIA422 port
Output LEDs	OUTPUT1	Green	Not used
	OUTPUT2	Green	Not used
	OUTPUT3	Green	Not used
	OUTPUT4	Green	Not used
	OUTPUT5	Green	Indicates output 1 is ON or energized
	OUTPUT6	Green	Indicates output 2 is ON or energized
	OUTPUT7	Green	Indicates output 3 is ON or energized
	OUTPUT8	Green	Indicates output 4 is ON or energized
	CTRLLOCK	N/A	Not used
	SENLOCK	N/A	Not used
	CMN ALR	Green	Indicates output is ON or energized
Status LEDs	MOP	Green	Indicates the microprocessor is operating properly (MOP)—must be on before Liebert AC4 will function
	FPROG	Green	Indicates firmware is being upgraded—lights up during upgrade process
	574 TX or 232 TX	Green	Liebert AC4 is transmitting information via the RS232 port
	574 RX or 232 RX	Green	Liebert AC4 is receiving information via the RS232 port

Table 1.2   LED indicators summary (continued)

LED Type	LED	Color	Description
	485 RX	Green	Not used
	485 TX	Green	Not used
Input LEDs	INPUT1	Red	Not used
	INPUT2	Red	Not used
	INPUT3	Red	Not used
	INPUT4	Red	Not used
	INPUT5	Red	Indicates input 1 is ON or energized
	INPUT6	Red	Indicates input 2 is ON or energized
	INPUT7	Red	Indicates input 3 is ON or energized
	INPUT8	Red	Indicates input 4 is ON or energized

1.8 Typical Sequence

Figure 1.4   on the next page shows a typical sequence of how the Liebert AC4 functions after detecting a change in a monitored device. Many responses depend on configuration settings. This example shows what happens when a digital input changes state—assuming the input is defined as alarmable—and when the condition returns to normal.

Figure 1.4   Example of typical sequence

RESPONSES TO AN ALARM

ALARM CONDITION DETECTED
A device connected to the Liebert AC4 changes state.

The horn sounds (audible horn on the controller board   silence horn by pressing any key on the LCD keypad)

The LCD flashes
(except during setup)

User setup determines output control (for example, the device in alarm might be disabled and a standby device set to operate)

Entry in Alarm Log
Condition (ALARM)
& state (CONTACT CLOSED)

Entry in Active Alarm Log
Condition (ALARM)
& state (CONTACT CLOSED)

Entry in Event Log
Status change
(DEVICE_4 STARTED)

RETURN-TO-NORMAL SEQUENCE

RETURN TO NORMAL
The device that triggered the alarm returns to its normal state.

The alarm is cleared
(automatically if Unlatched; must be cleared manually if Latched)
The horn stops sounding
(if user hasnt silenced it)

The LCD stops flashing

Entry in Alarm Log
(ALARMS CLEARED)

Entry in Event Log
Actions in response to event
(DEVICE_1 STARTED, DEVICE_4 OFF)

2 INSTALLATION

2.1 Installation Considerations

The Liebert AC4 must be installed indoors and may be mounted on the surface of a wall or flush-mounted, depending on the user's application, the location of equipment to be connected and the type of wall the unit will be mounted on.

The Liebert AC4 should be mounted where it can be easily accessed. On-site personnel would access the unit through the LCD on its front cover or the service terminal connected to the RS232 port.

In addition to the communications connections, the site also must have electrical service and must permit connecting the unit's four digital inputs and four digital outputs.

The wall material must be capable of supporting the weight of the Liebert AC4: see Specifications on page 67.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2.1.1 Unpacking and Preliminary Inspection

- Before unpacking the Liebert AC4, inspect the shipping carton for damage or signs of mishandling, such as gashes or holes in the carton or severely flattened corners.
- Open the shipping crates carefully. Use care to avoid puncturing the container with sharp objects that might damage the contents.
- Inspect the Liebert AC4 and all included components for damage.
- If any damage from shipping or mishandling is observed, immediately file a damage claim with the shipping agency and forward a copy to:

    Liebert Corporation
    1050 Dearborn Drive
    P.O. Box 29186
    Columbus, OH 43229

Packing Contents

Table 2.1   Packing manifest

Standard Components
Liebert AC4 controller board in enclosure
User Manual
Keys (2) to panel door lock
RS232 Configuration Cable

2.2 Surface-Mounting the Liebert AC4

NOTE: Removing the conduit knockouts before mounting the Liebert AC4 on the wall will ease installation and prevent strain on the mounting hardware and wall. It is imperative to remove the knockouts if the unit is to be flush-mounted.

After determining where to place the unit, check to ensure that you have all the hardware required to install the panel on the surface of a wall. Obtain the needed tools and material.

Required tools

- Electric drill (if surface is too hard to drive screws without pilot holes)
- Screwdriver
- Marker to denote layout of holes
- Four screws, each #10

2.2.1 Mounting the Panel

⚠ WARNING! Risk of electric shock. Can cause property damage, injury and death.

Check building plans and other relevant documents to determine whether mounting the Liebert AC4 at the selected location might cause cutting or otherwise damaging electrical or communication wiring or pipes.

1. Mark the wall for mounting holes, using the back of the unit as a template (see Figure 2.1 on the facing page).
2. Drill holes, if required, to install the four #10 screws that will secure the Liebert AC4 to the wall. Clean up the debris.
3. If the wall material is not strong enough to hold the screws securely, use wall anchors.
4. Install the top two screws—the screw heads must be small enough to slip through the larger, bottom portion of the pear-shaped mounting slot in the Liebert AC4 (see inset in Figure 2.1 on the facing page). The screws must also be large enough to extend over the edges of the top of the mounting slot.
5. Hang the Liebert AC4 on the screws, letting the panel slip down until the screws are in the smaller, upper portion of the slot.
6. Tighten the screws until they are snug.
7. Insert the remaining two screws in the bottom holes on the back of the panel and tighten.

Figure 2.1 Mounting dimensions

2.3 Flush-Mounting the Liebert AC4

NOTE: Removing the conduit knockouts before mounting the Liebert AC4 on the wall will ease installation and prevent strain on the mounting hardware and wall. It is imperative to remove the knockouts if the unit is to be flush-mounted.

NOTE: The rectangular access doors on the top and bottom of the Liebert AC4 must be reversed so they slide the opposite direction. Leaving the doors as shipped from the factory prevents them from being opened when the panel is flush mounted in a wall.

The Liebert AC4 may be flush mounted according to company practices—either with screws through the sides of the panel into wall supports or with hanging hardware that attaches to the back of the panel. After determining how and where to place the unit, check to ensure that you have all the hardware required to install the panel in the wall. Obtain the needed tools.

Required tools

- Saw
- Electric drill
- Screwdriver
- Marker to denote layout of the hole to accommodate the Liebert AC4
- Trim ring and associated hardware
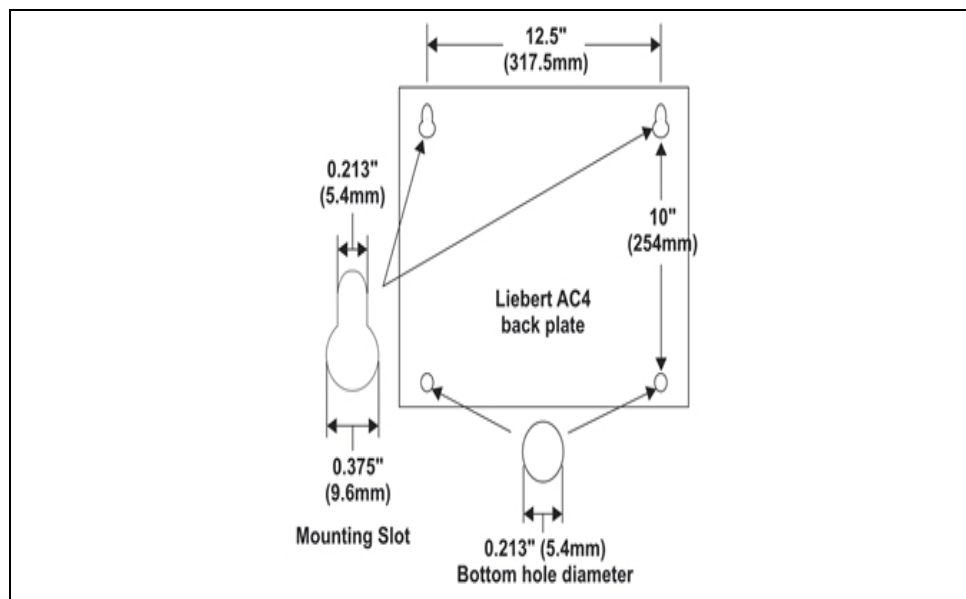- Mounting hardware

2.3.1 Mounting the Panel

⚠️ **WARNING! Risk of electric shock. Can cause property damage, injury and death.**

Check building plans and other relevant documents to determine whether mounting the Liebert AC4 at the selected location might cause cutting or otherwise damaging electrical or communication wiring or pipes.

1. Mark the wall for the cutout to accommodate the panel, using the back of the unit as a template.
2. Drill a pilot hole for the saw blade, if required.
3. Use the saw to cut out the marked section of the wall (if not new construction).
4. Rest the Liebert AC4 in the wall and mark where mounting screws will be inserted into the wall studs or other support member.
5. Remove the panel and drill the holes for the mounting screws or wall anchors. Clean up the debris.
6. Reverse the slide direction of the rectangular access doors on the top and bottom of the Liebert AC4. Leaving the doors as shipped from the factory prevents them from being opened when the panel is flush mounted in a wall.
7. Attach any field-supplied mounting hardware.
8. Reinsert the assembly into the wall.
9. Insert and tighten the screws or wall anchors.

2.4 Connect Power to the Liebert AC4

The Liebert AC4 requires 24VAC for proper operation. Liebert recommends using the optional Transformer Module manufactured by Liebert or another UL-approved class 2 power unit to obtain proper voltage. If the power unit is not a class 2 circuit, it must be protected with an IEC 5 x 20mm time lag 2A fuse. For information, consult your local dealer, Emerson representative or the Vertiv Worldwide Support Group.

⚠️ **WARNING! Risk of electric shock. Can cause property damage, injury and death.**

Check that power is removed from wires prior to installation. This unit should be installed only by properly trained and qualified personnel.

⚠ CAUTION: Risk of electric shock. Can cause property damage, injury and death.

The Liebert AC4 is designed for use on properly grounded (earthed) 24VAC power, 50Hz or 60Hz. The ground wire for the power lead must be wired to the earth ground terminal (stud located next to the 24VAC terminal block).

This equipment is intended to be installed by a qualified and certified electrician who must review and approve customer supplied wiring and circuit breakers, verify correct input and grounded (earthed) connections to ensure compliance with technical standards and national and local electrical codes.

⚠ WARNING! Risk of electric shock. Can cause property damage, injury and death.

Be sure that the Power On/Off switch is set to OFF before installing any wiring to this unit. The switch is in the top left corner of the unit, just below the battery pack.

To connect electrical power:

1. Run conduit and electrical wiring from building to the Liebert AC4.
2. Use copper wires only; proper wiring to use for power is 18-22 AWG stranded and shielded (18 AWG is recommended—see 3 on page 21). Strip wires 1/2".

Figure 2.2 Electrical connections to panel
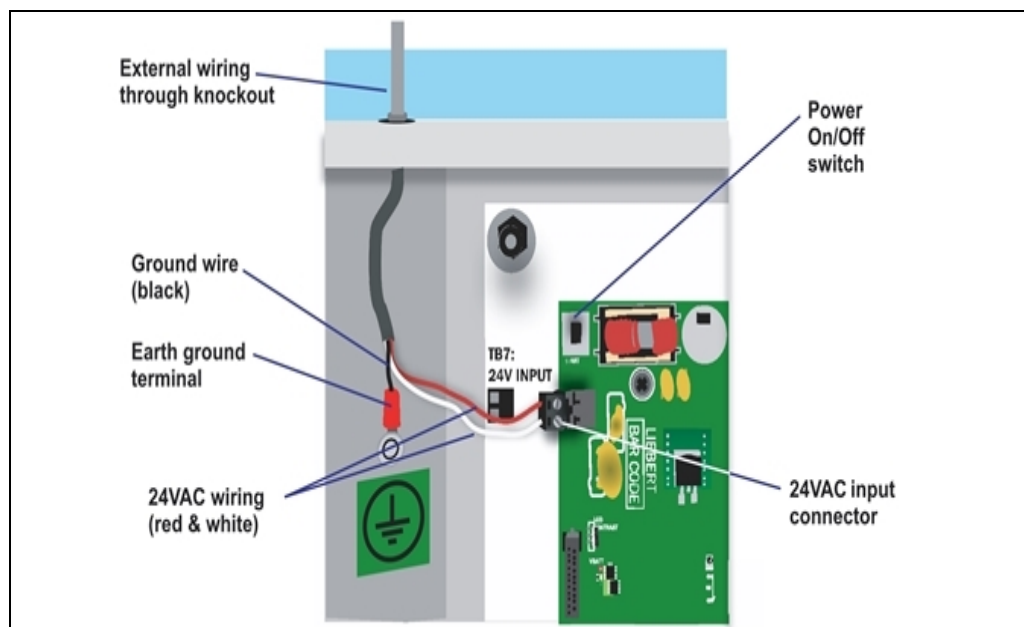
3. Secure the incoming electrical service wires to the Liebert AC4's 24VAC input by sliding the wires into TB7, the 24VAC input terminal block. There is no polarity requirement when connecting to TB7. The ground wire must be connected to the earth ground terminal located on the side of the panel (see Figure 2.2 above).

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3 WIRING AND CONNECTIONS

⚠️ **WARNING! Risk of electric shock. Can cause property damage, injury and death.**

Switch Off electric power to the Liebert AC4 before installing any wiring to the unit or changing input or output connections. The Power On/Off switch is in the top left corner of the unit.

3.1 Wiring Specifications

Input and output connections to the Liebert AC4 may be made in any order—it is not necessary, for example, to make all input connections before making any output connections. Use copper conductors only for all wiring.

Table 3.1   Wiring specifications

Connection	Supported Wire Type	Maximum Wire Length			Rating
Digital Input	18-22 AWG Stranded & Unshielded 18 AWG* (recommended) Non Plenum - Belden 9740 Plenum - Belden 89740	750 ft. (225m)			Dry Contact (24VDC, 10 mA)
Digital Output	18-22 AWG Stranded & Unshielded 18 AWG* (recommended) Non Plenum - Belden 9740 Plenum - Belden 89740	18 AWG* (recommended) @3A 50 ft. (15m) @2A 100 ft. (30m) @1A 200 ft. (60m)	20 AWG @3A 40 ft. (12m) @2A 60 ft. (18m) @1A 100 ft. (30m)	22 AWG @3A 25 ft. (7m) @2A 35 ft. (10m) @1A 75 ft. (23m)	24VAC @3A
Common Alarm Output	18-22 AWG Stranded & Unshielded 18 AWG* (recommended) Non Plenum - Belden 9740 Plenum - Belden 89740	18 AWG* (recommended) @3A 50 ft. (15m) @2A 100 ft. (30m) @1A 200 ft. (60m)	20 AWG @3A 40 ft. (12m) @2A 60 ft. (18m) @1A 100 ft. (30m)	22 AWG @3A 25 ft. (7m) @2A 35 ft. (10m) @1A 75 ft. (23m)	24VAC @3A
Communication RS232	Null Modem Cable	50 ft. (15m)			N/A
24VAC Power Connection (TB7)	18-22 AWG Stranded & Shielded 18 AWG* (recommended) Non Plenum - Belden 8770 Plenum - Belden 88770	150 ft. (45m)			24VAC @1.3A
* Recommended					

3.2 Connecting Digital Inputs and Outputs

The digital inputs and outputs are on the lower right side of the Liebert AC4 printed wiring assembly board. This section describes how to connect devices to the Liebert AC4's inputs and outputs.

Each input is tied to an output with the same number:

- Input 1 is tied to Output 1 (default name: Device_1)
- Input 2 is tied to Output 2 (default name: Device_2)
- Input 3 is tied to Output 3 (default name: Device_3)
- Input 4 is tied to Output 4 (default name: Device_4)

Up to four devices may be connected to the Liebert AC4. Each device must be connected to an input and an output with the same number.

To determine the proper wire size, see Wiring and Connections on the previous page.

NOTE: Each terminal block is a removable assembly to permit easier connection of more than one input or output at a time. If making multiple connections, grasp the upper portion of a block and pull firmly until the assembly pulls apart.

NOTE: After making the connections, push the removed piece back into the portion attached to the printed wiring assembly until the terminal block pieces lock together.

3.2.1 Connecting Digital Inputs

The four digital inputs are on the lower right side of the Liebert AC4, just below the output terminal blocks, as shown at right. These inputs are numbered 1 through 4.

To connect an input:

1. Turn Off electrical power to the Liebert AC4.

2. If necessary, remove a conduit knockout to permit wire entry into the Liebert AC4 enclosure.

3. Bring the wire(s) into the Liebert AC4 enclosure through a conduit knockout or access slot.

4. Loosen the appropriate screw and slip the stripped end of the wire into the terminal block.

5. Tighten the screw until it holds the wire snugly.
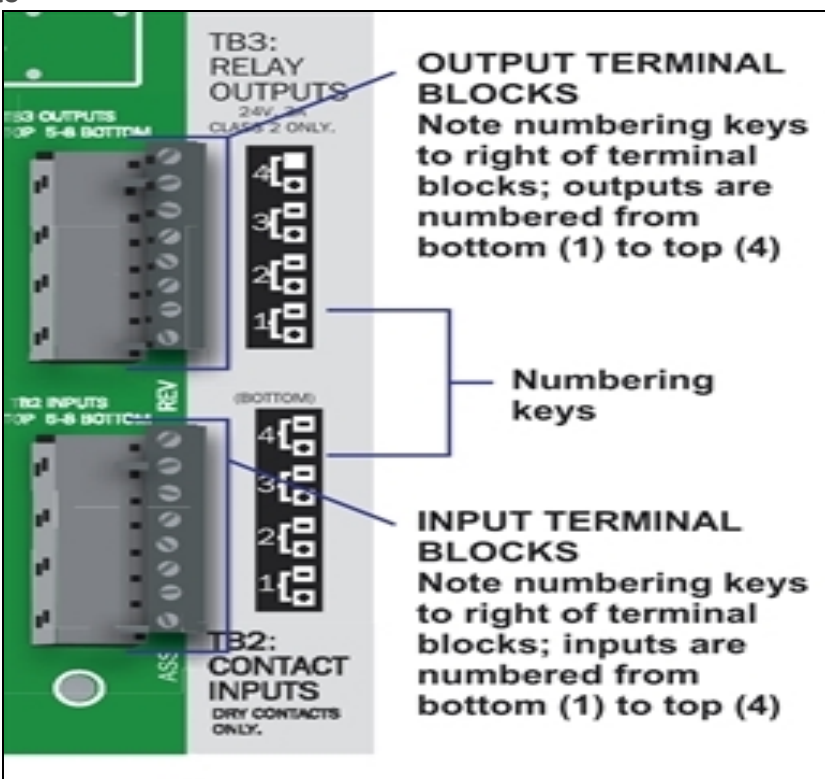
3.2.2 Connecting Digital Outputs

The four digital outputs are found on the lower right side of the Liebert AC4 just above the input terminal blocks, as shown at right. These outputs are numbered 1 through 4.

To connect an output:

1. Turn OFF electrical power to the Liebert AC4.
2. If necessary, remove a conduit knockout to permit wire entry into the Liebert AC4 enclosure.
3. Bring the wire(s) into the Liebert AC4 enclosure through a conduit knockout or access slot.
4. Loosen the appropriate screw and slip the stripped end of the wire into the terminal block.
5. Tighten the screw until it holds the wire snugly.

NOTE: To reduce the risk of fire or electric shock, do not interconnect the outputs of different class 2 circuits.

3.2.3 Setting the Digital Output Jumpers

Each digital output has an associated jumper to define its operation when power is interrupted. This puts the Liebert AC4 in a *fail-safe mode* and ensures proper functioning when the board has no power.

The Liebert AC4 comes from the factory with all digital output jumpers in the OFF position (normally open). The jumper setting for each digital output can be changed to ON (normally closed). The settings are shown in Table 3.2 below.

Digital output jumpers (four)
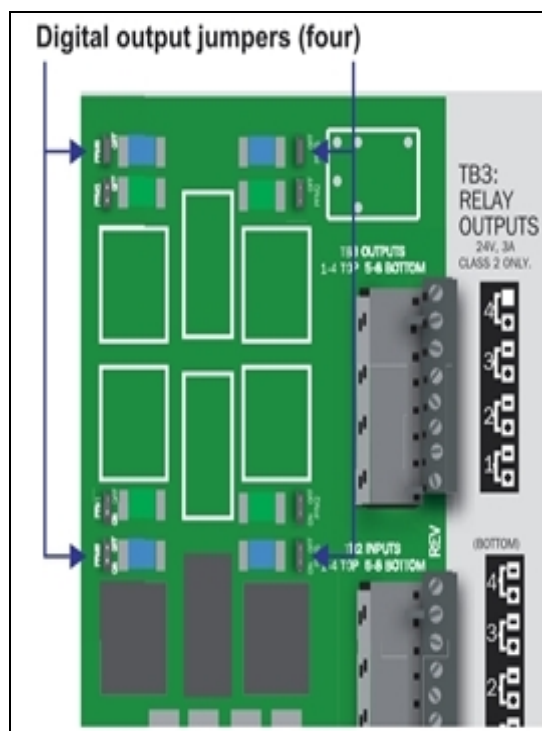
Table 3.2
Digital output jumper settings

Setting	Output status (power loss)
OFF	Normally open
ON	Normally closed

To change the output jumper setting:

1. Find the respective loss-of-power jumper on the circuit board, as shown above. See Controller board components on page 11 for more information.
2. Decide whether your configuration requires the jumper to be OFF or ON.

3. Set the jumper as needed:
- Set the jumper to OFF by placing the loss-of-power jumper on the middle and top pins.
- Set the jumper to ON by placing the black jumper on the middle and bottom pins.

