Liebert® XDP with iCOM™ Direct to Chip

User Manual

50 & 60 Hz, 160kW Nominal Capacity; Model Revision 5 or higher

The information contained in this document is subject to change without notice and may not be suitable for all applications. While every precaution has been taken to ensure the accuracy and completeness of this document, Vertiv assumes no responsibility and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

Vertiv recommends installing a monitored fluid detection system that is wired to activate the automatic closure of field-installed coolant fluid supply and return shut off valves, where applicable, to reduce the amount of coolant fluid leakage and consequential equipment and building damage. Refer to local regulations and building codes relating to the application, installation, and operation of this product. The consulting engineer, installer, and/or end user is responsible for compliance with all applicable laws and regulations relating to the application, installation, and operation of this product.

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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.

Visit https://www.vertiv.com/en-us/support/ for additional assistance.

TABLE OF CONTENTS

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1 Important Safety Instructions

SAVE THESE INSTRUCTIONS

This manual contains important safety instructions that should be followed during the installation and maintenance of the Vertiv™ Liebert® XDP. Read this manual thoroughly before attempting to install or operate this unit.

Only qualified personnel should move, install or service this equipment.

Adhere to all warnings, cautions, notices and installation, operating and safety instructions on the unit and in this manual. Follow all operating and user instructions.

Follow all local codes.

⚠️ **WARNING! Risk of arc flash and electric shock. Can cause equipment damage or death. Disconnect all local and remote electric power supplies and wear protective equipment per NFPA 70E before working within electric control enclosure. Failure to comply can cause serious injury or death. Customer must provide earth ground to unit, per NEC, CEC and local codes, as applicable. Before proceeding with installation, read all instructions, verify that all the parts are included and check the nameplate to be sure the voltage matches available utility power. The Vertiv™ Liebert® iCOM™ microprocessor does not isolate power from the unit, even in the Unit Off mode. Some internal components require and receive power even during the Unit Off mode of Liebert® iCOM™ control. The line side of the disconnect switch on the front of the unit contains live high-voltage. The only way to ensure that there is NO voltage inside the unit is to install and open a remote disconnect switch. Refer to unit electrical schematic. Follow all local codes.**

⚠️ **WARNING! Risk of unit falling over. Can cause property damage, injury or death. The Liebert® XDP is top-heavy. Use extreme caution and care when moving and installing this unit.**

⚠️ **CAUTION: Risk of piping and component rupture. Can cause equipment damage or injury.**

System is pressurized. Relieve pressure through access valve before working on unit. System is pressurized. Relieve pressure through access valve before working on unit. Closing service valves may isolate liquid refrigerant, causing high pressure and rupture of piping. Do not close valves without following recommended procedures for repair, maintenance and replacement of components. Install pressure relief valves in field piping that may become isolated by service valves.

Risk of improper installation and/or start-up. Can cause injury, equipment damage, or warranty cancellation. Read and follow completely the installation and start-up instructions that are factory supplied with the unit

⚠️ **CAUTION: Risk of contact with hot surfaces. Can cause injury. The pump motors are extremely hot during unit operation. Allow sufficient time for them to cool before working within the unit cabinet. Use extreme caution and wear protective gloves and arm protection when working on or near the pump motors.**

⚠️ **CAUTION: Risk of sharp edges, splinters and exposed fasteners. Can cause injury. Only properly trained and qualified personnel wearing appropriate safety headgear, gloves, shoes and glasses should attempt to move, lift, remove packaging from or prepare the unit for installation.**

NOTICE

Risk of leaking chilled water lines. Can cause equipment and building damage.

Lines and joints must be inspected regularly. Improper installation, application and service practices can result in water leakage from the unit. Water leakage can result in severe property damage and loss of critical data center equipment. Do not locate unit directly above any equipment that could sustain water damage. Vertiv recommends installing monitored leak detection equipment for the unit and supply and return lines.

NOTICE

Risk of overhead interference. Can cause unit and/or building damage.

The unit may be too tall to fit through a doorway while on the skid. Measure the unit and doorway heights and refer to the installation plans to verify clearances prior to moving the unit.

NOTICE

Risk of damage from forklift. Can cause unit damage.

Keep the forklift tines level and at a height suitable to fit below the skid and unit to prevent exterior and underside damage.

NOTICE

Risk of improper storage. Can cause unit damage.