3.3 Connecting Common Alarm Outputs

The common alarm relay, found in the top right corner of the Liebert AC4, permits the user to connect auxiliary notification equipment, such as lights, horns and sirens, to the Liebert AC4. To determine the proper wire size, see Wiring and Connections on page 21.

There are two connectors for the common alarm output. However, the connectors are not individual relay outputs. The connectors should be treated as a double-pole, double-throw (DPDT) relay.

The common alarm relay is energized whenever an alarm occurs.

Common alarm outputs

To connect an output:
1. Turn OFF electrical power to the Liebert AC4.
2. If necessary, remove a conduit knockout to permit wire entry into the Liebert AC4 enclosure.
3. Bring the wire(s) into the Liebert AC4 enclosure through a conduit knockout or access slot.
4. Loosen the appropriate screw and slip the stripped end of the wire into the terminal block.
5. Tighten the screw until it holds the wire snugly.
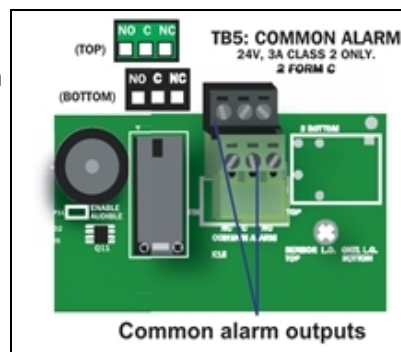
3.4 RS232 Connector

The Liebert AC4's Service Terminal Interface offers full configuration and monitoring capability via the RS232 port (see Connecting to the Service Terminal Interface on page 70).

The RS232 port requires a null modem cable. Connect one end of the cable to the Liebert AC4's RS232 port, shown at right, and the other end to the COM1 port of a laptop computer or video terminal.
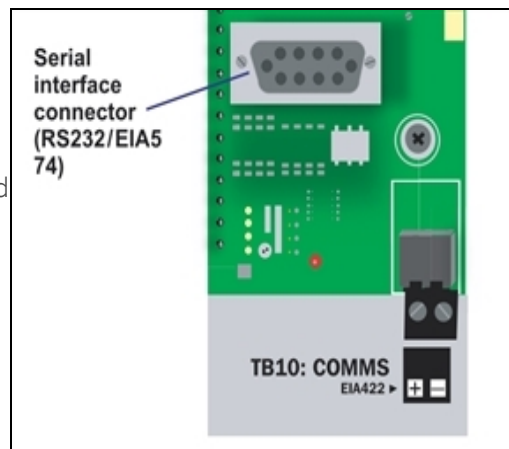
4 OVERVIEW OF MENUS

There are two ways to access the Liebert AC4: the LCD on the front of the enclosure and the Service Terminal Interface, which is accessible through any computer using a communications program. Many viewing and configuration tasks can be performed through either interface, but some are available only through the Service Terminal Interface.

- Step-by-step instructions for all functions appear in View Status Options on page 29 through System and Control Options on page 41. These instructions use examples of LCD screens to illustrate most functions, except those not available via the LCD.
- Examples of all Service Terminal Interface screens appear in Service Terminal Interface on page 69, along with instructions on how to connect to the Service Terminal Interface.

Table 4.1 below lists all Liebert AC4 functions and shows whether they can be performed through the LCD interface and where to find information.

Table 4.1
Guide to Liebert AC4 functions

Function	Can be performed via:		Where to find:	
	LCD	Service Terminal	Instructions on using function	Service Terminal screen examples
VIEW STATUS FUNCTIONS				
View Active Alarms	x	x	View Active Alarms on page 31	View Active Alarms
View Alarm Log	x	x	View Alarm Log on page 32	View Alarm Log
View Event Log	x	x	View Event Log on page 33	View Event Log
View Input Status	x	x	View Input Status on page 35	View Input Status
View Output Status	x	x	View Output Status on page 36	View Output Status
SILENCE ALARM & BACK UP LOGS FUNCTIONS				
Silence Alarm (On the LCD, press any key to silence an alarm)	x	x	Silence Alarm (Service Terminal Interface) on page 37	Silence Alarm (Service Terminal Interface only)
Back Up Log Files	—	x	Back Up Log Files (Service Terminal Interface only) on page 37	Back Up Log Files (Service Terminal Interface only)
SYSTEM & CONTROL FUNCTIONS				
Login	x	x	Login on page 41	Login Menu
Setup System	x	x	Setup System - Overview on page 44	Setup Menu
Setup Inputs	x	x	Setup System - Setup Inputs on page 44	Setup Inputs
Setup Common Alarm	x	x	Setup System - Setup Common Alarm on page 48	Setup Common Alarm
Setup Zones	x	x	Setup System - Setup Zones on page 48	Setup Zones

Table 4.1   Guide to Liebert AC4 functions (continued)

Function	Can be performed via:		Where to find:	
	LCD	Service Terminal	Instructions on using function	Service Terminal screen examples
Setup Outputs	x	x	Setup System - Setup Outputs on page 50	Setup Outputs
Setup System Info	x	x	Setup System - Setup System Info on page 52	Setup System Info
Change Password	x	x	Change Password on page 53	Change Password
Set Date & Time/Automatic Daylight Saving Time	x	x	Set Date & Time/Automatic Daylight Saving Time on page 53	Set Date & Time/Automatic Daylight Saving Time
Setup Site ID	x	x	Setup Site ID on page 54	Setup Site ID
Backup and Upload Configuration File	—	x	Backup and Upload Configuration File (Service Terminal Interface only) on page 54	Backup and Upload Configuration File (Service Terminal Interface only)
Factory Defaults	x	x	Factory Defaults on page 57	Factory Defaults
Perform Firmware Update	—	x	Perform Firmware Update (Service Terminal Interface only) on page 57	Firmware Update (Service Terminal Interface only)
Setup Operation	x	x	Setup Operation on page 60	Setup Operation
Override Output	x	x	Override Output on page 64	Override Output
Clear Alarms & Logs	x	x	Clear Alarms & Logs	Clear Alarms & Logs
Clear Active Alarms	x	x	Clear Active Alarms on page 66	Clear Active Alarms
Clear the Alarm Log	x	x	Clear the Alarm Log on page 66	Clear the Alarm Log
Clear the Event Log	x	x	Clear the Event Log on page 66	Clear the Event Log

4.1 Opening Screen Overview

The Liebert AC4 displays the Opening Screen at startup, as shown in Figure 4.1   on the facing page.

- If any alarms are active, the Current Alarm screen appears. (Pressing any key on the LCD keypad will silence the audible alarm.)

If no alarms are present, the Main Menu appears.

4.2 Main Menu Overview

The Main Menu offers access to all functions within the panel. As shown in Table 4.2   on the facing page, the functions are organized into three sections with step-by-step instructions.

Table 4.2

Primary Functions Overview

Section	Description
View Status Options on page 29 - View Status Options (both LCD and Service Terminal Interface)	These features are available to all users. This permits all personnel to check the status of any monitored equipment or location. From this menu, any user may: View active alarms View the current status of digital inputs and outputs View data stored in the alarm and event logs
Silence Alarm & Backup Log Files (Service Terminal Interface) on page 37 - Silence Alarm & Backup Log Files (Service Terminal Interface only)	These features—available via the Service Terminal Interface only—allow users to: Silence the audible alarm Back up the alarm and event logs
System and Control Options on page 41 - System and Control Options (some functions available via Service Terminal Interface only)	These options require a password. Authorized users may: Configure the Liebert AC4 Override automatic control of outputs to force an output ON or OFF Clear active alarms and delete all records in the alarm and event logs

4.3 LCD Menu Overview

Figure 4.1 below shows an overview of the initial screens available through the LCD interface. For comparable information about the Service Terminal Interface screens, see Overview of Menus.

Figure 4.1 LCD Menu overview
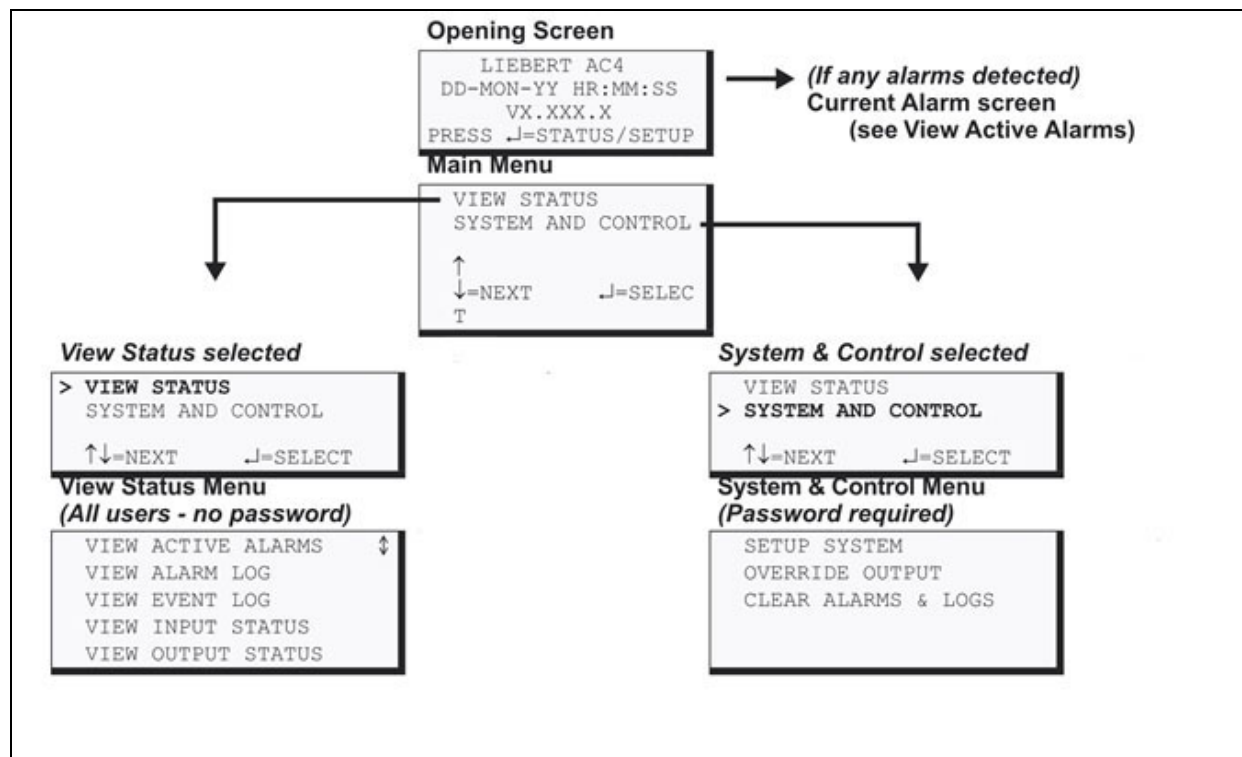
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5 VIEW STATUS OPTIONS

NOTE: For ease of understanding, this section uses the LCD interface to illustrate most instructions, except for features that are available only through the Service Terminal Interface. All Service Terminal Interface screens appear in Service Terminal Interface on page 69.

The View Status menu allows any user to view currently active alarms, data stored in the alarm and event logs and the status of all inputs and outputs. The arrows are used to scroll through the menu. The Enter key is used to select the menu item.

This section presents step-by-step instructions for each of the following options:

- View Active Alarms
- View Alarm Log
- View Event Log
- View Input Status
- View Output Status

Figure 5.1 on the next page shows the main options available from the View Status menu.

Figure 5.1 Menu overview - View Status menu
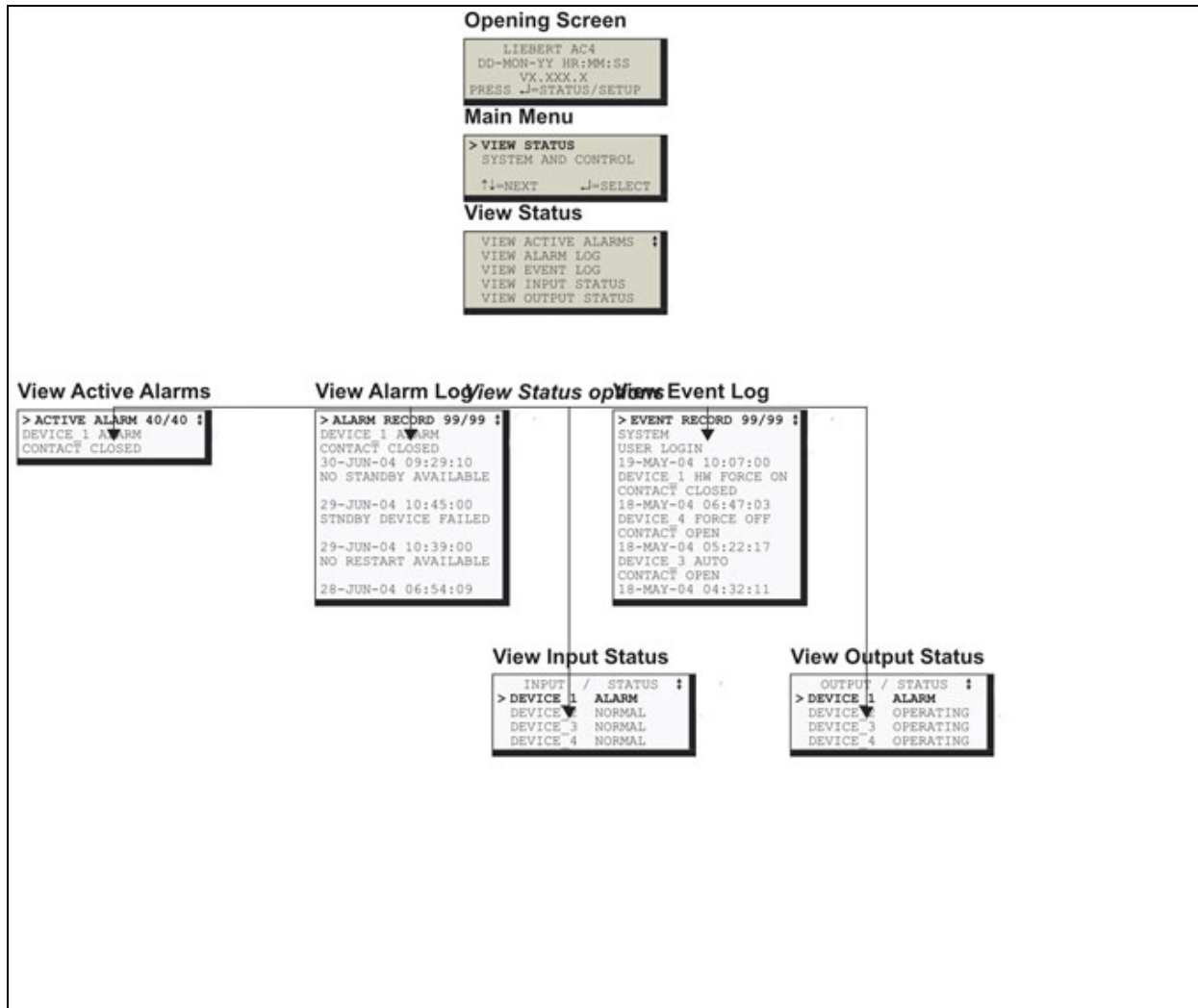
5.1 View Active Alarms

The Active Alarm screen displays all alarms that are occurring, up to a maximum of 40.

A Current Alarm screen appears automatically whenever an alarm occurs—except during setup. This screen can display only the two most recent active alarms. To view any other active alarms, use the View Active Alarms feature.

You may view active alarms at any time by using the following steps:

- From the Main Menu, use the arrows to choose **View Status**, as shown at right, and then press Enter.
- From the View Status Menu, use the arrows to choose **View Active Alarms** and press Enter.
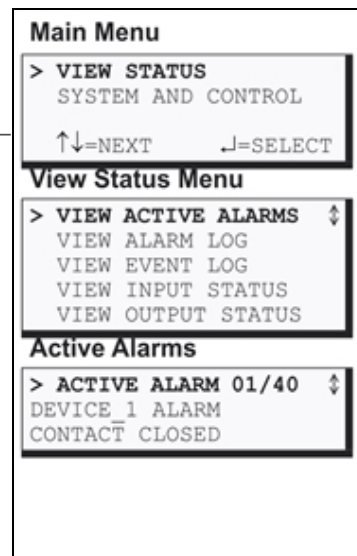
5.1.1 Active Alarms

The Active Alarms screen displays up to 40 records; it shows any active alarm and any Latched alarm that has not been cleared. Examples of alarms include inputs in alarm status and failure of a standby device. When any alarms are present, the Active Alarms screen shows descriptive details for each alarm:

- the source of the alarm (for example, `DEVICE_1`)
- the status of an input (`CONTACT CLOSED`)

If there are no active alarms, the screen displays the message:

NO ALARMS PRESENT

Viewing Additional Screens

There may be up to 40 records of alarm data.

- To view additional records, use the arrows ‾.
- To return to the previous screen, press the ESC key.

5.2 View Alarm Log

The Alarm Log contains up to 99 records of alarms that have occurred. Records are added to this log as alarms occur.

To view the Alarm Log:

- From the Main Menu, use the arrows to choose **View Status**, then press Enter.
- From the View Status Menu, use the arrows to choose **View Alarm Log**, then press Enter.

5.2.1 Alarm Log

The Alarm Log screen displays up to 99 records showing alarm data, including inputs and outputs in alarm status and failure of a standby device. If the log contains any alarm records, the Alarm Log screen displays details for each alarm:

- the source of the alarm (for example, DEVICE_1)
- the status of an input or output (CONTACT CLOSED) or a brief description of the problem (STNDBY DEVICE FAILED)
- the date and time the alarm occurred

Table 5.1 below shows conditions that the alarm log records for digital inputs and in the panel itself.

```
Main Menu
> VIEW STATUS
  SYSTEM AND CONTROL

  ↑↓=NEXT     ↵=SELECT
View Status Menu
  VIEW ACTIVE ALARMS  ↕
> VIEW ALARM LOG
  VIEW EVENT LOG
  VIEW INPUT STATUS
  VIEW OUTPUT STATUS
Alarm Log
> ALARM RECORD 99/99  ↕
  DEVICE_1 ALARM
  CONTACT CLOSED
  30-JUN-04 09:29:10
  NO STANDBY AVAILABLE

  29-JUN-04 10:45:00
  STNDBY DEVICE FAILED

  29-JUN-04 10:39:00
  NO RESTART AVAILABLE

  28-JUN-04 06:54:09
```
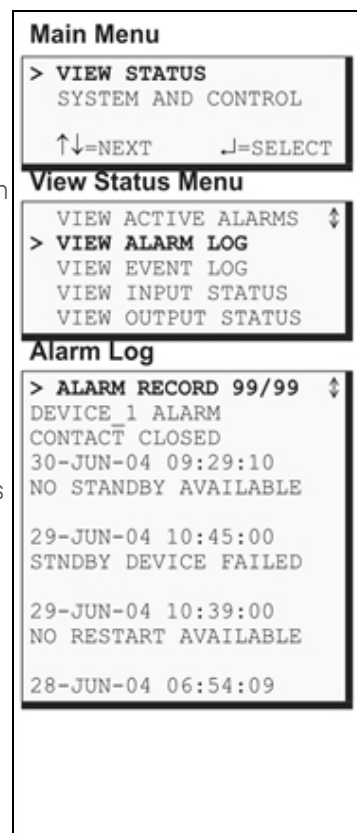
Table 5.1

Alarm log conditions

SOURCE	Digital Input	Panel
CONDITIONS RECORDED	ALARM NORMAL	LOSS OF POWER ALARM SILENCED ALARMS CLEARED STNDBY DEVICE FAILED NO STANDBY AVAILABLE NO RESTART AVAILABLE

If there are no alarms in the log, the screen displays the message:

NO ALARMS

Viewing Additional Screens

There may be up to 99 records of alarm data.

- To view additional records, use the arrows ⁻.
- To return to the previous screen, press the ESC key.

5.2.2 Backing Up the Alarm Log *(Service Terminal Interface only)*

The alarm log is stored as a file in the Liebert AC4; it can hold no more than 99 records. When the log is full, the oldest records are deleted from the end of the file as new alarm records are added at the beginning.

You may back up the alarm log file to a remote computer using the Service Terminal Interface, as described in Back Up Log Files (Service Terminal Interface only) on page 37.

To delete all records in the alarm log, see Clear Alarms & Logs.

5.3 View Event Log

In addition to alarms, the Liebert AC4 tracks other changes in the Event Log to assist users with verifying operational and troubleshooting problems. Events reflect changes in the status of an input that is defined as an event or the change of state of an output (i.e., manually forced ON or OFF). Other events may be informational, such as a user login. The Event Log contains up to 99 records of events, which are added as they occur.

To view the Event Log:

- From the Main Menu, use the arrows to choose **View Status**, then press Enter.
- From the View Status Menu, use the arrows to choose **View Event Log**, then press Enter.

5.3.1 Event Log

The Event Log screen displays up to 99 recent events. If the log contains any event records, the Event Log screen displays details for each event:

- the event source (for example, `DEVICE_1`)
- the status of an input or output (`CONTACT CLOSED`) or a brief description of the event (`USER LOGIN`)
- the date and time the event occurred

Table 5.2 on the next page shows conditions that the event log records for inputs and outputs and in the panel itself.

Table 5.2

Event log conditions

SOURCE	Digital Input	Digital Output	Panel

CONDITIONS RECORDED	EVENT
	NORMAL
		STARTED
		ON
		OFF
		HW FORCE ON
		AUTO
		FORCE ON
		FORCE OFF
		RESTORED
			ALARMS CLEARED
			ALARM SILENCED
			   NO STANDBY OUTPUTS AVAILABLE
			   NO STANDBY TESTING DEVICE AVAILABLE
			TIME & DATE SET
			USER LOGIN

If there are no records in the log, the screen displays the message:

    NO EVENTS

Viewing Additional Screens

There may be up to 99 records of event data.

- To view additional records, use the arrows ‾.
- To return to the previous screen, press the ESC key.

5.3.2 Backing Up the Event Log *(Service Terminal Interface only)*

The event log is stored as a file in the Liebert AC4; it can hold no more than 99 records. When the log is full, the oldest records are deleted from the end of the file as new event records are added at the beginning.

You may back up the event log file to a remote computer using the Service Terminal Interface, as described in Back Up Log Files (Service Terminal Interface only) on page 37.

To delete all records in the event log, see Clear Alarms & Logs.

5.4 View Input Status

The Input Status option allows you to view the current status of all four digital inputs.

To view the Input Status:

- From the Main Menu, use the arrows to choose View Status, then press Enter.
- From the View Status Menu, use the arrows to choose View Input Status, then press Enter.

5.4.1 Input Status

The Input Status screen displays the status of each digital input.

The following details appear for digital inputs:

- the name of the digital input (for example, DEVICE_1)
- the current status (ALARM)—values are updated constantly while being viewed

There are three possible states for a digital input, as shown in Table 5.3 below.

Table 5.3
Digital input states

State	Description
NORMAL	In normal state
ALARM	In alarm status (for an input configured as alarmable)
EVENT	An event has occurred (for an input configured as an event)

Viewing Additional Input Data

All input data may be viewed by scrolling beyond the four lines that appear on the LCD at one time:

- To view all inputs, use the arrows ⁻.
- To return to the previous screen, press the ESC key.
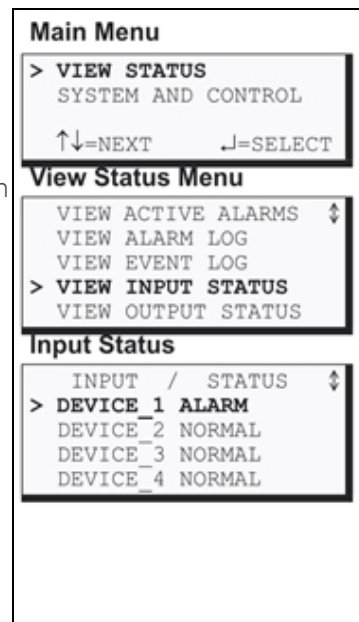
5.5 View Output Status

The Output Status option allows you to view the current status of all four outputs.

To view the Output Status:

- From the Main Menu, use the arrows to choose **View Status**, then press Enter.
- From the View Status Menu, use the arrows to choose **View Output Status**, then press Enter.

5.5.1 Output Status

The Output Status screen displays the status of each digital output.

The following details appear for digital outputs:

- the name of the output (for example, **DEVICE_1**)
- the current status (**ALARM**)—values are updated constantly while being viewed

There are eight possible states for a digital output, as shown in Table 5.4 below.

Table 5.4
Digital output states

State	Description
OPERATING	Device operating, or ON
STANDBY	Device in standby mode
ALARM	Device in alarm
FORCE ON	Device forced ON by operator
FORCE OFF	Device forced OFF by operator
HW FORCE ON	Device forced ON by hardware switch
PENDING	Pending delay timer
NOT USED	Device not used

Viewing Additional Output Data

All output data may be viewed by scrolling beyond the four lines that appear on the LCD at one time:

- To view all outputs, use the arrows ̄.
- To return to the previous screen, press the ESC key.
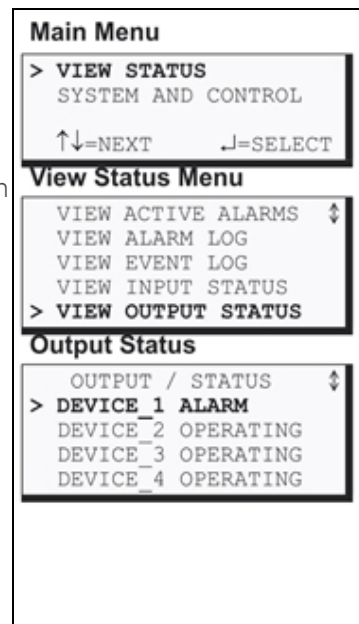
6 SILENCE ALARM & BACKUP LOG FILES *(SERVICE TERMINAL INTERFACE)*

This section describes two features that are available in the Service Terminal Interface:

- Silence Alarm
- Backup Log Files

6.1 Silence Alarm *(Service Terminal Interface)*

The Silence Alarm menu item allows you to silence the audible alarm and reset the Common Alarm Relay output if the common alarm is configured to reset with silence.

This menu item is available only through the Service Terminal Interface.

NOTE: An alarm may also be silenced by pressing any key on the LCD keypad on the front of the Liebert AC4. The LCD does not offer Silence Alarm as a menu item.

To silence the alarm remotely through the Service Terminal Interface:

- Connect to the Liebert AC4 either from a remote computer or through the RS232 port (see Connecting to the Service Terminal Interface on page 70).
- At the Main Menu, enter **6** (Silence Alarm).
- At the Silence Alarm menu, shown below, enter **1** to silence the audible alarm immediately. (To exit without silencing the alarm, enter **2** or press the Escape key.)

Silence Alarm (Service Terminal Interface Only)
SILENCE ALARM Silence alarm and reset common alarm relay if common alarm relay is configured to reset with silence alarm 1=SILENCE ALARM 2=RETURN TO MAIN MENU SELECT A NUMBER:1 >ALARM HAS BEEN SILENCED

- A confirmation message appears: "Alarm has been silenced."

6.2 Back Up Log Files *(Service Terminal Interface only)*

The Liebert AC4 maintains two types of logs—alarm and event—that may be backed up to a remote computer.

This feature is available only through the Service Terminal Interface.

To back up the alarm or event log:

1. Connect to the Liebert AC4 through the RS232 port (see Connecting to the Service Terminal Interface on page 70).
2. At the Main Menu, enter 7 (Backup Log Files).
3. At the Backup Log Files menu, as shown below, enter a number for the type of file you want to back up:
   - Enter 1 to back up the Alarm Log
   - Enter 2 to back up the Event Log

Backup Log Files - Event Log File (service Terminal Interface only)
BACKUP LOG FILES Backup alarm and event log files   1=BACKUP ALARM LOG FILE 2=BACKUP EVENT LOG FILE 3=RETURN TO MAIN MENU SELECT A NUMBER:2

4. At the prompt to initiate a backup of the selected log file, enter Y (Yes - begin) or N (No - cancel). The current setting appears in brackets—[N] in the following example.

```
>INITIATE A BACKUP OF EVENT LOG-YES(Y) OR NO(N)?

>[N]

>[
```

INSTRUCTIONS TO PERFORM BACKUP:

ASSUMES USING MICROSOFT WINDOWS HYPERTERMINAL APPLICATION

- SELECT TRANSFER FROM THE TOOLBAR

- SELECT RECEIVE FILE

- ENTER FOLDER WHERE FILE IS TO BE RECEIVED

- SELECT XMODEM FROM THE PROTOCOL BOX

- SELECT RECEIVE BUTTON AND ENTER FILE NAME, E.G., EVENT.LOG

NOTE: The following instructions refer to the Microsoft® Windows® HyperTerminal program. These steps may vary for other communications programs.

5. At the top of the HyperTerminal window, shown below, click on Transfer, then on Receive File.
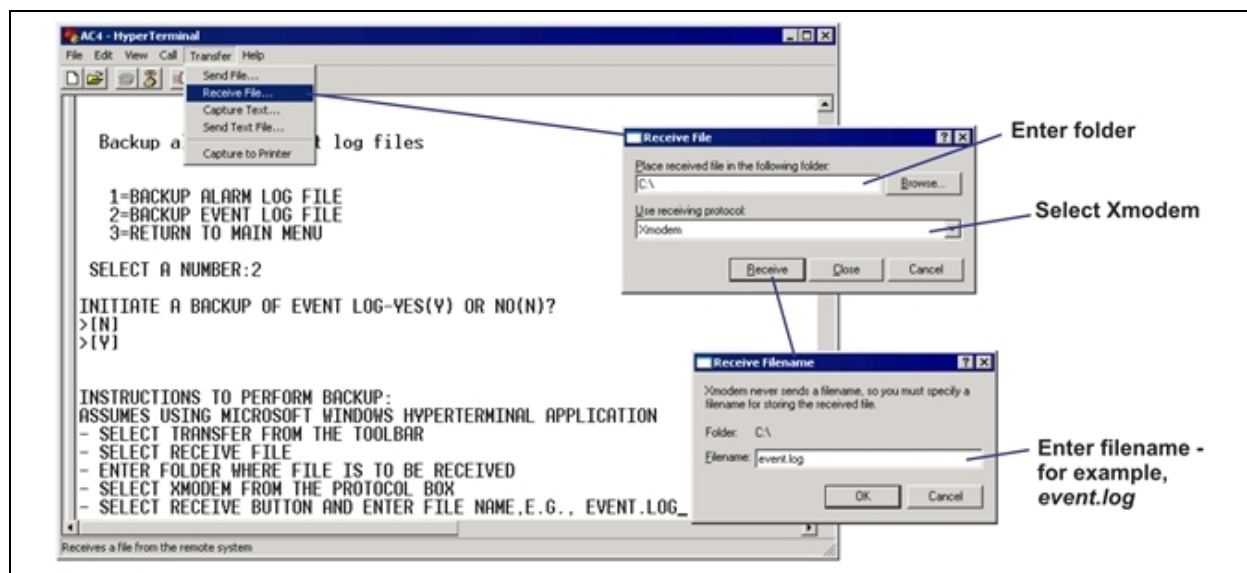
6. In the Receive File window, as shown above:

- In the Place Received File in the Following Folder box, enter the name and location of the folder where the configuration file should be placed—for example, **C:\downloads**—or click on the **Browse** button to locate the folder.
- In the Use Receiving Protocol box, select **Xmodem** from the drop-down list.
- Click on the **Receive** button. (To close the window without backing up the file, click on **Close** or **Cancel**.)

7. In the Receive Filename window, enter a name for the log file—**Event.log** in the example above.

8. When the transfer is complete, a confirmation message appears in the Service Terminal Interface window: "Backup Successful."

```
INSTRUCTIONS TO PERFORM BACKUP:

ASSUMES USING MICROSOFT WINDOWS HYPERTERMINAL APPLICATION

- SELECT TRANSFER FROM THE TOOLBAR

- SELECT RECEIVE FILE

- ENTER FOLDER WHERE FILE IS TO BE RECEIVED

- SELECT XMODEM FROM THE PROTOCOL BOX

- SELECT RECEIVE BUTTON AND ENTER FILE NAME, E.G., EVENT.LOG


>BACKUP SUCCESSFUL
```

9. The display returns to the Backup Log Files menu. You may choose another type of log file to back up (return to **Step**3. on the previous page) or press **3** (or Escape) to return to the Main Menu.

After backing up a log file, you may want to delete all records in the Liebert AC4 log of that type. See Clear Alarms & Logs for details.

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7 SYSTEM AND CONTROL OPTIONS

NOTE: For ease of understanding, this section uses the LCD interface to illustrate most instructions, except for features that are available only through the Service Terminal Interface. All Service Terminal Interface screens appear in Service Terminal Interface on page 69.

The System and Control menu allows you to configure the Liebert AC4—setting up inputs and outputs and system features such as date and time. This menu also provides a vehicle for manually changing the state of an output to ON or OFF, clearing active alarms and deleting records from the Liebert AC4's alarm and event logs.

The arrows are used to scroll through the menu. The Enter key is used to select the menu item and enter new information. Table 7.1 below shows characters that may be entered in labels and values.

Table 7.1

Valid characters for data entry

Alphanumeric	Special characters
A-Z, 0-9	space [ ] ^ _ ! " # $ % & ( ) * + - / , . ; < = > @

The System and Control options require a password to prevent unauthorized users from making changes to the system.

This section presents step-by-step instructions for each of the following:

- **Login** - enter the password
- **Setup System** - configure inputs, outputs, system features
- **Override Output** - manually override automatic control of outputs; release the override
- **Clear Alarms & Logs** - clear active alarms; delete records from the alarm and event logs

NOTE: If an alarm occurs while a user is logged on, the LCD backlight will flash and the audible alarm will sound. To obtain specific information about the alarm, you must access the Active Alarm screen (see View Active Alarms on page 31) or the Alarm Log (see View Alarm Log on page 32).

7.1 Login

Users must enter a password to access any of the system and control options. The password consists of four characters (see Table 7.1 above for valid characters). (To set up or change the password, see Change Password on page 53.) The default password is AAAA.

To log in:

- From the Main Menu, use the arrows to choose **System and Control**, then press Enter, as shown at right.
- Use the arrows to choose **System and Control**, and press Enter. The Login menu appears.
- To enter your password:
    - Use the arrows to choose a character.
    - Press Enter to advance to the next character position.
    - When finished, press Enter again.

Main Menu
```
    VIEW  STATUS
 >  SYSTEM  AND  CONTROL

  ↑↓=NEXT       ↵=SELECT
```

Login
```
       LOGIN

        AAAA
↑↓=SELECT  ↵=NEXT/END
```

System & Control Menu
```
 >  SETUP  SYSTEM
    OVERRIDE  OUTPUT
    CLEAR  ALARMS  &  LOGS
  ↑↓=NEXT    ↵=SELECT
```
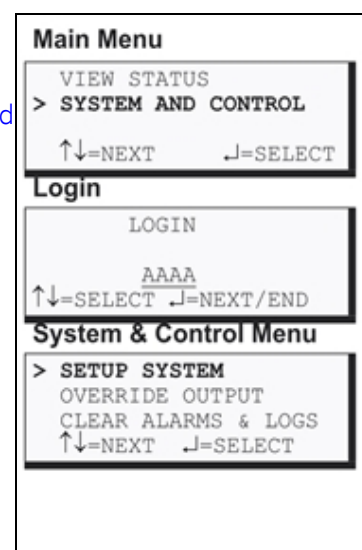
The System and Control Menu appears next, with these options that are described in the following sections:

- Setup System (Setup System - Overview on page 44 - Setup System - Setup System Info on page 52)
- Override Output (Override Output on page 64)
- Clear Alarms & Logs (

    If, after logging in, you press the ESC key to return to a previous screen that is not password-protected, you must log in again, including entering your password if you wish to access password-protected functions.

- Clear Alarms & Logs)

Figure 7.1 on the facing page shows the main options available from the System & Control menu.

Figure 7.1 Menu overview - System and Control menu
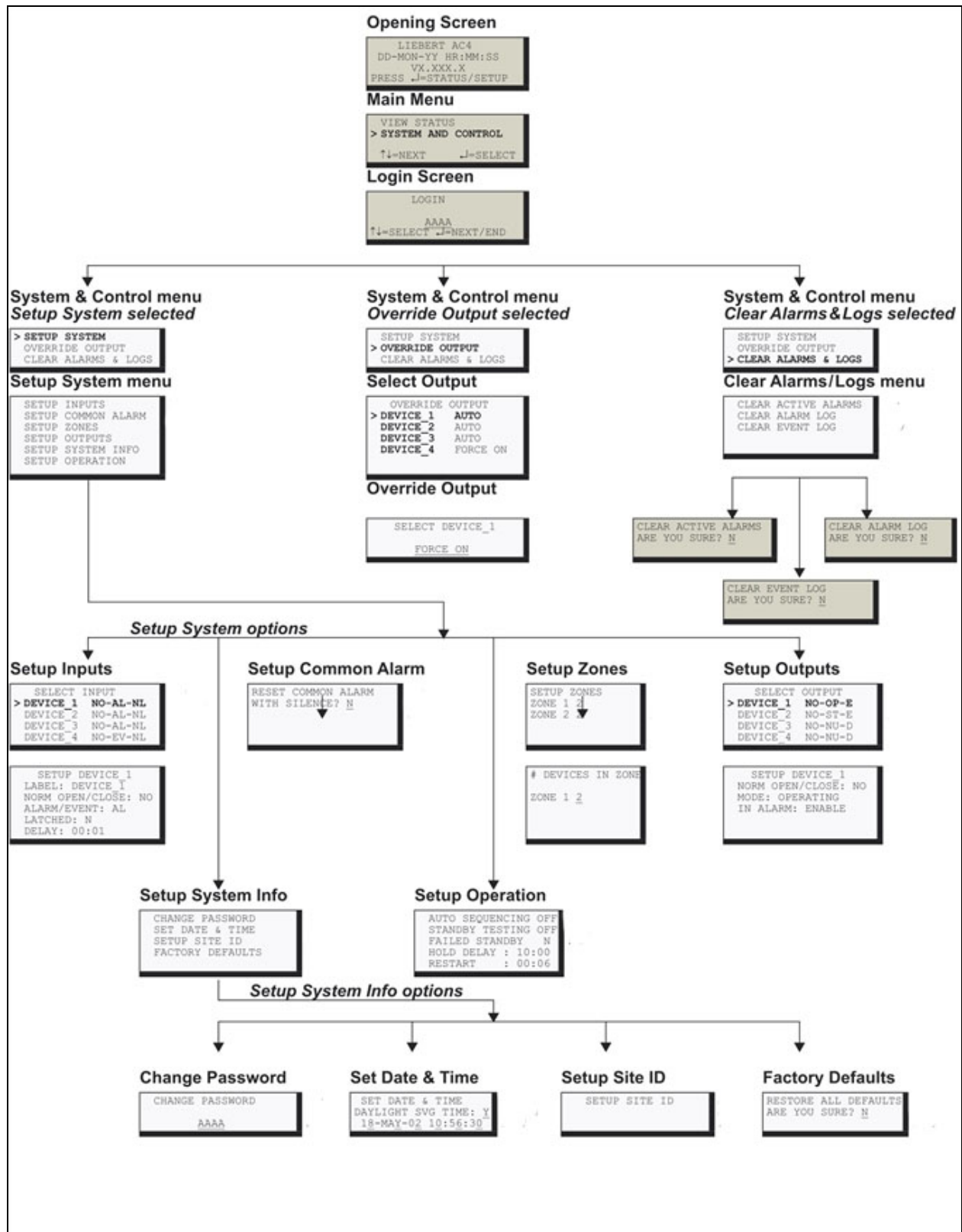
7.2 Setup System - Overview

The **Setup System** screen displays six options that allow you to configure input and output devices, the common alarm, and a variety of system details, such as login password and system date and time:

- Setup Inputs
- Setup Common Alarm
- Setup Zones
- Setup Outputs
- Setup System Info
- Setup Operation

7.3 Setup System - Setup Inputs

The Liebert AC4 has four digital input points that may be configured individually. These inputs may have a wide variety of Liebert or other manufacturers' equipment connected.

To configure a digital input:

Log In and Choose Setup System

- From the Main Menu, use the arrows to choose **System and Control**, then press Enter (see Login on page 41 for help).
- Enter your password at the Login screen.
- From the System and Control Menu, use the arrows to choose **Setup System**, then press Enter.

Select a Digital Input to Configure

- From the Setup System Menu, shown at right, use the arrows to choose **Setup Inputs** and press Enter.
- From the Select Input Menu, choose an input—for example, **Device_1**—and press Enter.

Table 7.2 on the facing page shows the digital input features you may change, along with the default settings: you may change the name of the input, define it as normally open or closed, and specify it as alarmable or as an event.

- Alarmable inputs may be defined as either Unlatched or Latched.
- Event status allows you to monitor a digital input's state—and use a change in state to initiate an action through an output, if desired—without triggering an alarm. Events are always Unlatched.
- You may also specify a time delay before the Liebert AC4 responds to an alarm or event.

Use the steps following Table 7.2 on the facing page to change the default settings for any digital input.
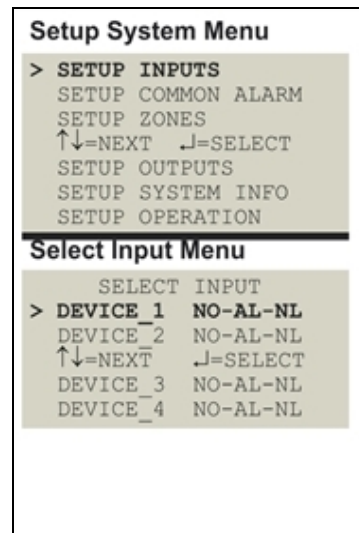
Table 7.2

Default settings - digital inputs

Feature	Default	Other Options
LABEL	**DEVICE_1**	Any name (up to eight characters)
NORM OPEN/CLOSE	NO (Normally open)	NC (Normally closed)
ALARM/EVENT	AL (Alarmable)	EV (Event)
LATCHED	L (Latched) / Y (Yes)*	NL (Unlatched) / N (No)*
DELAY	00:01 (1 second)	Any time (in minutes and seconds) from 00:00 to 99:59

		NOTE: Different abbreviations are used to designate a digital input as Latched or Unlatched as shown below.	
		Settings - Select Input Menu (see Setup System - Setup Inputs on the previous page)	**When configuring an input** (see Set Up Alarmable Inputs in Latched or Unlatched Mode on page 47)
	Unlatched	NL (Not Latched)	N (No, not latched)
	Latched	L (Latched)	Y (Yes, latched)

7.3.1 Change Label (Name of Input)

Each input has a default label (Device_1, Device_2, etc.) that you may change to a more descriptive name for ease in recognizing alarms and events associated with the input. The label may consist of up to eight characters (see Table 7.1 on page 41 for valid characters).

The device name assigned through this menu is also displayed for the corresponding output.

Setup Inputs Menu

```
      SETUP DEVICE_1
> LABEL: DEVICE_1
  NORM OPEN/CLOSE: NO
  ALARM/EVENT: AL
  ↑↓=NEXT  ↵=SELECT
  LATCHED: N
  DELAY: 00:01
```

Change Label

```
      CHANGE LABEL

       DEVICE_1
↑↓=SELECT ↵=NEXT/END
```
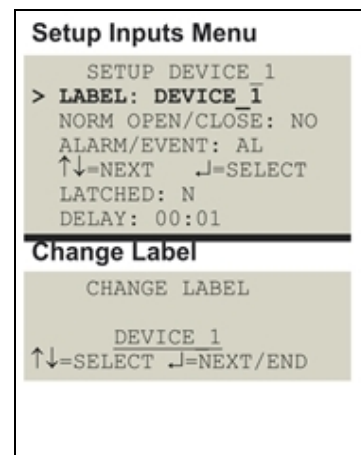
Table 7.3

Input and output labels

Label	Applies to:	
Device_1	Input 1	Output 1
Device_2	Input 2	Output 2
Device_3	Input 3	Output 3
Device_3	Input 3	Output 3

If the input label is changed, the output will change also.