Keep the Vertiv™ Liebert® XDP upright, indoors and protected from dampness, freezing temperatures and contact damage.

NOTE: This document is intended to be used together with site specific documentation and documentation for other parts of the system (heat rejection devices and cooling modules).

NOTE: Before any action that could cause a disturbance in the Vertiv™ Liebert® XD system's cooling function is begun, the facility manager MUST be informed. In addition, after the action is taken and the work is finished, the facility manager MUST be informed.

Table 1.1 Model Number Nomenclature

XD	P	160	R	A	__	__	5	S
Liebert® Extreme Heat Density System	P = Pumping Unit	Model Size	R = Pump Redundancy	C = 208V - 3ph-60Hz A = 460V - 3ph-60Hz 2 = 380V - 3ph-60Hz U= 400V - 3ph-50Hz	_ = Place Holder	_ = Place Holder	5 = Revision Level	Factory Configuration Number

2 Vertiv™ Liebert® iCOM™ Control

2.1 Liebert® iCOM™ Components and Functions

The Liebert® iCOM™ controller layout is shown in **Figure 2.1** below ; the keyboard functions are defined in **Table 2.1** on page 5 .

Figure 2.1 Liebert® iCOM™ Display Components

Table 2.1   Keyboard Icons and Functions

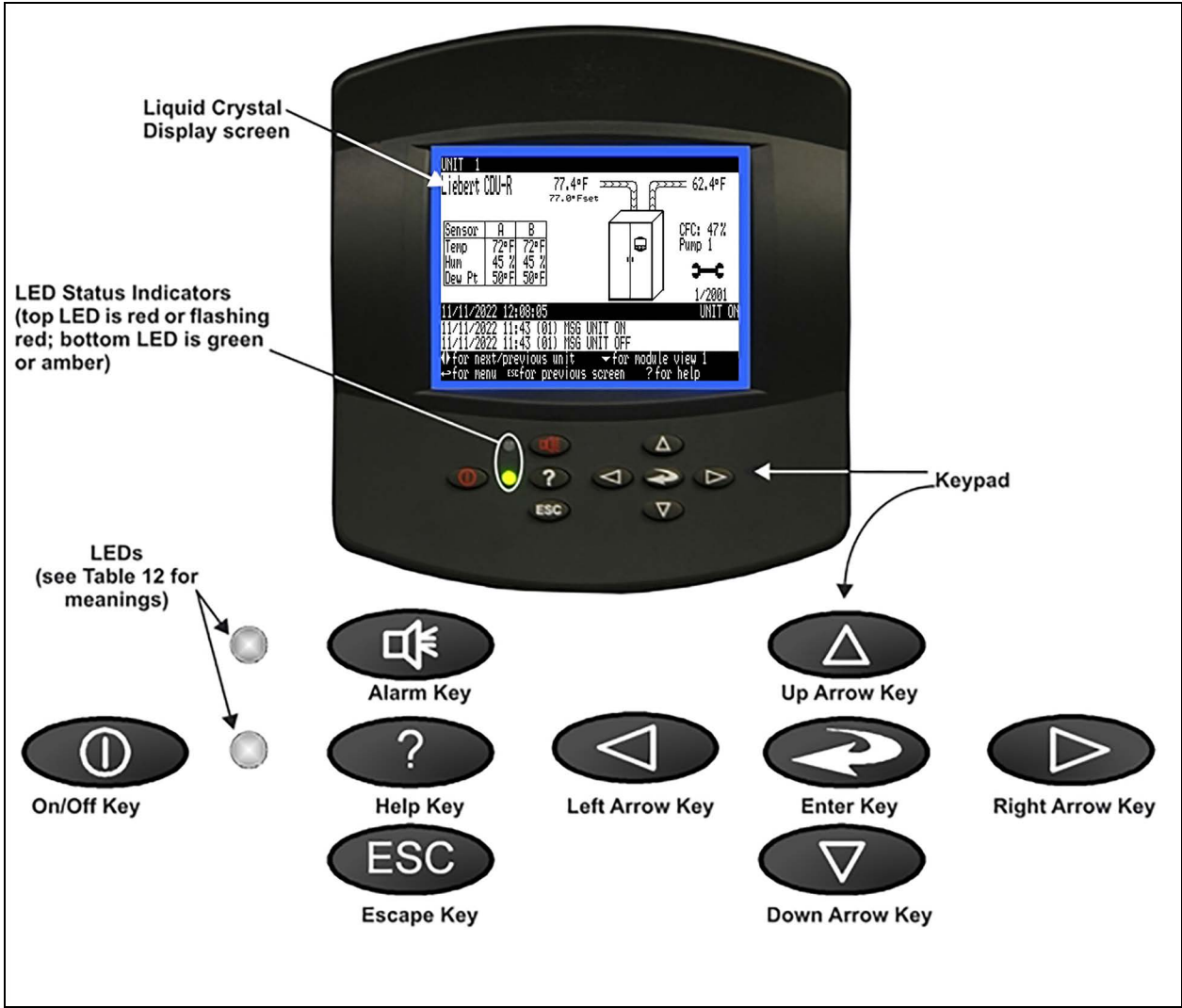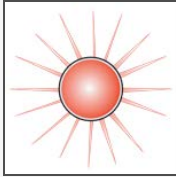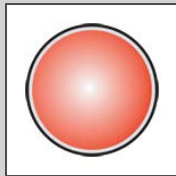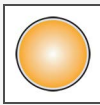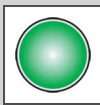| Icon	Key Name	Function
	On/Off Key	Controls the operational state of the cooling unit.
	Alarm Key	Silences an alarm.
	Help Key	Accesses integrated Help menus.
	ESCape Key	Returns to the previous display view.
	Enter Key	Confirms all selections and selects icons or text.
	Increase Key (Up Arrow)	Moves upward in a menu or increases the value of a selected parameter.
	Decrease Key (Down Arrow)	Moves downward in a menu or reduces the value of a selected parameter.
	Left and Right Arrow Keys	Navigates through text and sections of the display.