- From the Setup Inputs Menu, choose **Label** for the selected input—**Label: Device_1** in the example at right—and press Enter.
- To change the input's label, which may consist of up to eight characters:

- Use the arrows to choose a character.
- Press Enter to advance to the next character position.
- When finished, press Enter again.

7.3.2 Define Input as Normally Open or Normally Closed

Each input may be set up as Normally Open (NO) or Normally Closed (NC). The default setting for all input points is NO (Normally Open).

If you require an input to be a supervised point, define the input as Normally Closed (NC).

- From the Setup Inputs Menu, choose **Norm Open/Close**, as shown at right, and press Enter.
- To change the normal state for this input, use the arrows to choose **NO** (Normally Open) or **NC** (Normally Closed), then press Enter.

Setup Inputs Menu

```
     SETUP DEVICE_1
     LABEL: DEVICE_1
>  NORM OPEN/CLOSE: NO
     ALARM/EVENT: AL
     ↑↓=NEXT    ↵=SELECT
     LATCHED: N
     DELAY: 00:01
```

Normally Open / Closed

```
     IS INPUT NORMALLY
     OPEN OR CLOSED? NO

     ↑↓=NO/NC       ↵=END
```
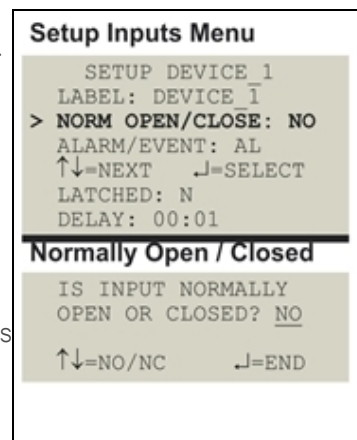
7.3.3 Define Input as Alarmable or Event

Each input may be defined as Alarmable (AL) or as an Event (EV).

- For an input defined as **alarmable**, a change in the status of the device triggers these actions: the LCD flashes, the audible horn sounds, a record is entered in the Alarm Log and the common alarm relay is energized.
- For an input defined as an **event**, a change in the status of the device is recorded in the Event Log.

Setup Inputs Menu

```
     SETUP DEVICE_1
     LABEL: DEVICE_1
     NORM OPEN/CLOSE: NO
>  ALARM/EVENT: AL
     ↑↓=NEXT    ↵=SELECT
     LATCHED: N
     DELAY: 00:01
```

Alarmable / Event

```
     IS INPUT AN ALARM
     OR EVENT? AL

     ↑↓=AL/EV       ↵=END
```

For both types (alarmable and event), user setup determines output control—whether the device that changed status is disabled or kept in operating mode and whether a standby device is set to operate.

By default, all inputs are set up as AL (Alarmable).

- From the Setup Inputs Menu, choose **Alarm/Event**, as shown at right, and press Enter.
- To change the type of input, use the arrows to choose **AL** (Alarmable) or **EV** (Event), then press Enter.

7.3.4 Set Up Alarmable Inputs in Latched or Unlatched Mode

Alarmable input points may be set up in Latched mode (Y), which requires the user to clear the Liebert AC4 alarms after an alarm has occurred, or Unlatched mode (N), in which alarms will automatically clear after a return-to-normal state. The default setting for alarmable inputs is Y (Latched). Any input defined as an event is automatically Unlatched.

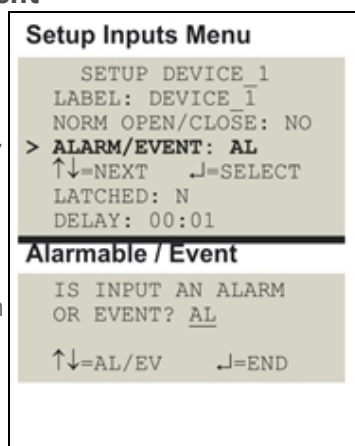An input defined as Latched does not reset automatically after an alarm. It will remain in the *triggered* position even after the monitored device returns to normal. After an alarm, the user must manually reset Latched inputs, as described in Clear Active Alarms on page 66. This also means that any outputs linked to a Latched digital input will *remain* triggered until the input is manually reset.

An input defined as Unlatched will automatically track the status of the monitored device. No action by the user is required.

- From the Setup Inputs Menu, choose **Latched**, as shown above right, and press Enter.
- To change this feature, use the arrows to choose **Y** (Yes - Latched) or **N** (No - Unlatched), then press Enter.

NOTE: Only alarmable input points may be set up as Latched. If you attempt to set up an event as Latched, the message shown at right appears. Press the ESC key to return to the previous screen to continue configuring the digital input.

The only way to reset latched alarms is by clearing active alarms. This step is required to return latched points to their normal state. For details, see Clear Active Alarms on page 66.
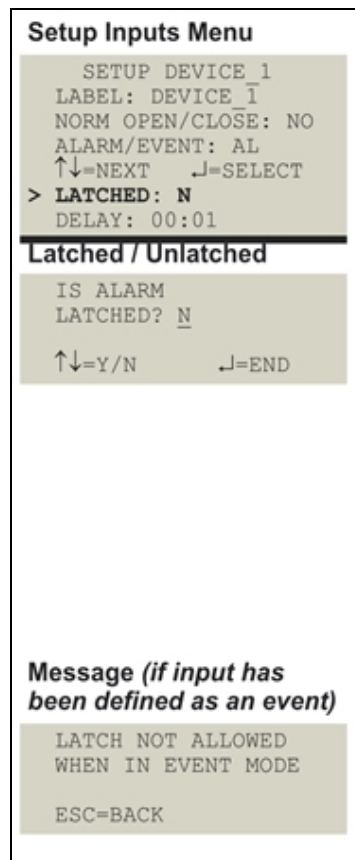
7.3.5 Set Up Delay Time

Each input may be set up with a specified time delay between the occurrence of an alarm or event—a monitored device changes state—and any response by the Liebert AC4. This feature can prevent needless responses to transient conditions.

This delay is the amount of time that must elapse before the Liebert AC4 acknowledges the change of state in the monitored device and takes any further action, such as dialing configured pagers. The default time delay is 1 second (displayed as 00 MIN : 01 SEC).

The time delay applies only when a monitored device changes *from* its normal state—for example, the Liebert AC4 detects a closed contact that is defined as Normally Open.

When the monitored device *returns* to its normal state, the Liebert AC4 acknowledges the change of state after the delay timer ends its countdown.

- From the Setup Inputs Menu, choose **Delay**, as shown at right, and press Enter.
- To change the time delay in minutes and seconds (in the range of 00:00 to 99:59):
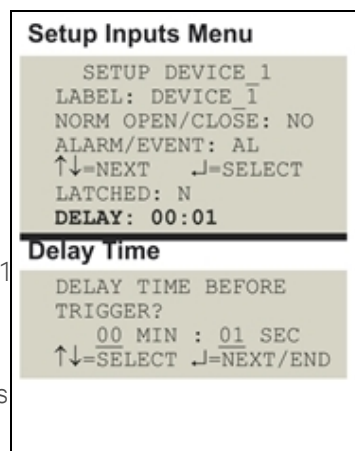
- For minutes (MIN), press and hold one of the arrow keys scroll through the numbers 00-99.
- Press Enter to advance to seconds (SEC).
- For seconds (SEC), press and hold one of the arrow keys scroll through the numbers 00-59.
- When finished, press Enter again.

7.4 Setup System - Setup Common Alarm

The audible alarm sounds after the Liebert AC4 detects an alarm condition in any input that has been defined as alarmable. Once the alarm is silenced, there are two options:

- By default, the common alarm remains energized until all input alarms are cleared.
- You may change this setting to de-energize the common alarm automatically once the alarm is silenced.

You might want to reset the common alarm with silence if an external alarm—for example, a horn—is connected to the common alarm output contacts.

You might not want to reset the common alarm contacts (let contacts reflect/track alarms) and simply silence the audible horn.

To change the common alarm setting:

Log In and Choose Setup System

- From the Main Menu, use the arrows to choose **System and Control**, then press Enter (see Login on page 41 for help).
- Enter your password at the Login screen.
- From the System and Control Menu, use the arrows to choose **Setup System**, then press Enter.

Change to Reset (Y) or Not Reset (N)

- From the Setup System Menu, shown at right, use the arrows to choose **Setup Common Alarm** and press Enter.
- By default, the common alarm is set up not to reset automatically when the alarm is silenced (N). To change this setting, use the arrows to choose **Y** (Yes - reset with silence) or **N** (No - not reset), then press Enter.

```
Setup System Menu
    SETUP  INPUTS
>   SETUP  COMMON  ALARM
    SETUP  ZONES
    ↑↓=NEXT   ↵=SELECT
    SETUP  OUTPUTS
    SETUP  SYSTEM  INFO
    SETUP  OPERATION
Reset Common Alarm
    RESET  COMMON  ALARM
    WITH  SILENCE?  N

    ↑↓=Y/N        ↵=END
```

7.5 Setup System - Setup Zones

The Liebert AC4 has two zones that may be used to define different areas—rooms or sections of a room. The Liebert AC4 effectively performs as two separate units, controlling each zone separately, for examply, using a different rotation sequence for devices in each zone.

Each zone may have two to four outputs associated with it. By default, Zone 1 has four associated outputs and Zone 2 has none.
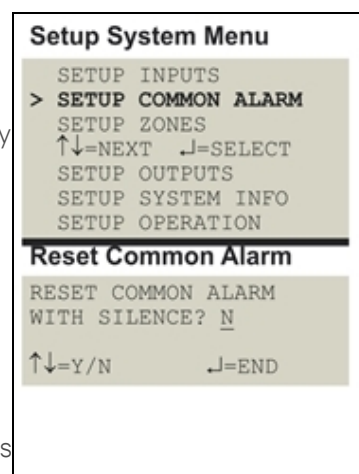
To set up zones:

Log In and Choose Setup System

- From the Main Menu, use the arrows to choose **System and Control**, then press Enter (see Login on page 41 for help).
- Enter your password at the Login screen.
- From the System and Control Menu, use the arrows to choose **Setup System**, then press Enter.

Setup System Menu
```
    SETUP  INPUTS
    SETUP  COMMON ALARM
>   SETUP  ZONES
    ↑↓=NEXT   ↵=SELECT
    SETUP  OUTPUTS
    SETUP  SYSTEM INFO
    SETUP  OPERATION
```
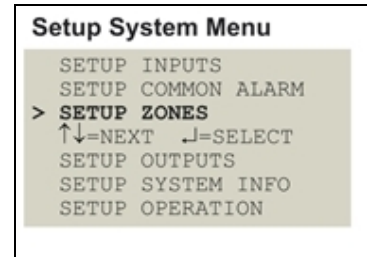
Select Setup Zones

- From the Setup System Menu, shown at right, use the arrows to choose **Setup Zones** and press Enter.

7.5.1 Set Up a Zone

- From the Setup Zones Menu, choose a zone—for example, **Zone 1**—and press Enter.
- On the Number of Devices screen, Use the arrows to select the number of outputs for this zone, then press Enter. The example at right shows four outputs in **Zone 1**.
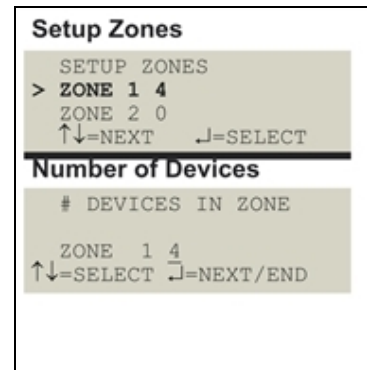
Table 7.4 below shows the default number of outputs for each zone.

Setup Zones
```
    SETUP  ZONES
>   ZONE  1 4
    ZONE  2 0
    ↑↓=NEXT    ↵=SELECT
```
Number of Devices
```
    # DEVICES  IN  ZONE

    ZONE   1 4
    ↑↓=SELECT ↵=NEXT/END
```

Table 7.4
Default zones

Zone	Default number of outputs
Zone 1	4
Zone 2	0

NOTE: Each zone that is used must have at least two outputs, and the total for the two zones cannot exceed four.

A message appears if you enter too few or too many devices, as shown at right. Press Escape to return to the Setup Zones menu.

Table 7.5 on the next page shows the possible combinations of outputs for each zone.
For example, if **Zone 1** has four outputs, then **Zone 2** may not be used (0 outputs).

Message (if too few devices entered)
```
    MINIMUM OF 2 DEVICES
    ESC BACK
```

Message (if too many devices entered)
```
    TOO MANY DEVICES
    ESC BACK
```
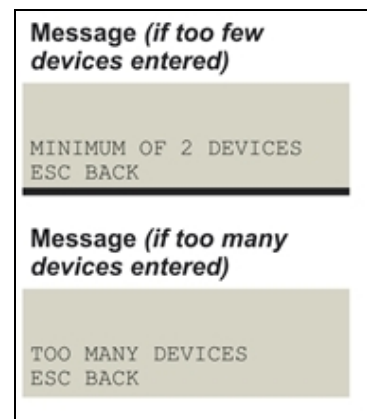
Table 7.5

Possible combinations - outputs per zone

If Zone 1 has:	Zone 2 must have:
4 or 3 outputs	0 (not used)
2 outputs	0 (not used) or 2 outputs
0 (not used)	2 or 3 or 4 outputs

7.6 Setup System - Setup Outputs

The Liebert AC4 has four outputs that may be configured individually. These outputs correspond to the four numbered inputs. For example, Device_1 is the unit connected to Input 1 and to Output 1.

The output name is the same as the input name, as described in Change Label (Name of Input) on page 45.

To configure an output:

Log In and Choose Setup System

- From the Main Menu, use the arrows to choose **System and Control**, then press Enter (see Login on page 41 for help).
- Enter your password at the Login screen.
- From the System and Control Menu, use the arrows to choose **Setup System**, then press Enter.

Select an Output to Configure

- From the Setup System Menu, shown at right, use the arrows to choose **Setup Outputs** and press Enter.
- From the Select Output Menu, choose an output—for example, **Device_1**—and press Enter.


```
Setup System Menu
   SETUP  INPUTS
   SETUP  COMMON  ALARM
   SETUP  ZONES
   ↑↓=NEXT   ↵=SELECT
 > SETUP  OUTPUTS
   SETUP  SYSTEM  INFO
   SETUP  OPERATION
Select Output Menu
   SELECT  OUTPUT
 > DEVICE_1   NO-OP-E
   DEVICE_2   NO-ST-E
   ↑↓=NEXT    ↵=SELECT
   DEVICE_3   NO-NU-D
   DEVICE_4   NO-NU-D
```
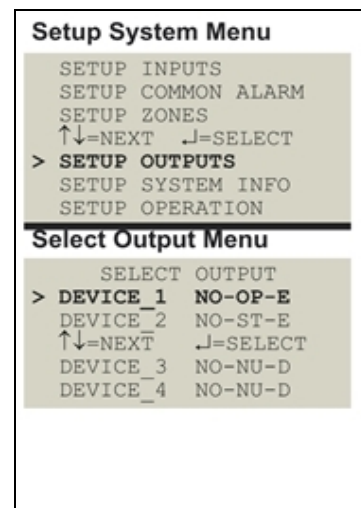
Table 7.6 below shows digital output features and their default settings: you may define an output as normally open or normally closed, set the device's mode—operating, standby or not used—and specify whether to disable the device when an alarm occurs.

Use the steps following Table 7.6 below to change the default settings for any digital output.

Table 7.6

Default settings - digital outputs

Feature	Default		Other Options
NORM OPEN/CLOSE	NO (Normally open)		NC (Normally closed)
MODE	Outputs 1-3: Output 4:	OP (Operating) ST (Standby)	OP (Operating) ST (Standby) NU (Not Used)
IN ALARM	E (Enable)		D (Disable)

7.6.1 Define Output as Normally Open or Normally Closed

Each output may be set up as Normally Open (NO) or Normally Closed (NC). The default setting for all output points is NO (Normally Open).

```
Setup Outputs Menu
  SETUP DEVICE_1
> NORM OPEN/CLOSE: NO
  MODE: OPERATING
  ↑↓=NEXT    ↵=SELECT
  IN ALARM: ENABLE
Change State
SET TO NORMAL OPEN
OR NORMAL CLOSE? NO

↑↓=NO/NC       ↵=END
```

- From the Setup Outputs Menu, shown at right, use the arrows to choose **Norm Open/Close** and press Enter.
- To change the normal state for this output, use the arrows to choose the state:
  - **NO** (Normally Open)
  - **NC** (Normally Closed)
- Press Enter.
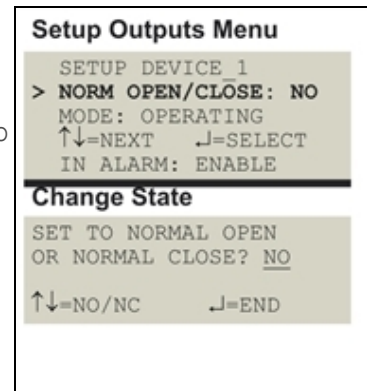
7.6.2 Define Operating or Standby Mode

Each output may be defined as Operating (OP), Standby (ST), or Not Used (NU). This setting takes precedence over any setting in the override menu (see Override Output on page 64).

```
Setup Outputs Menu
  SETUP DEVICE_1
  NORM OPEN/CLOSE: NO
> MODE: OPERATING
  ↑↓=NEXT    ↵=SELECT
  IN ALARM: ENABLE
Set Mode

SET MODE: OP

↑↓=OP/ST/NU   ↵=EDIT
```

Default settings are:

- Outputs 1, 2 and 3 are in Operating (OP) mode
- Output 4 is in Standby (ST) mode

To change the mode:

- From the Setup Outputs Menu, shown at right, use the arrows to choose **Mode** for the selected output and press Enter.
- To change the output's mode, use the arrows to choose one of these options:
  - **OP** (Operating)
  - **ST** (Standby)
  - **NU** (Not Used)
- Press Enter.
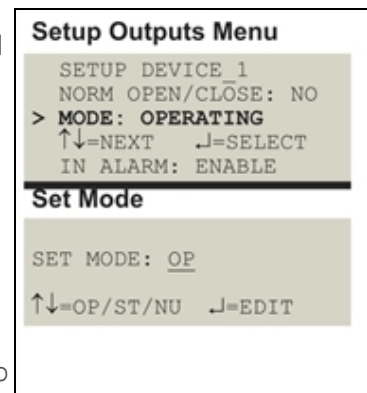
7.6.3 Enable or Disable an Output Device in Alarm Status

You may choose whether to Enable or Disable an output when the connected device is in alarm status. The default setting for all output points is Enabled.

```
Setup Outputs Menu
  SETUP DEVICE_1
  NORM OPEN/CLOSE: NO
  MODE: OPERATING
  ↑↓=NEXT    ↵=SELECT
> IN ALARM: ENABLE
Change State in Alarm
STATE OF DEVICE
IN ALARM: DISABLE

↑↓=E/D   ↵=EDIT
```

- From the Setup Outputs Menu, choose **In Alarm**, as shown at right, and press Enter.
- To make a change, use the arrows to choose **E** (Enable) or **D** (Disable) to determine what happens when an alarm is detected in the device.
- Press Enter.
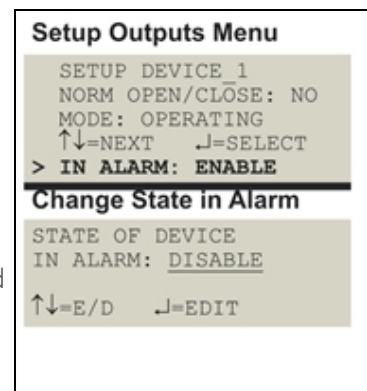
7.6.4 Configure Output for Loss of Power ("Fail-Safe")

Each output has an associated jumper that can help prevent undesired effects when the controller board loses power. For example, without the proper fail-safe jumper setting, a loss of power might close a switch that is Normally Open (NO)—perhaps shutting off an environmental unit or a fan or closing a valve.

This fail-safe jumper setting is unrelated to configuring an output as Normally Open (NO) or Normally Closed (NC), as described in Define Output as Normally Open or Normally Closed on the previous page.

To configure a digital output jumper for a loss of power:

- Set the jumper in the "OFF" position *(factory default)* to make the output Normally Open (NO).
- Set the jumper in the "ON" position to make the output Normally Closed (NC).

For more information, see Setting the Digital Output Jumpers on page 23.

7.7 Setup System - Setup System Info

The Setup System Info options allow users to:

- **Change Password**—used for access to system setup functions
- **Set Date & Time/Automatic Daylight Saving Time**—used to set the Liebert AC4 date and time and to enable automatic time change for Daylight Saving Time
- **Setup Site ID**—the Liebert AC4's location to differentiate among sites if more than one Liebert AC4 is in use
- **Backup and Upload Configuration File** *(Service Terminal Interface only)*—permits the user to copy the Liebert AC4's configuration settings and to upload the file to the Liebert AC4
- **Factory Defaults**—returns the Liebert AC4 to its factory settings
- **Perform Firmware Update** *(Service Terminal Interface only)*—changes the Liebert AC4's firmware to newest version

To change any Setup System Info features:

Log In and Choose Setup System

- From the Main Menu, use the arrows to choose **System and Control**, then press Enter (see Login on page 41 for help).
- Enter your password at the Login screen.
- From the System and Control Menu, use the arrows to choose **Setup System**, then press Enter.
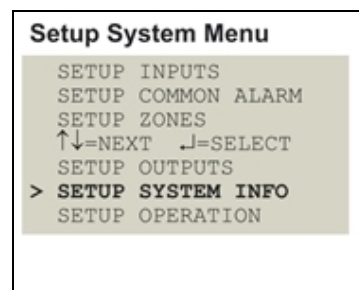
Select Setup System Info

- From the Setup System Menu, shown at right, use the arrows to choose **Setup System Info** and press Enter.
- Use the following steps to access any of the Setup System Info options.

```
Setup System Menu

  SETUP INPUTS
  SETUP COMMON ALARM
  SETUP ZONES
  ↑↓=NEXT  ↵=SELECT
  SETUP OUTPUTS
> SETUP SYSTEM INFO
  SETUP OPERATION
```

7.7.1 Change Password

A password is required to access the Liebert AC4's system and control options, as described in Login on page 41. The password consists of four characters (see Table 7.1 on page 41 for valid characters). The default password is AAAA.