 2 Vertiv™ Liebert® iCOM™ Control

Table 2.1   Keyboard Icons and Functions (continued)

Icon	Key Name	Function
	Upper LED	Blinking Red—Active, unacknowledged alarm exists
		Solid Red—Active, acknowledged alarm exists
	Lower LED	Amber—Power is available to the unit; unit is NOT operating
		Green—Unit is operating with no alarms

2.2 Display Lamp Indicators

- The Green lamp will be On only when the Vertiv™ Liebert® XDP is On and running with no alarms.
- The Red lamp will be On if the unit is On and running with an active alarm, or if the unit is shut down because of an alarm.
- The Red lamp will flash while an alarm is being annunciated. The Red lamp will stop flashing and the beeper in the display will stop beeping when the ALARM SILENCE/? key is pressed.
- The Amber lamp will be On if the Liebert® XDP has been shut down at the I/O switch or if the unit has been shut down by an alarm condition.

2.3 Navigating through the Vertiv™ Liebert® iCOM™ Display

Liebert® iCOM™ displays icons and text for monitoring and controlling your Liebert® cooling unit. The Liebert® iCOM™ home screen is shown in **Figure 2.2**   on the next page .

Figure 2.2   Vertiv™ Liebert® iCOM™ Default Home Screen
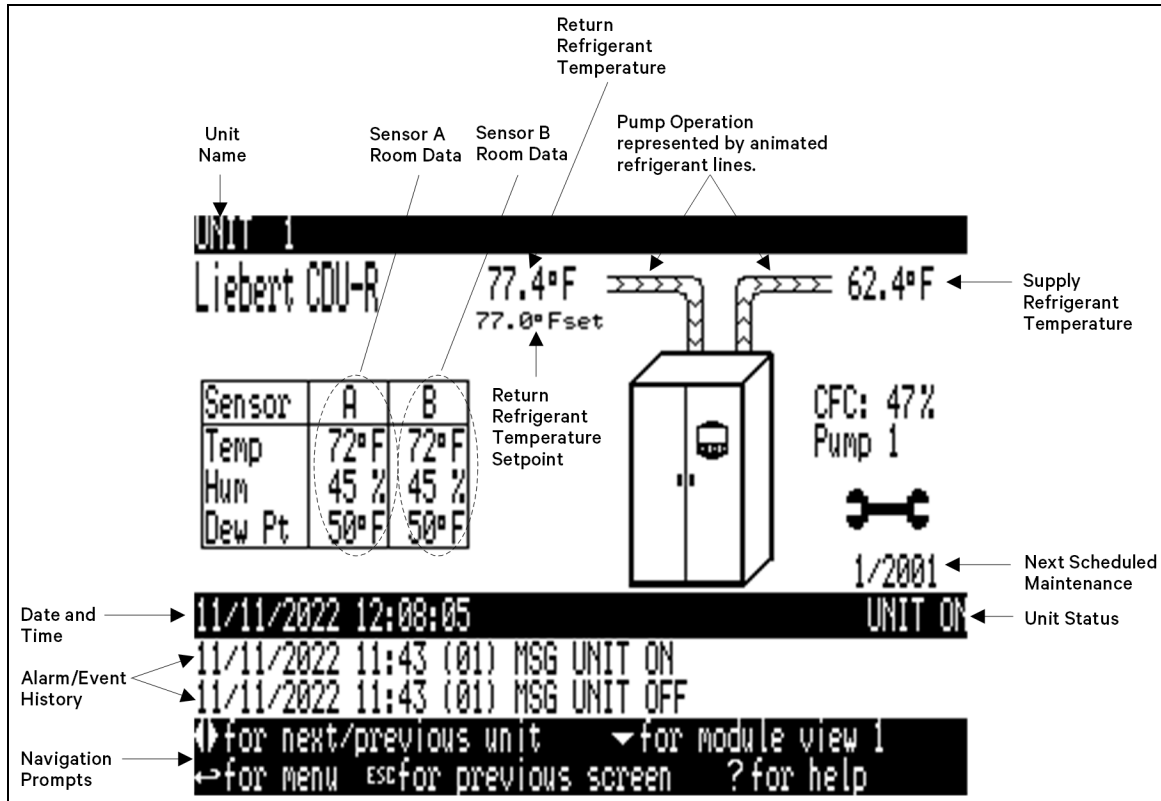
2.3.1 Accessing Menus and Settings

Viewing Data

No password is required to view data or settings.

To view data:

1. From the home screen, press the **Enter** key to view the User Menu (see **Figure 2.5** on page 10).
2. Press **Enter** again to highlight the first icon.
3. Use the keyboard's arrow keys to move to the icon for the data you wish to view.
4. Once that icon is highlighted, press **Enter** again to open that menu.
    - If a password is required, see Entering the Password on the facing page .
    - If a menu has more than one screen, the Vertiv™ Liebert® iCOM™ display will have text at the top similar to this: *(page 1 of 2)*.
5. Press **Enter** to select the first line of data.
6. Use the **Up** and **Down** arrow keys to scroll to the desired data point.
7. Press **ESC** to move back to higher level menus.

2.3.2   Entering the Password

Most settings in the Vertiv™ Liebert® iCOM™ are protected by a factory-set password, 1490. To enter the password:

1. From the home screen, press the **Enter** key to view the User Menu (see **Figure 2.5**   on page 10).

2. Press **Enter** again to highlight the first icon.

3. Use the keyboard's arrow keys to move to the icon for the data you wish to change.

4. Once that icon is highlighted, press **Enter** again to open that menu.

5. Press **Enter** to highlight the Password line.

6. With the Password line highlighted, press **Enter** to highlight the first digit in the password

7. Enter the password, 1490.

   Use the **Up** and **Down** arrow keys to select a numeral for the first digit of the password.

   Move to the next digit of the password with the **Right** arrow key.

   Select the numerals for all four digits with the same process.

8. After all four digits of the password have been entered, press the **Enter** key.

NOTE: Do not press the ESC key or the Vertiv™ Liebert® iCOM™ will move to the previous screen and the password must be re-entered before changes may be made.