Change the Password

To change the password:

- From the Setup System Info Menu, use the arrows to choose Change Password, then press Enter.
- To change your password:
  - Use the arrows to choose a character.
  - Press Enter to advance to the next character position.
  - When finished, press Enter again.
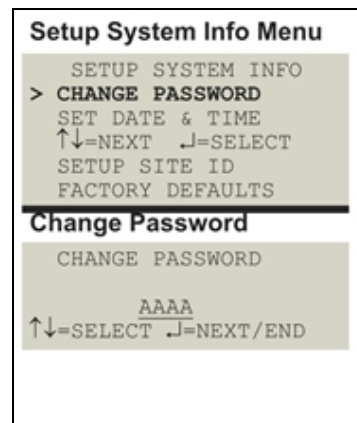
Reset Password to the Factory Default ("AAAA")

To reset the password to the factory default of AAAA:

- Locate DIP switch 1 on the unit's circuit board (see Controller Board Overview on page 9) and move all switches to the OFF position (down).
- Move the second switch to the ON position, then to the OFF position.
- Move the seventh switch to the ON position, then to the OFF position.
- Move the eighth switch to the ON position, then to the OFF position.

The password should now be AAAA.

7.7.2 Set Date & Time/Automatic Daylight Saving Time

The Liebert AC4 has a built-in real-time clock that is backed up by an encapsulated lithium battery and set up to adjust automatically for daylight saving time twice a year. The Setup System Info menu allows you to set the current date or time or change the automatic adjustment at any time.

To change the daylight saving time setting or to set the current date or time:

- From the Setup System Info Menu, use the arrows to choose Set Date & Time, then press Enter.
- To change the daylight saving time setting:
  - To the right of Daylight Svg Time, use the arrows to choose Y (Yes - automatically adjust for daylight saving time) or N (No), then press Enter.
- The format of the date and time is DD-MMM-YY HR:MM:SS. To set the current date or time:
  - Press Enter to advance to the next character position you want to change.
  - Use the arrows to choose from available entries:
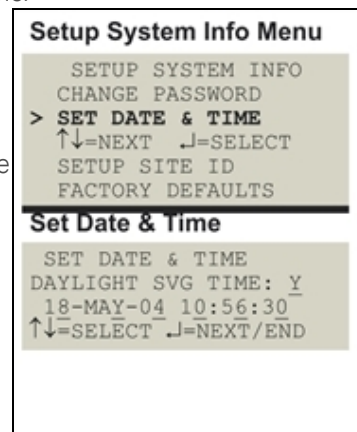
Date	Day (DD)	0-31
	Month (MMM)	JAN-DEC
	Year (YY)	00-99
Time	Hour (HR)	00-23
	Minutes (MM)	00-59
	Seconds (SS)	00-59

- Press Enter to advance to the next character position.
- When finished, press Enter again.

7.7.3 Setup Site ID

You may enter a Site ID to identify the Liebert AC4's location, using a name that may consist of up to 40 characters (see Table 7.1 on page 41 for valid characters). The Site ID will appear with each alarm.

To enter or change the Site ID:

- From the Setup System Info Menu, use the arrows to choose Setup Site ID, then press Enter.
- To enter a Site ID:
  - Use the arrows to choose a character.
  - Press Enter to advance to the next character position.
  - If the Site ID is less than 40 characters, you may enter an underscore (_) character to indicate the end of the name.
  - When finished, press Enter again.
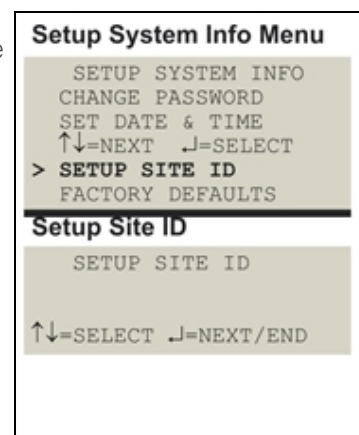
7.7.4 Backup and Upload Configuration File *(Service Terminal Interface only)*

This operation may be performed only through the Service Terminal Interface. It permits the user to make a copy of the Liebert AC4 configuration settings and save it as a file on the computer connected through the RS232 port. Should the need arise, the user can upload the configuration file from the computer to the Liebert AC4, instead of re-entering the settings manually.

To access these options:

1. Connect to the Liebert AC4 either from a remote computer or through the RS232 port (see Connecting to the Service Terminal Interface on page 70).
2. At the Main Menu, enter 0 (zero—Setup System-Login Required).
3. At the Login Menu, enter your password.
4. At the Setup Menu, enter 5 (Setup System Information).
5. At the Setup System Information Menu, enter 4 (Backup & Upload Configuration File). The Backup & Upload Configuration File menu appears, shown below:

Backup & Upload Configuration File - Backup (Service Terminal interface only)

```
  BACKUP AND UPLOAD CONFIGURATION FILE


Backup from panel saves panel configurations
Upload to panel restores panel configurations



 Select to backup or upload file



1=BACKUP CONFIGURATION FILE
2=UPLOAD CONFIGURATION FILE
3=RETURN TO SETUP SYSTEM INFO MENU
4=RETURN TO SETUP MENU
5=RETURN TO MAIN MENU

SELECT A NUMBER:1
```

6. Enter **1** to back up the configuration file from the Liebert AC4 to the computer and proceed to **Step** 1. below,

> *OR*

7. Enter **2** to upload the configuration file from the computer to the Liebert AC4 and proceed to **Step** 1. on the next page.

NOTE: This will replace the current configuration settings in the Liebert AC4 with the most recent backup.

To Back Up the Configuration File:

1. At the prompt to Initiate a Backup of Configuration File, enter **Y** (Yes - begin) or **N** (No - cancel). The current setting appears in brackets—[N] in the following example.

```
>INITIATE A BACKUP OF CONFIGURATION FILE-YES(Y) OR NO(N)?
>[N]
>[
```

2.

NOTE: The following instructions refer to the Microsoft Windows HyperTerminal program. These steps may vary for other communications programs.

3. At the top of the HyperTerminal window, shown below, click on **Transfer**, then on **Receive File**.
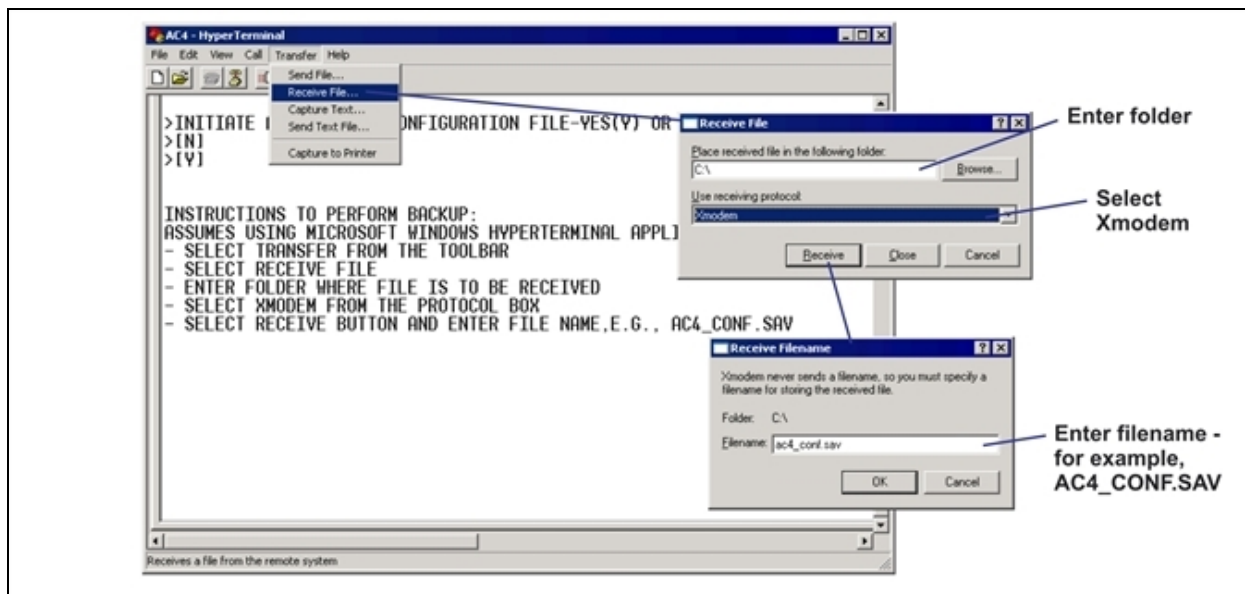
4. In the Receive File window, as shown above:

   - In the Place Received File in the Following Folder box, enter the name and location of the folder where the configuration file should be placed—for example, **C:\downloads**—or click on the **Browse** button to locate the folder.

   - In the Use Receiving Protocol box, select **Xmodem** from the drop-down list.

   - Click on the **Receive** button. (To close the window without backing up the file, click on **Close** or **Cancel**.)

5. In the Receive Filename window, enter a name for the file—for example, AC4_CONF.SAV.

6. When the transfer is complete, a confirmation message appears in the Service Terminal Interface window: "Backup Successful."

To Upload the Configuration File:

1. At the prompt to Initiate an Upload of Configuration File, enter **Y** (Yes - begin) or **N** (No - cancel). The current setting appears in brackets—[N] in the following example.

   ```
   >INITIATE AN UPLOAD OF CONFIGURATION FILE-YES(Y) OR NO(N)?

   >[N]

   >[
   ```

2.

NOTE: The following instructions refer to the Microsoft Windows HyperTerminal program. These steps may vary for other communications programs.

3. At the top of the HyperTerminal window, shown below, click on **Transfer**, then on **Send File**.
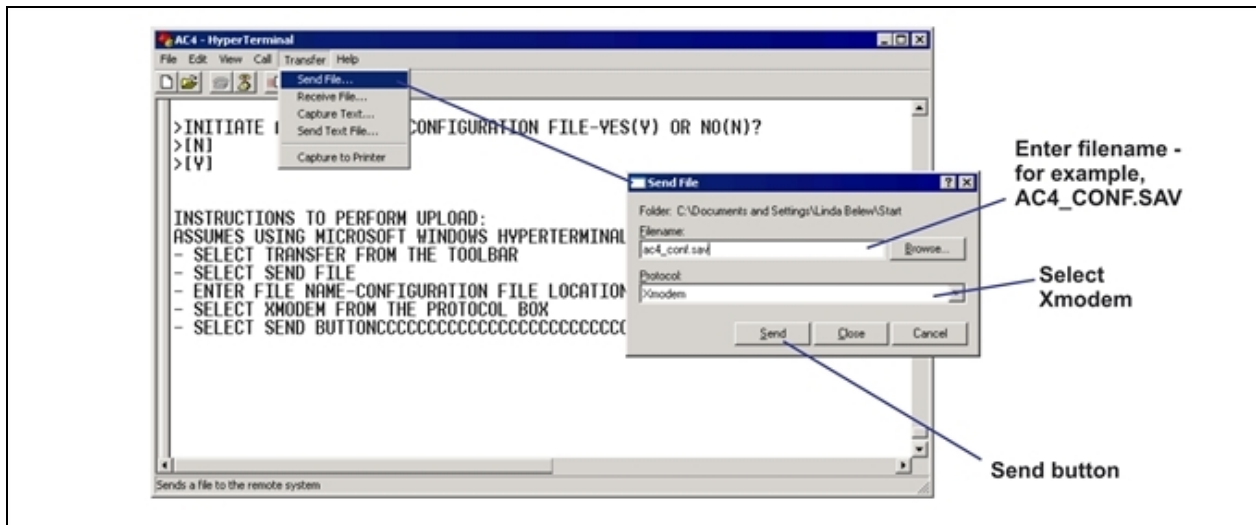
4. In the Send File window, as shown above:
   - In the Filename box, enter the full path of the file to be uploaded—for example, AC4_CONF.SAV—or click on the **Browse** button to locate the file.
   - In the Protocol box, select **Xmodem** from the drop-down list.
   - Click on the **Send** button. (To close the window without sending the file, click on **Close** or **Cancel**.)
5. When the transfer is complete, a confirmation message—"Upload Successful"—appears in the Service Terminal Interface window and the Liebert AC4 reboots with the new configuration.

7.7.5 Factory Defaults

At any time, you may restore all default values for settings in the Liebert AC4 as it was shipped.

NOTE: This action will overwrite any configuration settings. You may want to back up your settings before restoring the factory defaults. See Backup and Upload Configuration File (Service Terminal Interface only) in Setup System Info for details on backing up settings using the Service Terminal Interface.
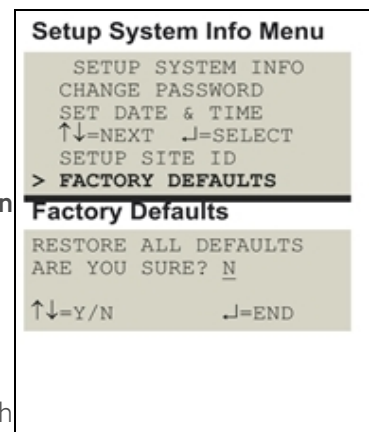
The password is the sole exception when reverting to the factory default settings. The password can be reset to the factory default of AAAA through the DIP switches. For details, see Change Password on page 53.

7.7.6 Perform Firmware Update *(Service Terminal Interface only)*

This function, which may be performed only through the Service Terminal Interface, upgrades the Liebert AC4's firmware to the newest version.

NOTE: This action will overwrite any configuration settings. You may want to back up your settings before restoring the factory defaults. See Backup and Upload Configuration File (Service Terminal Interface only) in Setup System Info for details on backing up settings using the Service Terminal Interface.

- Connect to the Liebert AC4 either from a remote computer or through the RS232 port (see Connecting to the Service Terminal Interface on page 70).
- At the Main Menu, enter 0 (zero—Setup System-Login Required).
- At the Login Menu, enter your password.
- At the Setup Menu, enter 5 (Setup System Information).
- At the Setup System Info menu, enter 6 (Perform Firmware Update).
- At the Perform Firmware Update menu, shown below, enter 1 to proceed with an update.

Firmware Update (service terminal interface only)

```
PERFORM FIRMWARE UPDATE


This command will update
the existing firmware



 1=PERFORM FIRMWARE UPDATE
 2=RETURN TO SETUP SYSTEM INFO MENU
 3=RETURN TO SETUP MENU
 4=RETURN TO MAIN MENU


SELECT A NUMBER:1
```

To perform the update:

1. At the Perform Firmware Update prompt, enter Y (Yes - begin) or N (No - cancel). The current setting appears in brackets—[N] in the following example.

```
>PERFORM FIRMWARE UPDATE-YES(Y) OR NO(N)?

>[N]

>[
```

NOTE: The following instructions refer to the Microsoft Windows HyperTerminal program. These steps may vary for other communications programs.

2. The firmware update is a two-step process—this step describes how to upload the file prog###.s19 (where ### is a number—for example, prog118.s19) to the Liebert AC4:

   a. At the top of the HyperTerminal window, shown below, click on Transfer, then on Send File.
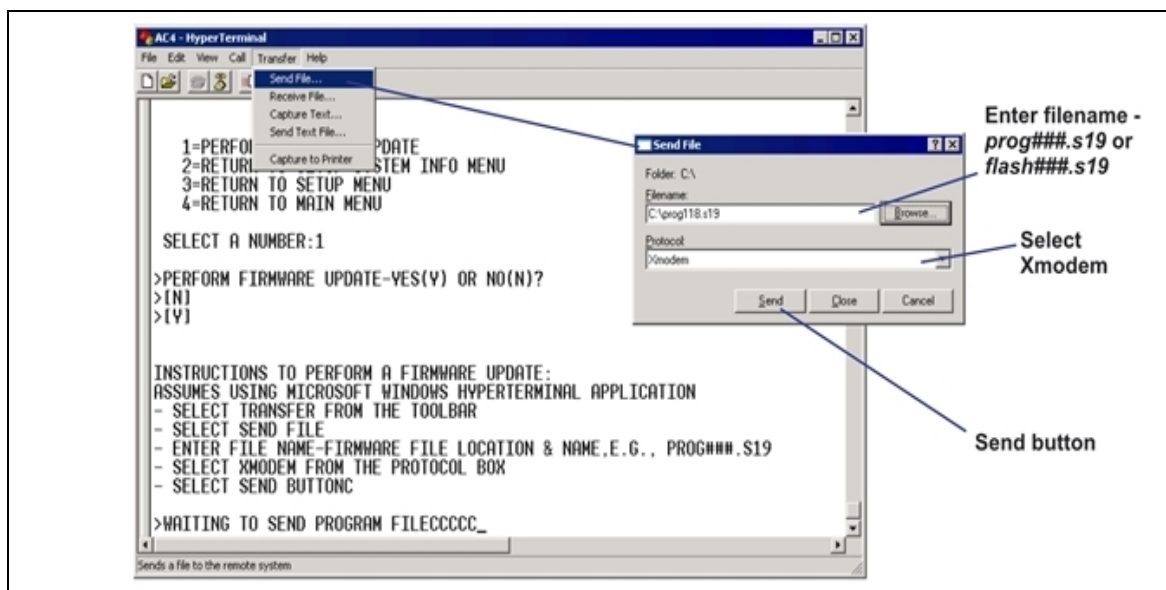
b. In the Send File window, as shown above:

In the Filename box, enter the full path of the file to be uploaded—**prog###.s19**—or click on the **Browse** button to locate the file.

In the Protocol box, select **Xmodem** from the drop-down list.

Click on the **Send** button. (To close the window without sending the file, click on **Close** or **Cancel**.)

When the transfer is complete, a confirmation message appears in the Service Terminal Interface window.

3. Next, follow these steps to upload the file **flash###.s19** (where ### is a number—for example, flash512.s19) to the Liebert AC4:

   a. At the top of the HyperTerminal window, shown above, click on **Transfer**, then on **Send File**.

   b. In the Send File window, shown above:

In the Filename box, enter the full path of the file to be uploaded—**flash###.s19**—or click on the **Browse** button to locate the file.

In the Protocol box, select **Xmodem** from the drop-down list.

Click on the **Send** button. (To close the window without sending the file, click on **Close** or **Cancel**.)

When the transfer is complete, a confirmation message—"Firmware Update Successful"—appears in the Service Terminal Interface window and the Liebert AC4 reboots with the new firmware update.

7.8 Setup Operation

The Liebert AC4 operation features allow you to set up a rotation sequence to alternate which devices are operating and which are placed on Standby, as well as test devices while in Standby mode and specify what to do when a Standby device goes into alarm as it is powered up. You may also specify delay times after an output changes state, directing the Liebert AC4 to wait before acknowledging inputs or turning an output on or off.

To change any operation features:

Log In and Choose Setup System

- From the Main Menu, use the arrows to choose **System and Control**, then press Enter (see Login on page 41 for help).
- Enter your password at the Login screen.
- From the System and Control Menu, use the arrows to choose **Setup System**, then press Enter.
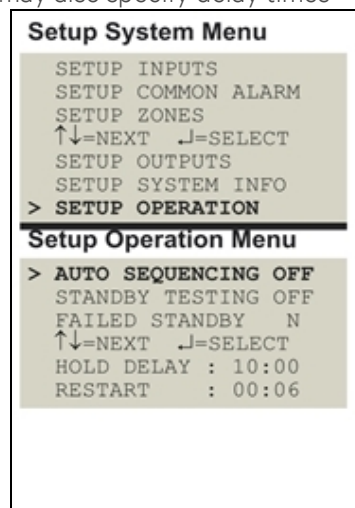
Select Setup Operation

- From the Setup System Menu, shown at right, use the arrows to choose **Setup Operation** and press Enter.
- Use the steps following Table 7.7 below to access any of the Setup Operation options.

Table 7.7 below shows the default settings for operation options: automatic sequencing, standby testing, failed standby, hold delay and restart.

Table 7.7
Default settings - operation features

Feature	Default	Other Options
AUTO SEQUENCING	OFF (Deactivated)	ON (Activated), 12h (Activated for 12-hour intervals)
STANDBY TESTING	OFF (Deactivated)	ON (Activated)
FAILED STANDBY	N (Deactivated)	Y (Activated)
HOLD DELAY	10:00 (No delay)	Any time (in minutes and seconds) from 00:00 to 99:59
RESTART	00:06 (No delay)	Any time (in minutes and seconds) from 00:00 to 99:59

7.8.1 Turn Automatic Sequencing On or Off

Use automatic sequencing to set up a schedule for rotation of redundant devices. For example, three devices might be in operating mode while a fourth device is in standby mode. Every two days, the Liebert AC4 returns the standby device to operating mode and places one of the operating devices on standby.

When zones are used, the Liebert AC4 manages the rotation sequence for each zone separately, so each zone might have one device in operating mode and one in standby mode.

Auto sequencing is OFF (deactivated) by default. When auto sequencing is activated (ON or 12h, for a 12-hour interval), the Liebert AC4 cycles devices at the specified interval and time of day as follows:

- An output device in Standby mode is returned to Operating mode.
- An output device that is Operating is put in Standby mode.

When more than one device is in Standby mode or turned On, the Liebert AC4 performs the operations in a sequence that rotates the order. For example, in a sequence set up to occur every two days:

- Monday: Device 1 is placed on Standby, and Devices 2, 3 and 4 operate.
- Wednesday: Device 2 is placed on Standby, and Devices 1, 3 and 4 operate.
- Friday: Device 3 is placed on Standby, and Devices 1, 2 and 4 operate.
- Sunday: Device 4 is placed on Standby, and Devices 1, 2 and 3 operate.