Figure 2.3   Entering the Password
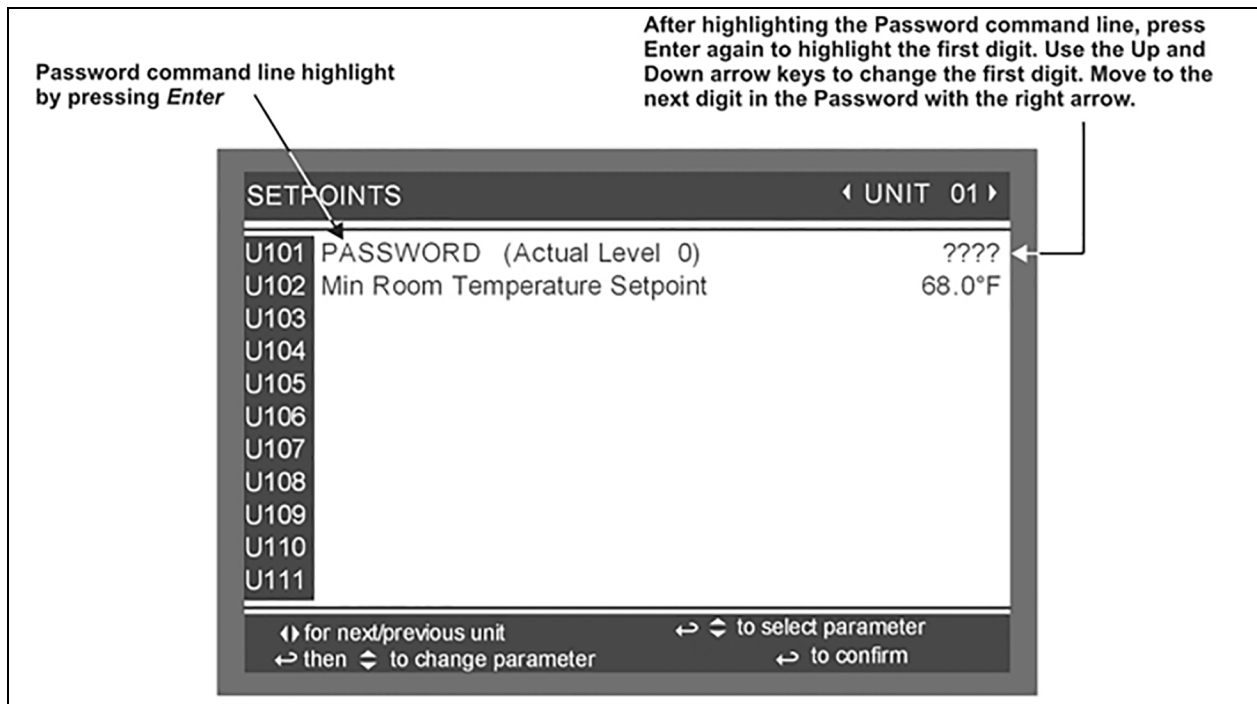
2.4 Changing Vertiv™ Liebert® iCOM™ Display Settings

No password is required to change the way the Liebert® iCOM™ displays data. The Display Setup controls how the unit shows data, such as temperature, date and time.

To change the display settings:

1. From the home screen, press the **Enter** key to view the User Menu (see **Figure 2.5**   on page 10).
2. Press **Enter** again to highlight the first icon.
3. Use the keyboard's arrow keys to move to the Display Setup icon.
4. Once that icon is highlighted, press **Enter** again to open that menu.
5. Press the **Enter** key to select the first setting.

   Either change that setting or navigate to another setting with the **Up** and **Down** arrow keys.

6. Once the desired setting is highlighted, press the **Enter** key to access that parameter's display setting options.
7. Use the **Up** and **Down** arrow keys to make changes.
8. Press the **Enter** key to accept the changes.
9. Press the **ESC** key twice to return to the Vertiv™ Liebert® iCOM™ user menu.

Figure 2.4   Display Setup Screen

	DISPLAY SETUP	SYSTEM
	U401 Language	ENGLISH (US)
	U402 Date	8/27/2012
	U403 Time	15:03:17
	U404 Temperature Indication	°F
Highlight the setting to be changed by pressing Enter.	U405 Display Contrast	30
	U406 Buzzer Frequency	Off/ 50
	U407 Backlite Off after	5 min
	U408 Screen	Unit View
	U409	
	U410 Display Colors	Normal
	U411 Date Format	mm/dd/yyyy
	◀▶ for next/previous unit ↵ then ⬍ to change parameter	↵ ⬍ to select parameter ↵ to confirm

2.5 Changing Operational Settings

Changes to the Vertiv™ Liebert® XDP's operation settings in the **Set Alarms** and **Setpoints** menus require a password.

1. From the home screen, press the **Enter** key to view the User Menu (see **Figure 2.5**   on the next page).

2. Press **Enter** again to highlight the first icon.

3. Use the keyboard's arrow keys to move to the icon for the data you wish to change.

4. Once that icon is highlighted, press **Enter** again to open that menu.

   If a password is required, see Entering the Password on page 7 .

5. After entering the password, use the **Up** and **Down** arrow keys to scroll to and highlight the operational setting to be changed.
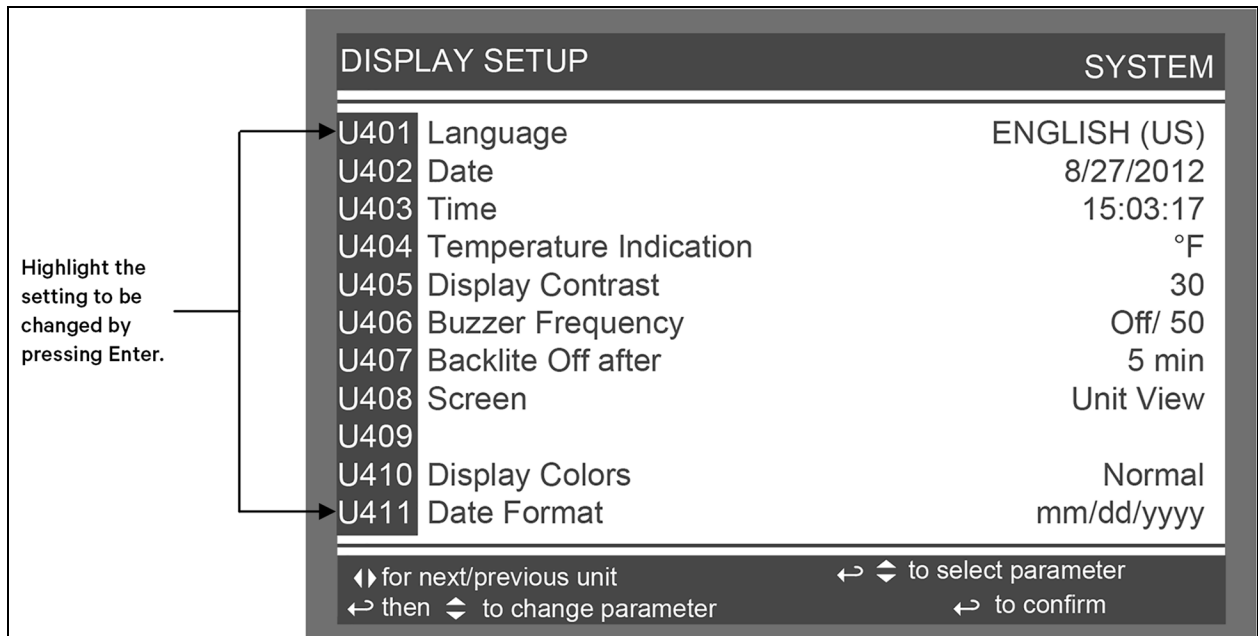
6. Press **Enter** to highlight the values for that setting.

7. Use the **Up** and **Down** arrow keys to change the value.

8. Press **Enter** to accept the change. (The value will no longer be highlighted.)

9. Press **ESC** to deselect the operational setting. (The setting will no longer be highlighted.)

10. Press **ESC** again to move to previous screens.

2.6 Graphical Data Record

The Graphical Data Record charts the average temperature from Sensors A and B and the supply refrigerant temperature.

The temperature scales can be changed to expand or compress the data.

The time scale also can be altered to any of several selectable values.

NOTE: Changing the time scale eliminates all previous graphical data and the unit will begin recording new data.

2.7 Vertiv™ Liebert® iCOM™ User Menu Icons and Legend

Table 2.2   Liebert® iCOM™ User Menu Icons Descriptions
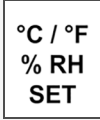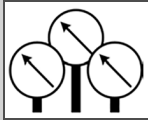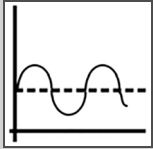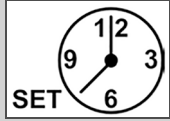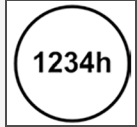
item	description	item	description
°C / °F % RH SET	Setpoints - View and change operational setpoints	SET ALARMS	Set Alarms - Allows user to change settings for alarms
(spare parts icon)	Spare Parts List - Contains spare parts available on site	(sensor data icon)	Sensor Data - Shows readings of sensors; View Only
EVENT LOG	Event Log - Lists last 400 events and alarms. View Only	ACTIVE ALARMS	Active Alarms - Lists all current alarms; View Only

Table 2.2   Liebert® iCOM™ User Menu Icons Descriptions (continued)

item	description	item	description
	Graphic Data Record - Displays average temperature from Sensors A and B, the average dewpoint from Sensors A and B, the supply refrigerant temperature and the supply refrigerant control point graphs; Data is View Only; Display scale is adjustable		Display Setup - Change settings for display: language and time
	View Network - Shows status of all connected units; View Only		Total Run Hours - Records the run time of all components and allows setting of limits on run time; View Only
	XDIO - Displays readings for the individual smart modules; View Only		Service Contacts - Contains key contact information for service

NOTE: Menu shows icons only; text is explanatory and does not appear on the Liebert® iCOM™ display.