NOTE: The Liebert AC4 will not cycle outputs that have been manually forced On or Off through the Override Output Menu or the hardware switch (see Override Output on page 64).

To change the auto sequencing settings:

1. From the Setup System Operation Menu, use the arrows to choose **Auto Sequencing**, then press Enter.

2. In the Activate / Deactivate screen, use the arrows to choose one of three options:

   a. **ON** for intervals of every 1 to 99 days, then press Enter and proceed to **Step** 3.

   b. **12h** for an interval of every 12 hours, then press Enter and proceed to **Step** 4.

   c. **OFF** to deactivate auto sequencing, then press Enter to return to the previous menu.

3. Select the interval for how often the sequencing should occur in the **Every** 03 **Days** field. The default is 3 days; valid entries range from 0 to 99 days.

   - For each digit, use the arrows to choose a number from 0 to 9, then press Enter to advance to the next digit.
   - When finished, press Enter to set the time of day.

4. Specify the time of day the sequencing should begin in the **At** 00:00 field. The format is HH:MM for hours and minutes.

   - Use the arrows to choose from available entries for hours (00-23), then press Enter to advance to minutes.
   - Use the arrows to select minutes (00-59).
   - When finished, press Enter again.
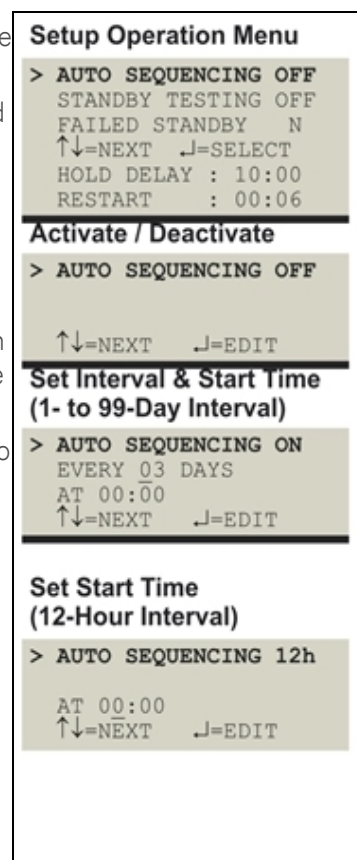
7.8.2 Turn Standby Testing On or Off

Standby testing permits scheduling an automatic operational check of devices in Standby mode.

When this feature is activated (ON), the Liebert AC4 tests all devices in Standby mode by putting each device in operating mode for a designated time. You may specify the time of day the testing begins, the duration of the test and the interval between tests. Standby testing is OFF (deactivated) by default.

To change the standby testing settings:

Setup Operation Menu
```
> AUTO SEQUENCING OFF
  STANDBY TESTING OFF
  FAILED STANDBY    N
  ↑↓=NEXT  ↵=SELECT
  HOLD DELAY : 10:00
  RESTART    : 00:06
```

Activate / Deactivate
```
> AUTO SEQUENCING OFF


  ↑↓=NEXT    ↵=EDIT
```

**Set Interval & Start Time
(1- to 99-Day Interval)**
```
> AUTO SEQUENCING ON
  EVERY 03 DAYS
  AT 00:00
  ↑↓=NEXT    ↵=EDIT
```

**Set Start Time
(12-Hour Interval)**
```
> AUTO SEQUENCING 12h

  AT 00:00
  ↑↓=NEXT    ↵=EDIT
```

- From the Setup System Operation Menu, use the arrows to choose **Standby Testing**, then press Enter.

- In the Change Standby Testing screen, press Enter to edit **Standby Testing**, then use the arrows to choose **ON** to activate or **OFF** to deactivate the standby testing feature. Press Enter.

- Select the desired interval for how frequently the testing should occur in the **Every 03 Days** field. The default is 3 days; valid entries range from 0 to 99 days.

  - For each digit, use the arrows to choose a number from 0 to 9, then press Enter to advance to the next digit.

  - When finished, press Enter to configure the time of day.

- Specify the time of day the test should begin in the **At 00:00** field. The format is HH:MM for hours and minutes.

  - Use the arrows to choose from available entries for hours (00-23), then press Enter to advance to minutes.

  - Use the arrows to select minutes (00-59).

  - When finished, press Enter again.

- Specify the duration of the test in minutes—the length of time the standby units will be turned On—in the **For 10 Min** field. Use the arrows to choose a number from 0 to 59 minutes. The default is 10 minutes.

- When finished, press Enter.

Setup Operation Menu

```
  AUTO SEQUENCING OFF
> STANDBY TESTING OFF
  FAILED STANDBY    N
  ↑↓=NEXT  ↵=SELECT
  HOLD DELAY : 10:00
  RESTART    : 00:06
```

Change Standby Testing

```
> STANDBY TESTING ON
  EVERY 03 DAYS
  AT 00:00 FOR 10 MIN
  ↑↓=NEXT   ↵=EDIT
```
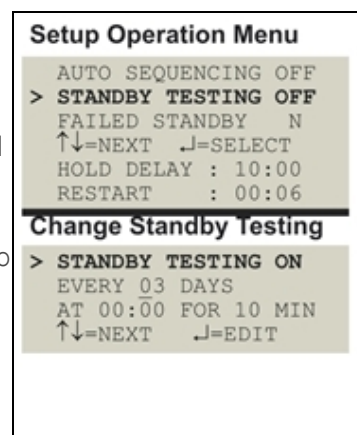
7.8.3 Specify Failed Standby Response

The Liebert AC4's Failed Standby feature determines what happens when an operating device fails and a standby device then becomes an operating unit. A subsequent alarm in the newly operating unit (previously the standby device) results in either restarting the previously operating device that was alarmed or not. This feature specifies whether each device remains in its current state or returns to its previous state of operation.

When this feature is activated (Y), each device returns to its previous state, as Table 7.8 below shows: the newly enabled Standby device is disabled and the previously operating device is returned to Operating mode. The default setting is N (deactivated), meaning that each device remains in its current state: the Standby device remains enabled and the previously operating unit remains disabled.

Table 7.8
Failed Standby response

Failed Standby Setting	Previous Standby Device (alarm after being enabled)	Previously Operating Device
Activated (Y)	Disabled	Returned to Operating mode
Deactivated (N)	Remains enabled	Remains disabled

To change the Failed Standby settings:

- From the Setup System Operation Menu, use the arrows to choose **Failed Standby**, then press Enter.
- In the Change Failed Standby screen, press use the arrows to choose **Y** to activate or **N** to deactivate the feature.
- Press Enter.

7.8.4 Specify Hold Delay Time

After an output changes state, the hold delay timer directs the Liebert AC4 to ignore all inputs in the same zone for the specified time.

This delay is the amount of time that must elapse before the Liebert AC4 acknowledges a change of state in any input. The default is 10 minutes (displayed as 10 MIN : 00 SEC).

The time delay applies only when a monitored output device changes *from* its normal state—for example, the Liebert AC4 detects a closed contact that is defined as Normally Open.

When the output device *returns* to its normal state, the Liebert AC4 acknowledges any input change of state immediately.

Setup Operation Menu
```
  AUTO  SEQUENCING  OFF
  STANDBY  TESTING  OFF
> FAILED  STANDBY     N
  ↑↓=NEXT   ↵=SELECT
  HOLD DELAY : 10:00
  RESTART     : 00:06
```
Change Failed Standby
```
> FAILED  STANDBY     N


  ↑↓=NEXT     ↵=END
```

Setup Operation Menu
```
  AUTO  SEQUENCING  OFF
  STANDBY  TESTING  OFF
  FAILED  STANDBY     N
  ↑↓=NEXT   ↵=SELECT
> HOLD DELAY : 10:00
  RESTART     : 00:06
```
Hold Delay Time
```
  HOLD DELAY
  10 MIN : 00 SEC

  ↑↓=NEXT     ↵=EDIT
```
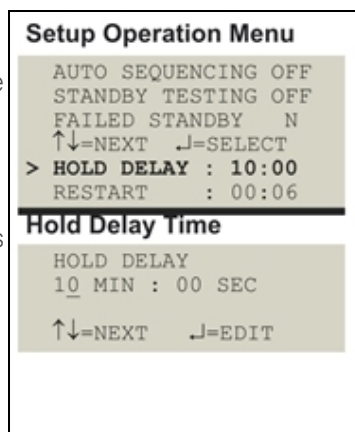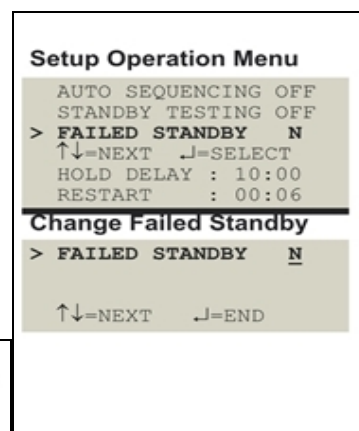
The hold delay timer also takes effect when the Liebert AC4 is powered up. All alarms are ignored until the hold delay time expires.

- From the Setup Operation Menu, choose **Hold Delay**, as shown at right, and press Enter.
- To change the time delay in minutes and seconds (in the range of 00:00 to 99:59):
  - For minutes (MIN), press and hold one of the arrow keys scroll through the numbers 00-99.
  - Press Enter to advance to seconds (SEC).
  - For seconds (SEC), press and hold one of the arrow keys scroll through the numbers 00-59.
  - When finished, press Enter again.

7.8.5 Specify Restart Time

The restart delay timer directs the Liebert AC4 to wait a specified time before changing the state of an output. This feature can prevent needless responses to transient conditions.

If two or more outputs change state simultaneously, the Liebert AC4 begins a new countdown between each output change of state.

The default is 6 seconds (displayed as 00 MIN : 06 SEC).

- From the Setup Operation Menu, choose **Restart**, as shown at right, and press Enter.
- To change the time delay in minutes and seconds (in the range of 00:00 to 99:59):
  - For minutes (MIN), press and hold one of the arrow keys scroll through the numbers 00-99.
  - Press Enter to advance to seconds (SEC).
  - For seconds (SEC), press and hold one of the arrow keys scroll through the numbers 00-59.
  - When finished, press Enter again.
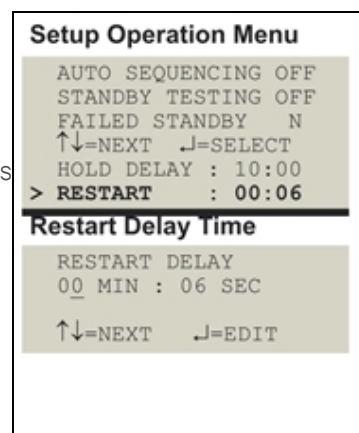
7.9 Override Output

The Override Output feature allows you to manually change the state of any digital output to ON or OFF, overriding automatic control by the Liebert AC4 (the default setting for all outputs). This menu also allows you to release the manual override, returning any output to automatic control.

There are two ways to override automatic control of outputs:

- Use the Override Output menu, as described in this section, to turn any output ON or OFF.
- Use the hardware switch on the circuit board to force all four outputs ON at the same time (see Controller Board Overview on page 9).

After an output is forced manually ON or OFF, it remains in that state until returned to automatic control through this menu.

Table 7.9   on the facing page summarizes the four types of control, including the abbreviated message that appears on the LCD and in log reports.

Table 7.9

Automatic / manual control - output points

Message	Description	
AUTO	Automatic	Controlled by Liebert AC4 (default for all outputs)
FORCE ON	Manually ON	This output has been forced ON (operating) or OFF via the Override Output menu
FORCE OFF	Manually OFF	
HW FORCE ON	Manually ON (all outputs)	All outputs have been forced ON (operating) via the hardware switch on the circuit board (see Controller Board Overview on page 9)

To force an output point ON or OFF or return it to automatic control:

Log In and Choose Override Output

- From the Main Menu, use the arrows to choose **System and Control**, then press Enter (see Login on page 41 for help).
- Enter your password at the Login screen.
- From the System and Control Menu, use the arrows to choose **Override Output**, then press Enter.

Select an Output

The Select Output menu, shown at right, displays the current status of all four outputs.

- Use the arrows to choose the output you want—for example, **Device_1**—and press Enter.

Turn Output ON or OFF / Return to Automatic

- From the Override Output menu, use the arrows to choose one of these options:
  - **AUTO** - return to automatic control
  - **FORCE ON** - manually turn this output ON (operating)
  - **FORCE OFF** - manually turn this output OFF
- Press Enter.

Main Menu

```
  VIEW STATUS
> SYSTEM AND CONTROL

  ↑↓=NEXT      ↵=SELECT
```

Login

```
        LOGIN

        AAAA
↑↓=SELECT ↵=NEXT/END
```

System & Control Menu

```
  SETUP SYSTEM
> OVERRIDE OUTPUT
  CLEAR ALARMS & LOGS
↑↓=NEXT    ↵=SELECT
```

Select Output

```
  OVERRIDE OUTPUT
> DEVICE_1    AUTO
  DEVICE_2    AUTO
↑↓=NEXT   ↵=SELECT
  DEVICE_3    AUTO
  DEVICE_4    FORCE ON
```

Override Output

```
  SELECT DEVICE_1

       FORCE ON
↑↓=SELECT ↵=END
```

7.10 Clear Alarms & Logs

Log In and Choose Clear Alarms & Logs

- From the Main Menu, use the arrows to choose **System and Control**, then press Enter (see Login on page 41 for help).
- Enter your password at the Login screen.
- From the System and Control Menu, use the arrows to choose **Clear Alarms & Logs**, then press Enter.
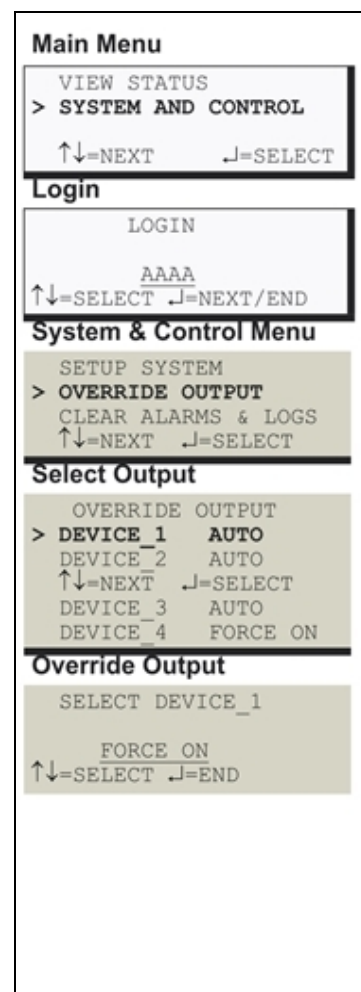- Use the following steps to clear alarms or delete log records.

7.10.1 Clear Active Alarms

To clear all active alarms:

- From the Clear Alarms/Logs Menu, use the arrows to choose **Clear Active Alarms**, then press Enter.
- Use the arrows to choose **Y** (Yes - clear all active alarms) or **N** (No - do not clear alarms), then press Enter.

NOTE: Clear active alarms is the only means to reset Latched alarms. This action must be taken to return Latched points to their normal state. To set up a digital input as latched, see Set Up Alarmable Inputs in Latched or Unlatched Mode on page 47

7.10.2 Clear the Alarm Log

The alarm log contains up to 99 records of alarms that have occurred. You may want to clear the log after backing up the file or simply to free up space.

NOTE: Before deleting the records in the alarm log, you may want to back up the file to a computer, as described in Back Up Log Files (Service Terminal Interface only) on page 37.

To delete all records from the alarm log:

- From the Clear Alarms/Logs Menu, use the arrows to choose **Clear Alarm Log**, then press Enter.
- Use the arrows to choose **Y** (Yes - clear the alarm log) or **N** (No - do not clear the alarm log), then press Enter.

7.10.3 Clear the Event Log

The event log contains up to 99 records of events detected by the Liebert AC4. You may want to clear the log after backing up the file or simply to free up space.

NOTE: Before deleting the records in the event log, you may want to back up the file to a computer, as described in Back Up Log Files (Service Terminal Interface only) on page 37.

To delete all records from the event log:

- From the Clear Alarms/Logs Menu, use the arrows to choose **Clear Event Log**, then press Enter.
- Use the arrows to choose **Y** (Yes - clear the event log) or **N** (No - do not clear the event log), then press Enter.

8 SPECIFICATIONS

8.1 Liebert AC4 Specifications

Power Requirements	24VAC ±10% of nominal		NOTE
Dimensions W x D x H, in. (mm)	14-1/4 x 2-3/4 x 12 (361.95 x 69.85 x 304.8)		If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
Weight (Assembled)	7.68 lbs (3.48 kg)		
Enclosure Type	NEMA 1		
Liquid Crystal Display (LCD)	Four line, 20 character, backlit		
Mounting Surface	Building Wall or Structural Member		
Ambient Operating Environment	32°F to 104°F (0°C to 40°C) 0% RH to 95% RH (non-condensing)		
Processor Specifics			
Model	Motorola XC68HC812A4		
Clock speed	16MHz		
Total RAM	32Kb		
Total FLASH	4M		
Total EEPROM	4K		
A/D Resolution (Analog IN)	12 Bit		
Clock Type	Real-Time Clock		
Clock battery backup type	Lithium Cell (non-replaceable)		
Clock battery life	7 years, constant, no power		
Communications			
Local Communications	RS232		
Agency Listings			
UL	UL3121		
CE	Yes		
FCC Compliance	CFR 47 Part 15		
Inputs & Outputs (Quantity)			
Digital Inputs (4)	Dry Contact Closure 24VDC, 10 mA		
Digital Outputs (4)	24VAC, 3A		
Common Alarm Outputs (2)	24VAC, 3A		

NOTES

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Appendix A: Service Terminal Interface

The Service Terminal Interface allows access to all functions of the Liebert AC4, including some that are not possible through the LCD interface. This interface is accessible through any computer using a communications program such as Microsoft® Windows® HyperTerminal.

This appendix provides directions for connecting to the Service Terminal Interface, an overview of each type of function and sample screens for each menu available through the Service Terminal Interface. References to more detailed instructions about each function are provided.

A.1 Comparison of Functions: LCD and Service Terminal Interface

Table A.1 below lists all functions for viewing and configuring the Liebert AC4 and shows whether they can be performed through the LCD interface and where to find information.

Table A.1
Guide to Liebert AC4 functions

Function	Can be performed via:		Where to find:	
	LCD	Service Terminal	Instructions on using function	Service Terminal screen examples
VIEW STATUS FUNCTIONS				
View Active Alarms	x	x	View Active Alarms on page 31	View Active Alarms
View Alarm Log	x	x	View Alarm Log on page 32	View Alarm Log
View Event Log	x	x	View Event Log on page 33	View Event Log
View Input Status	x	x	View Input Status on page 35	View Input Status
View Output Status	x	x	View Output Status on page 36	View Output Status
SILENCE ALARM & BACK UP LOGS FUNCTIONS				
Silence Alarm (On the LCD, press any key to silence an alarm)	x	x	Silence Alarm (Service Terminal Interface) on page 37	Silence Alarm (Service Terminal Interface only)
Back Up Log Files	—	x	Back Up Log Files (Service Terminal Interface only) on page 37	Back Up Log Files (Service Terminal Interface only)
SYSTEM & CONTROL FUNCTIONS				
Login	x	x	Login on page 41	Login Menu
Setup System	x	x	Setup System - Overview on page 44	Setup Menu
Setup Inputs	x	x	Setup System - Setup Inputs on page 44	Setup Inputs
Setup Common Alarm	x	x	Setup System - Setup Common Alarm on page 48	Setup Common Alarm
Setup Zones	x	x	Setup System - Setup Zones on page 48	Setup Zones
Setup Outputs	x	x	Setup System - Setup Outputs on page 50	Setup Outputs

Table A.1 Guide to Liebert AC4 functions (continued)

Function	Can be performed via:		Where to find:	
	LCD	Service Terminal	Instructions on using function	Service Terminal screen examples
Setup System Info	x	x	Setup System - Setup System Info on page 52	Setup System Info
Change Password	x	x	Change Password on page 53	Change Password
Set Date & Time/Automatic Daylight Saving Time	x	x	Set Date & Time/Automatic Daylight Saving Time on page 53	Set Date & Time/Automatic Daylight Saving Time
Setup Site ID	x	x	Setup Site ID on page 54	Setup Site ID
Backup and Upload Configuration File	—	4	Backup and Upload Configuration File (Service Terminal Interface only) on page 54	Backup and Upload Configuration File (Service Terminal Interface only)
Factory Defaults	4	4	Factory Defaults on page 57	Factory Defaults
Perform Firmware Update	—	x	Perform Firmware Update (Service Terminal Interface only) on page 57	Firmware Update (Service Terminal Interface only)
Setup Operation	x	x	Setup Operation on page 60	Setup Operation
Override Output	x	x	Override Output on page 64	Override Output
Clear Alarms & Logs	x	x	Clear Alarms & Logs	Clear Alarms & Logs
Clear Active Alarms	x	x	Clear Active Alarms on page 66	Clear Active Alarms
Clear the Alarm Log	x	x	Clear the Alarm Log on page 66	Clear the Alarm Log
Clear the Event Log	x	x	Clear the Event Log on page 66	Clear the Event Log

A.2 Connecting to the Service Terminal Interface

This section describes how to set up and connect to the Service Terminal Interface. To access the Service Terminal Interface, you will need:

- A null modem cable to connect a computer's COM1 port to the Liebert AC4's RS232 port.
- A communications program, such as HyperTerminal, to connect to the Service Terminal Interface.

Refer to following sections for step-by-step instructions to set up a connection (one time) and use that connection to access the Service Terminal Interface:

- Create a Connection on the facing page
- Connect to the Service Terminal Interface

The instructions in this section refer to the HyperTerminal program—they may vary for other communications programs.

Create a Connection

Before connecting to the Service Terminal Interface, you must create a connection and specify the method to be used for connection, as described in the following steps.

1. Start the HyperTerminal program—to do this, click on the **Start** button, then on **Programs**, then **Accessories**, then **Communications**, and finally **HyperTerminal**.

2. At the top of the HyperTerminal window, click on **File**, then on **New Connection**, as shown below left.
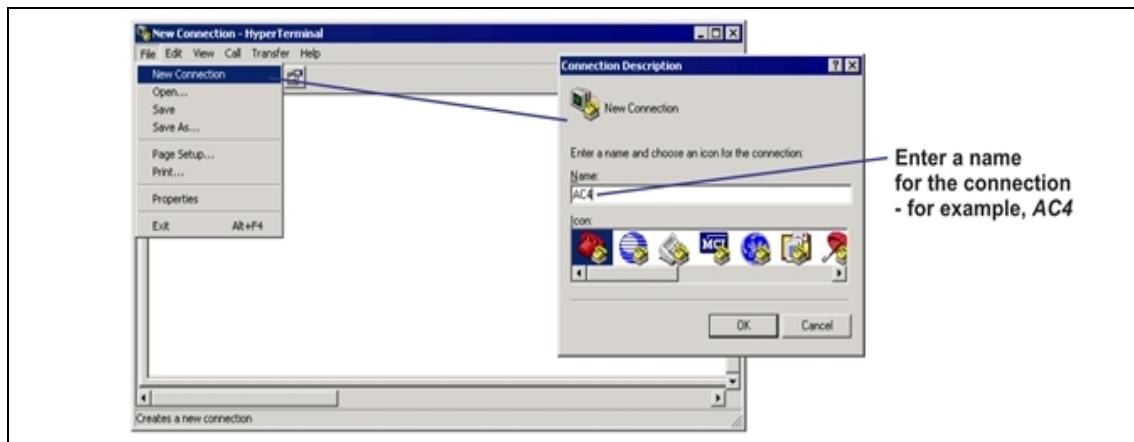
3. In the Connection Description window, shown above right, enter a name for the connection— for example, **AC4**. This becomes the file name (with the extension ".ht").

4. Click **OK** to close the window. The Connect To window opens, as shown at right.

Specify COM Port Connection

5. In the Connect To window, select **COM1** from the Connect Using drop-down list.

6. Click **OK**. This opens the COM1 Properties window.
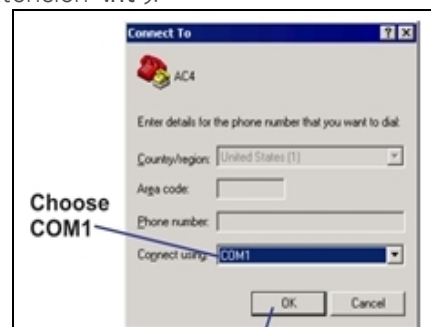
COM1 Port Setup

7. In the COM1 Properties window, shown at right, make the following selections:

   - Bits per second: **9600**
   - Data bits: **8**
   - Parity: **None**
   - Stop bits: **1**
   - Flow control: **None**

8. Click **OK**. When the connection is open, the connection name appears in the title bar of the HyperTerminal window. To complete the setup, continue with **Step**Open the Properties window by clicking on File, then on Properties, as shown below left. (next section).

Properties Setup

9. Open the Properties window by clicking on **File**, then on **Properties**, as shown below left.
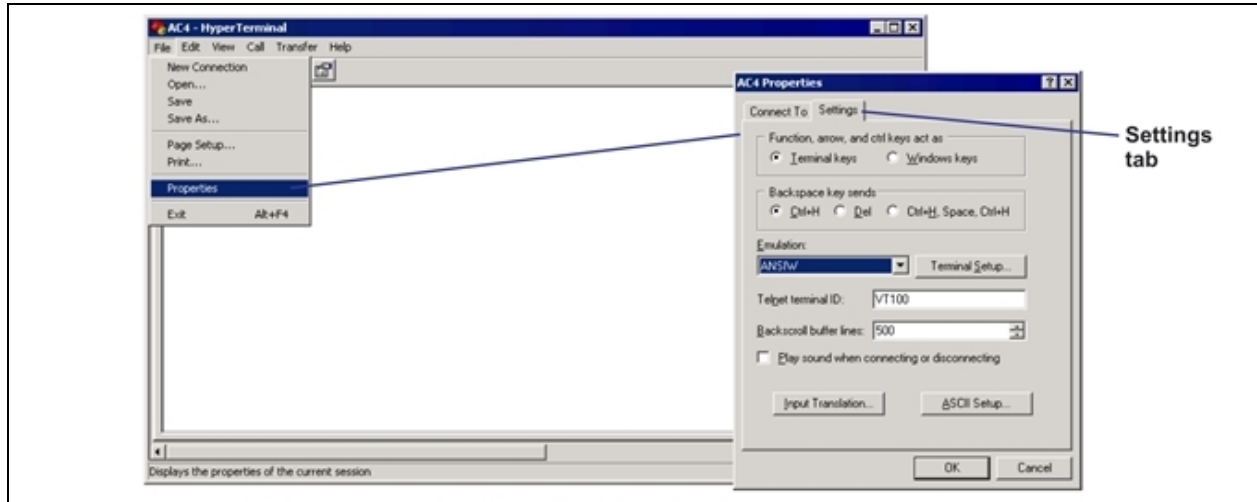
10. In the Properties window, above right, click on the **Settings** tab and choose the following settings:
    - Function, arrow, and ctrl keys act as: **Terminal keys**
    - Backspace key sends: **Ctrl+H**
    - Emulation: **ANSIW**
    - Telnet terminal ID: **VT100**
    - Backscroll buffer lines: **500**
    - Play sound when connecting or disconnecting: **Unchecked**

ASCII Setup

11. In the Properties window, click on the **ASCII Setup** button, shown below left.
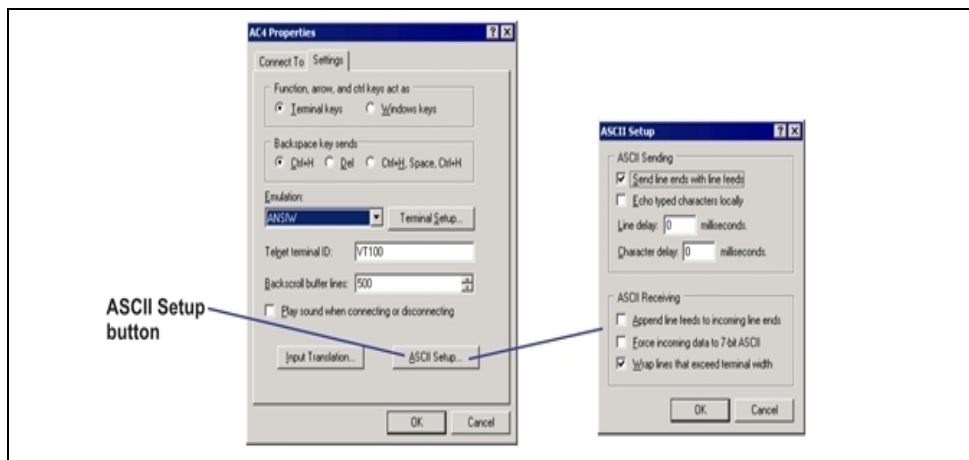
12. In the ASCII Setup window, shown above right, choose the following settings:
    - ASCII Sending: place a check mark (4) in the **Send Line Ends With Line Feeds** box.

- ASCII Receiving: place a check mark (4) in the **Wrap Lines That Exceed Terminal Width** box.
- Click **OK**.

The setup is now complete. To use the new connection, proceed to the next section, Connect to the Service Terminal Interface below.

Connect to the Service Terminal Interface

After creating and setting up a connection, use a communications program such as HyperTerminal to access the Liebert AC4's Service Terminal Interface.

1. Verify communications connections between the remote computer and the Liebert AC4. Connect a null modem cable from the computer's COM1 port to the Liebert AC4's RS232 port (for location, see RS232 Connector on page 24).
2. Start the HyperTerminal program—click on the **Start** button, then on **Programs**, then **Accessories**, then **Communications**, and finally **HyperTerminal**.
3. Open the Liebert AC4 connection created in Create a Connection on page 71. To do this, click on **File**, then on **Open**, as shown below.
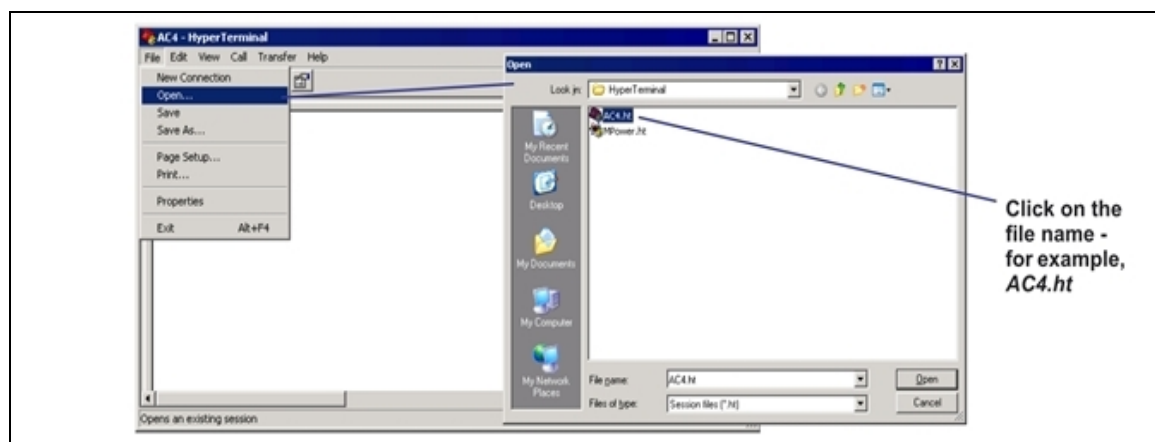
4. In the Open window, shown above right, select the file name—**AC4.ht** in this example—and then click on the **Open** button.
5. Press Enter (or Escape) to initiate communication and bring up the Main Menu.

For more information on the Liebert AC4's options:

- See Overview of Menus below for examples of the Service Terminal Interface screens.
- See Table A.1 on page 69 to locate step-by-step instructions for each Liebert AC4 function.

A.3 Overview of Menus

The Main Menu offers choices for viewing the status of the Liebert AC4, silencing the audible alarm and backing up the unit's log files. It also allows access to the System and Control features, which require a password.

The following shows where to find examples of the Main Menu screens:

Main Menu	For sample screens, see:
1=VIEW ACTIVE ALARMS	View Status Menus below
2=VIEW ALARM LOG	
3=VIEW EVENT LOG	
4=VIEW INPUT STATUS	
5=VIEW OUTPUT STATUS	
6=SILENCE ALARM	Silence Alarm & Back Up Log Files (Service Terminal Interface only)
7=BACKUP LOG FILES	
0=SETUP SYSTEM-LOGIN REQUIRED	Setup Menu

View Status Overview

The View Status features are available to all users. This permits all personnel to check on the status of any equipment or location being monitored. These options allow any user to:

- View active alarms
- View the current status of all inputs and outputs
- View data stored in alarm and event logs

Silence Alarm and Backup Log Files

Two Main Menu options—Silence Alarm and Backup Log Files—are unique to the Service Terminal Interface. As with the View Status options, these features do not require a password:

- **Silence Alarm**—silence the Liebert AC4's audible alarm and reset the Common Alarm Relay output.
- **Backup Log Files**—make backup copies of the Liebert AC4's Alarm Log and Event Log and save the copies to a computer.

Setup Menu Overview

The Setup Menu options require a password. Authorized users may:

- Configure the Liebert AC4—this includes setting up digital inputs and outputs and system features such as setting the date and time

  Two system features—**Backup and Upload Configuration File** and **Firmware Update**—are unique to the Service Terminal Interface.

- Override automatic control of outputs to force an output ON or OFF
- Clear active alarms and delete all records in the alarm and event logs

A.4 View Status Menus

The View Status menu allows any user to view currently active alarms, data stored in the alarm and event logs and the status of all inputs and outputs.

Main Menu

After connecting to the Service Terminal Interface, the Main Menu appears, as shown below. This section presents Service Terminal Interface screens for options 1 through 5:

Main Menu	
LIEBERT AC4 VX.XXX.X LIEBERT CORPORATION COPYRIGHT 2004 ALL RIGHTS RESERVED MAIN MENU	For sample screens, see:
1=VIEW ACTIVE ALARMS	View Active Alarms below
2=VIEW ALARM LOG	View Alarm Log below
3=VIEW EVENT LOG	View Event Log on the next page
4=VIEW INPUT STATUS	View Input Status on page 77
5=VIEW OUTPUT STATUS	View Output Status on page 78
6=SILENCE ALARM	
7=BACKUP LOG FILES	
0=SETUP SYSTEM-LOGIN REQUIRED	
SELECT A NUMBER:1	

View Active Alarms

For details on this feature, see View Active Alarms on page 31.

View Active Alarms
ACTIVE ALARMS Input points/hardware presently in an alarm state   DEVICE_1 ALARM CONTACT CLOSED 1=REFRESH ACTIVE ALARMS 2=RETURN TO MAIN MENU SELECT A NUMBER:

View Alarm Log

For details on this feature, see View Alarm Log on page 32.

View Alarm Log
ALARM LOG
Alarm history
DEVICE_1 ALARM
CONTACT CLOSED
29-AUG-02 09:29:10
NO STANDBY AVAILABLE
29-AUG-02 09:20:10
STANDBY DEVICE FAILED
29-AUG-02 09:19:10
NO RESTART AVAILABLE
29-AUG-02 09:19:10
<ENTER>=MORE <ESC>=EXIT <A>=ALL
DEVICE_2 ALARM
CONTACT CLOSED
28-AUG-02 09:29:10
1=REFRESH ALARM LOG
2=RETURN TO MAIN MENU
SELECT A NUMBER:

View Event Log

For details on this feature, see

View Event Log
EVENT LOG
Event history
SYSTEM
USER LOGIN
07-MAY-02 10:29:10
DEVICE_1 HW FORCE ON
CONTACT CLOSED
07-MAY-02 09:50:10
DEVICE_4 FORCE OFF
CONTACT OPEN
07-MAY-02 09:20:10
DEVICE_3 AUTO
CONTACT OPEN
07-MAY-02 06:20:10
<ENTER>=MORE <ESC>=EXIT <A>=ALL
DATE AND TIME SET
06-MAY-02 07:10:10
DEVICE_4 FORCE OFF
CONTACT CLOSED
07-MAY-02 06:20:10
1=REFRESH EVENT LOG
2=RETURN TO MAIN MENU
SELECT A NUMBER:

View Input Status

For details on this feature, see

View Input Status
INPUT STATUS Input status from device INPUT STATUS DEVICE_1 NORMAL DEVICE_2 ALARM DEVICE_3 EVENT DEVICE_4 ALARM 1=REFRESH INPUT 2=RETURN TO MAIN MENU SELECT A NUMBER:1

View Output Status

For details on this feature, see

View Output Status	
OUTPUT STATUS Output status to device OUTPUT STATE MODE ZONE DEVICE_1 ON ALARM 1 DEVICE_2 ON OPERATING 1 DEVICE_3 OFF STANDBY 1 DEVICE_4 OFF ALARM 1 1=REFRESH OUTPUT STATUS 2=RETURN TO MAIN MENU SELECT A NUMBER:	 *** OPERATING = OPERATING/ON STANDBY = IN STANDBY MODE ALARM = IN ALARM FORCE ON = FORCE ON BY OPERATOR FORCE OFF = FORCE OFF BY OPERATOR HW FORCE ON = FORCE ON BY HARDWARE SWITCH PENDING = PENDING DELAY TIMER NOT USED = DEVICE NOT USED ***

A.5 Silence Alarm & Back Up Log Files *(Service Terminal Interface only)*

This section presents two options from the Main Menu that are available via the Service Terminal Interface only.

Main Menu

After connecting to the Service Terminal Interface, the Main Menu appears, as shown below. This section presents Service Terminal Interface screens for options 6 and 7:

Main Menu	
LIEBERT AC4 V5.300.2 LIEBERT CORPORATION COPYRIGHT 2004 ALL RIGHTS RESERVED MAIN MENU	
1=VIEW ACTIVE ALARMS	
2=VIEW ALARM LOG	
3=VIEW EVENT LOG	
4=VIEW INPUT STATUS	
5=VIEW OUTPUT STATUS	For sample screens, see:
6=SILENCE ALARM	Silence Alarm (Service Terminal Interface only) below
7=BACKUP LOG FILES	Back Up Log Files (Service Terminal Interface only) below
0=SETUP SYSTEM-LOGIN REQUIRED	
SELECT A NUMBER:1	

Silence Alarm *(Service Terminal Interface only)*

For details on this feature, see Silence Alarm (Service Terminal Interface) on page 37.

Silence Alarm
SILENCE ALARM Silence alarm and reset common alarm relay if common alarm relay is configured to reset with silence alarm 1=SILENCE ALARM 2=RETURN TO MAIN MENU SELECT A NUMBER:1 >ALARM HAS BEEN SILENCED

Back Up Log Files *(Service Terminal Interface only)*

For details on this feature, see Back Up Log Files (Service Terminal Interface only) on page 37.

Back Up Alarm Log File

Backup Log Files - Alarm Log File

BACKUP LOG FILES

Backup alarm and event log files

1=BACKUP ALARM LOG FILE
2=BACKUP EVENT LOG FILE
3=RETURN TO MAIN MENU

SELECT A NUMBER:1

>INITIATE A BACKUP OF ALARM LOG-YES(Y) OR NO(N)?
>[N]
>[

INSTRUCTIONS TO PERFORM BACKUP:
ASSUMES USING MICROSOFT WINDOWS HYPERTERMINAL APPLICATION
- SELECT TRANSFER FROM THE TOOLBAR
- SELECT RECEIVE FILE
- ENTER FOLDER WHERE FILE IS TO BE RECEIVED
- SELECT XMODEM FROM THE PROTOCOL BOX
- SELECT RECEIVE BUTTON AND ENTER FILE NAME, E.G., ALARM.LOG

>BACKUP SUCCESSFUL

Back Up Event Log File

```
BACKUP LOG FILES

Backup alarm and event log files


1=BACKUP ALARM LOG FILE
2=BACKUP EVENT LOG FILE
3=RETURN TO MAIN MENU

SELECT A NUMBER:2

>INITIATE A BACKUP OF EVENT LOG-YES(Y) OR NO(N)?
>[N]
>[



INSTRUCTIONS TO PERFORM BACKUP:
ASSUMES USING MICROSOFT WINDOWS HYPERTERMINAL APPLICATION
- SELECT TRANSFER FROM THE TOOLBAR
- SELECT RECEIVE FILE
- ENTER FOLDER WHERE FILE IS TO BE RECEIVED
- SELECT XMODEM FROM THE PROTOCOL BOX
- SELECT RECEIVE BUTTON AND ENTER FILE NAME, E.G., EVENT.LOG


>BACKUP SUCCESSFUL
```

A.6 Setup Menu

The Setup menu allows the user to configure the Liebert AC4—setting up inputs, outputs and system features such as date and time, as well as operation options such as a rotation sequence and standy testing. This menu also provides a vehicle for manually changing the state of an output to ON or OFF, clearing active alarms and deleting records from the Liebert AC4's alarm and event logs.

Main Menu

After connecting to the Service Terminal Interface, the Main Menu appears, as shown below.

```
┌─────────────────────────────────────────────┐
│ Main Menu                                     │
├─────────────────────────────────────────────┤
│ LIEBERT AC4                                   │
│                                               │
│ VX.XXX.X                                      │
│ LIEBERT CORPORATION COPYRIGHT 2004            │
│ ALL RIGHTS RESERVED                           │
│                                               │
│                                               │
│ MAIN MENU                                     │
│                                               │
│                                               │
│ 1=VIEW ACTIVE ALARMS                          │
│ 2=VIEW ALARM LOG                              │
│ 3=VIEW EVENT LOG                              │
│ 4=VIEW INPUT STATUS                           │
│ 5=VIEW OUTPUT STATUS                          │
│ 6=SILENCE ALARM                               │
│ 7=BACKUP LOG FILES                            │
│ 0=SETUP SYSTEM-LOGIN REQUIRED                 │
│                                               │
│ SELECT A NUMBER:0                             │
└─────────────────────────────────────────────┘
```

- Choose 0 to access the features illustrated in this section.

Login Menu

The System and Control options require a password to prevent unauthorized users from making changes to the system. After choosing 0 in the Main Menu above, the Login Menu appears:

```
┌─────────────────────────────────────────────┐
│ Login                                         │
├─────────────────────────────────────────────┤
│ YOU MUST LOGIN TO PERFORM                     │
│ SETUP OR TO MAKE CHANGES                      │
│                                               │
│                                               │
│ LOGIN WITH 4 CHARACTER                        │
│ PASSWORD                                      │
│                                               │
│ >****                                         │
│                                               │
│ >INVALID PASSWORD, ENTER AGAIN                │
│ >PRESS <ESC> TO EXIT                          │
│                                               │
│ >                                             │
└─────────────────────────────────────────────┘
```

- Enter the password, and the Setup Menu appears, as shown in the following section.

Setup Menu

This section presents Service Terminal Interface screens for each of the following:

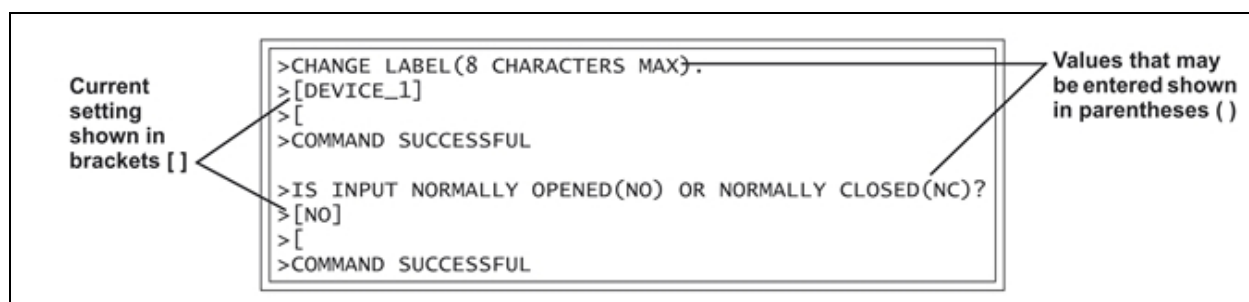| Setup Menu		
SETUP MENU	See:	Description
1=SETUP INPUTS	Setup Inputs	Configure digital inputs
2=SETUP COMMON ALARM	Setup Common Alarm	Set up the common alarm to reset with silence
3=SETUP ZONES	Setup Zones	Define areas with 2-4 devices each
4=SETUP OUTPUTS	Setup Outputs	Configure digital outputs
5=SETUP SYSTEM INFORMATION*	Setup System Info	Set up features such as password and date & time*
6=SETUP OPERATION	Setup Operation	Set up rotation sequence, standby testing
7=OVERRIDE OUTPUT	Override Output	Manually override automatic control of outputs
8=CLEAR ALARMS&LOGS	Clear Alarms & Logs	Clear active alarms; clear alarm and event logs
9=RETURN TO MAIN MENU		
SELECT A NUMBER:		

* Setup System Information features are:

- Change Password
- Set Date & Time/Automatic Daylight Saving Time
- Setup Site ID
- Backup and Upload Configuration File (Service Terminal Interface only)
- Factory Defaults
- Firmware Update (Service Terminal Interface only)

Note that two of these system features—**Backup and Upload Configuration File** and **Firmware Update**—are unique to the Service Terminal Interface.

Tips on Using the Service Terminal Interface

Use the following tips when making changes in the Service Terminal Interface:

- Data that can be entered is shown in parentheses ( ) in prompt line.
- The current setting is shown in brackets [ ] in the line below the prompt
  - To accept the current setting, press the Enter key.
  - To change the current setting, enter the value and then press Enter.
- Pressing Escape will exit the current setup function or take you to the previous menu screen.

Setup Inputs

For details on this feature, see

Setup Inputs

SETUP INPUTS

Setup input of device

Select input to edit

INPUT DEFINITION

1=DEVICE_1 NO-EV-NL-00:01
2=DEVICE_2 NO-AL-L -00:01
3=DEVICE_3 NC-EV-NL-00:01
4=DEVICE_4 NO-AL-L -00:01
5=RETURN TO SETUP MENU
6=RETURN TO MAIN MENU

SELECT A NUMBER:1

****
NO=NORMALLY OPENED
NC=NORMALLY CLOSED

EV=EVENT
AL=ALARMABLE

NL=NOT LATCHED
L =LATCHED

MIN:SEC=DELAY TIME BEFORE
INPUT WILL TRIGGER

NOTE:EVENT CANNOT BE LATCHED
****

>CHANGE LABEL(8 CHARACTERS MAX).
>[DEVICE_1]
>[
>COMMAND SUCCESSFUL

>IS INPUT NORMALLY OPENED(NO) OR NORMALLY CLOSED(NC)?
>[NO]
>[
>COMMAND SUCCESSFUL

>IS INPUT AN ALARM(AL) OR EVENT(EV)?
>[AL]
>[
>COMMAND SUCCESSFUL

>IS ALARM LATCHED-YES(Y) OR NO(N)?
>[N]
>[
>COMMAND SUCCESSFUL

>DELAY TIME BEFORE TRIGGER (MM:SS)?
>[00:01]
>[
>COMMAND SUCCESSFUL

Setup Common Alarm

For details on this feature, see Setup System - Setup Common Alarm on page 48.

Setup Common Alarm

SETUP COMMON ALARM
 	
Select if the common
alarm relay contact
is to reset with
silence alarm   CURRENT
         SETTING
 	
       N
1=SETUP COMMON ALARM
2=RETURN TO SETUP MENU
3=RETURN TO MAIN MENU
 	
SELECT A NUMBER:1
 	
>RESET COMMON ALARM WITH SILENCE-YES(Y) OR NO(N)?
>[N]
>[
>COMMAND SUCCESSFUL

Setup Zones

For details on this feature, see Setup System - Setup Zones on page 48.

Setup Zones	
SETUP ZONES Select zones and number of devices in the zone ZONE # DEVICES 1=ZONE 1 2 2=ZONE 2 2 3=RETURN TO SETUP MENU 4=RETURN TO MAIN MENU SELECT A NUMBER:1	
># DEVICES IN ZONE 1 >[2] >[>COMMAND SUCCESSFUL	

Setup Outputs

For details on this feature, see Setup System - Setup Outputs on page 50.

Setup Outputs
SETUP OUTPUTS

```
SETUP OUTPUTS

Setup output of device


Select output to edit

OUTPUT   DEFINITION     ******************************************
                NO=NORMALLY OPENED
1=DEVICE_1 NO-OP-E       NC=NORMALLY CLOSED
2=DEVICE_2 NO-ST-E
3=DEVICE_3 NO-NU-D       OP=OPERATING/ON
4=DEVICE_4 NO-NU-D       ST=STANDBY MODE
5=RETURN TO SETUP MENU     NU=NOT USED
6=RETURN TO MAIN MENU
              D=DISABLE DEVICE ON AN ALARM CONDITION
SELECT A NUMBER:1        E=LEAVE DEVICE OPERATING ON ALARM CONDITION
              ******************************************


>SET TO NORMALLY OPENED(NO) OR NORMALLY CLOSED(NC)
>[NO]
>[
>COMMAND SUCCESSFUL

>DEVICE_1 TO OPERATING/ON(OP), STANDBY MODE(ST), NOT USED(NU)
>[OP]
>[
>COMMAND SUCCESSFUL

>DEVICE_1 TO ENABLE(E) OR DISABLE(D) DEVICE ON ALARM
>[E]
>[
>COMMAND SUCCESSFUL
```
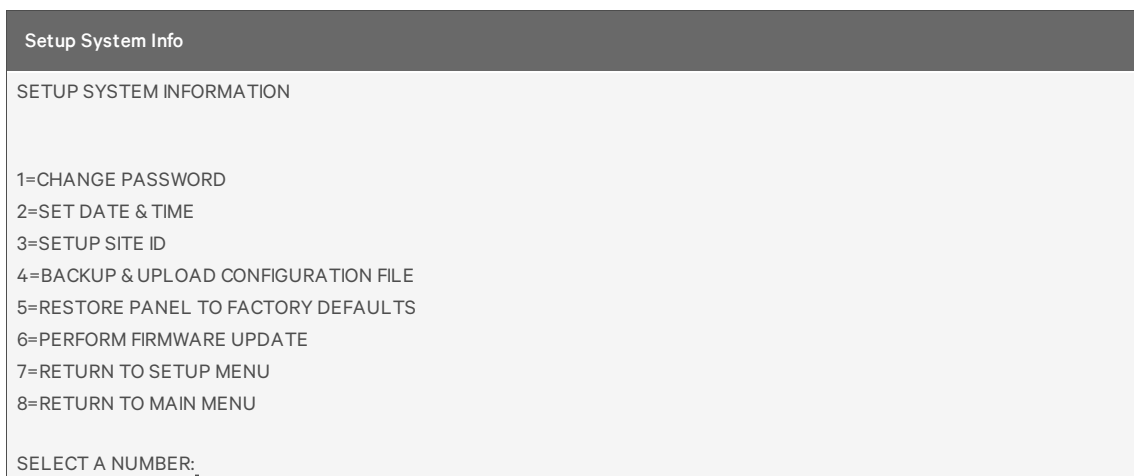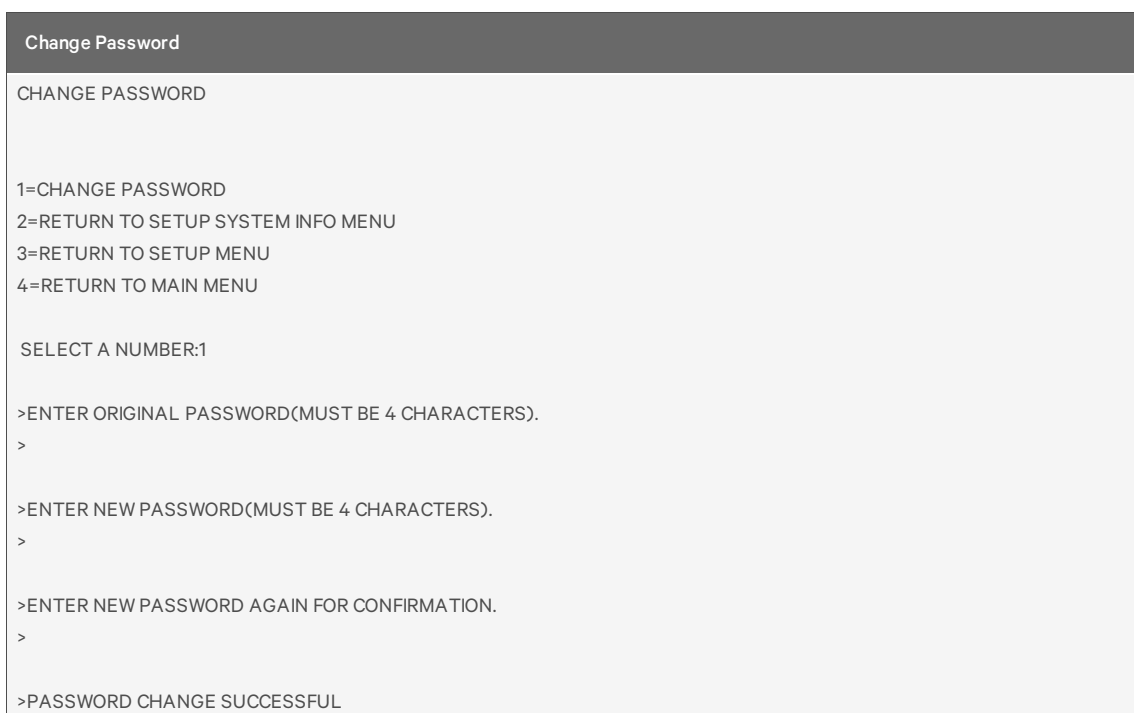
Setup System Info

This section presents Service Terminal Interface screens for choices 1 through 9 in the Setup System Information menu shown below. For details on this topic, see Setup System - Setup System Info on page 52.

Setup System Info
SETUP SYSTEM INFORMATION   1=CHANGE PASSWORD 2=SET DATE & TIME 3=SETUP SITE ID 4=BACKUP & UPLOAD CONFIGURATION FILE 5=RESTORE PANEL TO FACTORY DEFAULTS 6=PERFORM FIRMWARE UPDATE 7=RETURN TO SETUP MENU 8=RETURN TO MAIN MENU SELECT A NUMBER:

Change Password

For details on this feature, see Change Password on page 53.

Change Password
CHANGE PASSWORD   1=CHANGE PASSWORD 2=RETURN TO SETUP SYSTEM INFO MENU 3=RETURN TO SETUP MENU 4=RETURN TO MAIN MENU   SELECT A NUMBER:1 >ENTER ORIGINAL PASSWORD(MUST BE 4 CHARACTERS). > >ENTER NEW PASSWORD(MUST BE 4 CHARACTERS). > >ENTER NEW PASSWORD AGAIN FOR CONFIRMATION. > >PASSWORD CHANGE SUCCESSFUL

Setup Site ID

For details on this feature, see Setup Site ID on page 54.

Setup Site ID
SETUP SITE ID Define name to reference panel   CURRENT SITE ID 1=SETUP SITE ID 2=RETURN TO SETUP SYSTEM INFO MENU 3=RETURN TO SETUP MENU 4=RETURN TO MAIN MENU SELECT A NUMBER:1 >ENTER SITE ID NAME(40 CHARACTERS MAX). >[] >[>COMMAND SUCCESSFUL

Backup and Upload Configuration File *(Service Terminal Interface only)*

For details on this feature, see Backup and Upload Configuration File (Service Terminal Interface only) on page 54.

Backup & Upload Configuration File - Backup
BACKUP AND UPLOAD CONFIGURATION FILE Backup from panel saves panel configurations Upload to panel restores panel configurations   Select to backup or upload file   1=BACKUP CONFIGURATION FILE 2=UPLOAD CONFIGURATION FILE 3=RETURN TO SETUP SYSTEM INFO MENU 4=RETURN TO SETUP MENU 5=RETURN TO MAIN MENU SELECT A NUMBER:1 >INITIATE A BACKUP OF CONFIGURATION FILE-YES(Y) OR NO(N)? >[N] >[INSTRUCTIONS TO PERFORM BACKUP: ASSUMES USING MICROSOFT WINDOWS HYPERTERMINAL APPLICATION - SELECT TRANSFER FROM THE TOOLBAR - SELECT RECEIVE FILE - ENTER FOLDER WHERE FILE IS TO BE RECEIVED - SELECT XMODEM FROM THE PROTOCOL BOX - SELECT RECEIVE BUTTON AND ENTER FILE NAME,,E.G., AC4_CONF.SAV >BACKUP SUCCESSFUL

Backup & Upload Configuration File - Upload
BACKUP AND UPLOAD CONFIGURATION FILE Backup from panel saves panel configurations Upload to panel restores panel configurations   Select to backup or upload file   1=BACKUP CONFIGURATION FILE 2=UPLOAD CONFIGURATION FILE 3=RETURN TO SETUP SYSTEM INFO MENU 4=RETURN TO SETUP MENU 5=RETURN TO MAIN MENU SELECT A NUMBER:2 >INITIATE AN UPLOAD OF CONFIGURATION FILE-YES(Y) OR NO(N)? >[N] >[INSTRUCTIONS TO PERFORM UPLOAD: ASSUMES USING MICROSOFT WINDOWS HYPERTERMINAL APPLICATION - SELECT TRANSFER FROM THE TOOLBAR - SELECT SEND FILE - ENTER FILE NAME-CONFIGURATION FILE LOCATION & NAME,E.G., AC4_CONF.SAV - SELECT XMODEM FROM THE PROTOCOL BOX - SELECT SEND BUTTON >UPLOAD SUCCESSFUL

Factory Defaults

For details on this feature, see Factory Defaults on page 57.

Factory Defaults
RESTORE FACTORY DEFAULTS This command restores all panel information to factory settings   1=RESTORE FACTORY DEFAULTS 2=RETURN TO SETUP SYSTEM INFO MENU 3=RETURN TO SETUP MENU 4=RETURN TO MAIN MENU SELECT A NUMBER:1 >RESTORE THE PANEL TO FACTORY SETTINGS-YES(Y) OR NO(N)? >[N] [>COMMAND SUCCESSFUL

Firmware Update *(Service Terminal Interface only)*

For details on this feature, see Perform Firmware Update (Service Terminal Interface only) on page 57.

Firmware Update
PERFORM FIRMWARE UPDATE This command will update the existing firmware   1=PERFORM FIRMWARE UPDATE 2=RETURN TO SETUP SYSTEM INFO MENU 3=RETURN TO SETUP MENU 4=RETURN TO MAIN MENU SELECT A NUMBER:1 >PERFORM FIRMWARE UPDATE-YES(Y) OR NO(N)? >[N] >[INSTRUCTIONS TO PERFORM FIRMWARE UPDATE: ASSUMES USING MICROSOFT WINDOWS HYPERTERMINAL APPLICATION - SELECT TRANSFER FROM THE TOOLBAR - SELECT SEND FILE - ENTER FILE NAME-FIRMWARE FILE LOCATION & NAME,E.G., PROG####.S19 - SELECT XMODEM FROM THE PROTOCOL BOX - SELECT SEND BUTTON >WAITING TO SEND PROGRAM FILE >DONE >CHECKSUM IS.... >PROGRAM VERSION.... >WAITING TO SEND FLASH FILE >DONE >FIRMWARE UPDATE SUCCESSFUL

Setup Operation

For details on this feature, see Setup Operation on page 60.

Auto Sequencing

For details on this feature, see Turn Automatic Sequencing On or Off on page 60.

Setup Operation - Auto Sequencing
SETUP OPERATION Select operation to edit OPERATION   STATE 1=AUTO SEQUENCING   OFF 2=STANDBY TESTING   OFF 3=FAILED STANDBY   N 4=HOLD DELAY   10:00 5=RESTART DELAY   00:06 6=RETURN TO SETUP MENU 7=RETURN TO MAIN MENU SELECT A NUMBER:1 >AUTO SEQUENCING- N FOR ON, F FOR OFF >[N] >[N] >COMMAND SUCCESSFUL >EVERY ## DAYS (.5 FOR 12 HOUR) >[03] DAYS >[>COMMAND SUCCESSFUL >AT >[00:00] >[>COMMAND SUCCESSFUL

Standby Testing

For details on this feature, see Turn Standby Testing On or Off on page 61.

Setup Operation - Standby Testing
SETUP OPERATION Select operation to edit   OPERATION   STATE 1=AUTO SEQUENCING   OFF 2=STANDBY TESTING   OFF 3=FAILED STANDBY   N 4=HOLD DELAY   10:00 5=RESTART DELAY   00:06 6=RETURN TO SETUP MENU 7=RETURN TO MAIN MENU SELECT A NUMBER:2 >STANDBY TESTING- N FOR ON, F FOR OFF >[N] >[N] >COMMAND SUCCESSFUL >EVERY ## DAYS >[03] DAYS >[>COMMAND SUCCESSFUL >AT >[00:00] >[>COMMAND SUCCESSFUL >FOR >[10] MIN >[>COMMAND SUCCESSFUL

Failed Standby

For details on this feature, see Specify Failed Standby Response on page 63.

Setup Operation - Failed Standby

SETUP OPERATION

Select operation to edit

  OPERATION   STATE

1=AUTO SEQUENCING   OFF
2=STANDBY TESTING   OFF
3=FAILED STANDBY   N
4=HOLD DELAY   10:00
5=RESTART DELAY   00:06
6=RETURN TO SETUP MENU
7=RETURN TO MAIN MENU

SELECT A NUMBER:3

>IF FAILED STANDBY,IN SAME FAILED ZONE, ENABLE A DISABLED UNIT-YES(Y) OR NO(N)?
>[N]
>[Y]
>COMMAND SUCCESSFUL

Hold Delay

For details on this feature, see Specify Hold Delay Time on page 63.

Setup Operation - Hold Delay

SETUP OPERATION

Select operation to edit

  OPERATION   STATE

1=AUTO SEQUENCING   OFF
2=STANDBY TESTING   OFF
3=FAILED STANDBY   N
4=HOLD DELAY   10:00
5=RESTART DELAY   00:06
6=RETURN TO SETUP MENU
7=RETURN TO MAIN MENU

SELECT A NUMBER:4

>HOLD DELAY (MM:SS)
>[10:00]
>[
>COMMAND SUCCESSFUL

Restart Delay

For details on this feature, see Specify Restart Time on page 64.

Setup Operation - Restart Delay
SETUP OPERATION Select operation to edit   OPERATION   STATE 1=AUTO SEQUENCING   OFF 2=STANDBY TESTING   OFF 3=FAILED STANDBY   N 4=HOLD DELAY   10:00 5=RESTART DELAY   00:06 6=RETURN TO SETUP MENU 7=RETURN TO MAIN MENU SELECT A NUMBER:5 >DELAY BEFORE STARTUP UNIT(MM:SS)? >[00:06] >[>COMMAND SUCCESSFUL

Override Output

For details on this feature, see

Override Output
OVERRIDE OUTPUT Manually override an output point Select output to override   OUTPUT CONTROL 1=DEVICE_1   AUTO   ******************************* 2=DEVICE_2   AUTO   AUTO   = CONTROL BY PANEL 3=DEVICE_3   FORCE ON   FORCE ON = FORCE ON BY OPERATOR 4=DEVICE_4   FORCE ON   FORCE OFF= FORCE OFF BY OPERATOR 5=RETURN TO SETUP MENU   ******************************* 6=RETURN TO MAIN MENU SELECT A NUMBER:1 >OVERRIDE OUTPUT DEVICE_1-AUTO(2),FORCE ON(1),FORCE OFF(0). >[2] >[>COMMAND SUCCESSFUL

Clear Alarms & Logs

For details on this topic, see Clear Alarms & Logs.

Clear Active Alarms

For details on this feature, see Clear Active Alarms on page 66.

Clear Alarms & Logs - Clear Active Alarms
CLEAR ALARMS&LOGS Clear active alarms or log records Select the log to clear   1=CLEAR ACTIVE ALARMS 2=CLEAR ALARM LOG 3=CLEAR EVENT LOG 4=RETURN TO SETUP MENU 5=RETURN TO MAIN MENU SELECT A NUMBER:1 >CLEAR ALL THE ACTIVE ALARMS-YES(Y) OR NO(N)? >[N] >[>COMMAND SUCCESSFUL

Clear the Alarm Log

For details on this feature, see Clear the Alarm Log on page 66.

Clear Alarms & Logs - Clear the Alarm Log
CLEAR ALARMS&LOGS Clear active alarms or log records Select the log to clear   1=CLEAR ACTIVE ALARMS 2=CLEAR ALARM LOG 3=CLEAR EVENT LOG 4=RETURN TO SETUP MENU 5=RETURN TO MAIN MENU SELECT A NUMBER:2 >CLEAR ALL RECORDS IN THE ALARM LOG-YES(Y) OR NO(N)? >[N] >[>COMMAND SUCCESSFUL

Clear the Event Log

For details on this feature, see

Clear Alarms & Logs - Clear the Event Log
CLEAR ALARMS&LOGS Clear active alarms or log records Select the log to clear   1=CLEAR ACTIVE ALARMS 2=CLEAR ALARM LOG 3=CLEAR EVENT LOG 4=RETURN TO SETUP MENU 5=RETURN TO MAIN MENU SELECT A NUMBER:3 >CLEAR ALL RECORDS IN THE EVENT LOG-YES(Y) OR NO(N)? >[N] >[>COMMAND SUCCESSFUL

Notes

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