Figure 2.5   Vertiv™ Liebert® XDP User Menu Screen
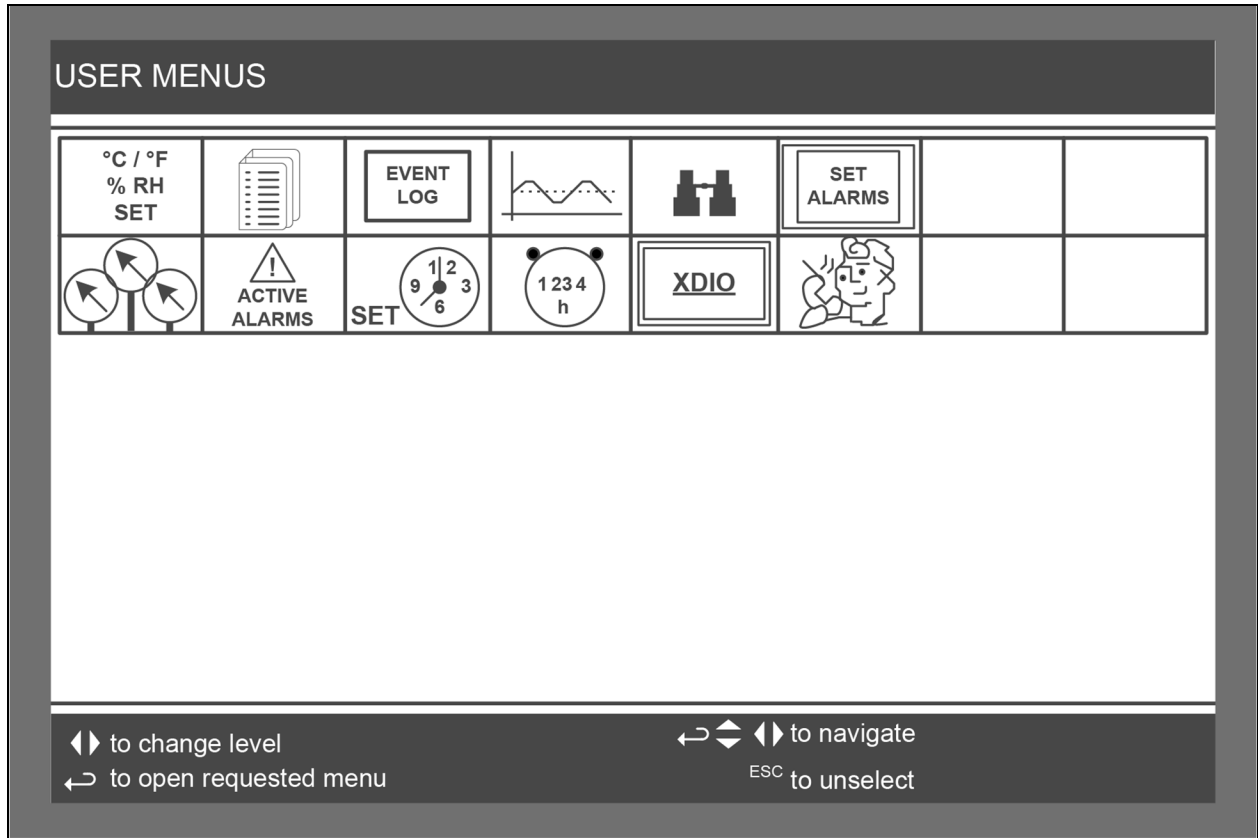
2.8 Vertiv™ Liebert® iCOM™ User Menu Screens

User menus report general cooling unit operations and status. User menu screens employ a coding that begins with "U" and is followed by parameters and information, such as settings. Gaining access to some User menu screens requires entering a password; the User Menu password is **1490**.

Check *www.Vertiv.com* for the latest Liebert® iCOM™ user manual updates, SL-18835.

Figure 2.6   Setpoints Screen
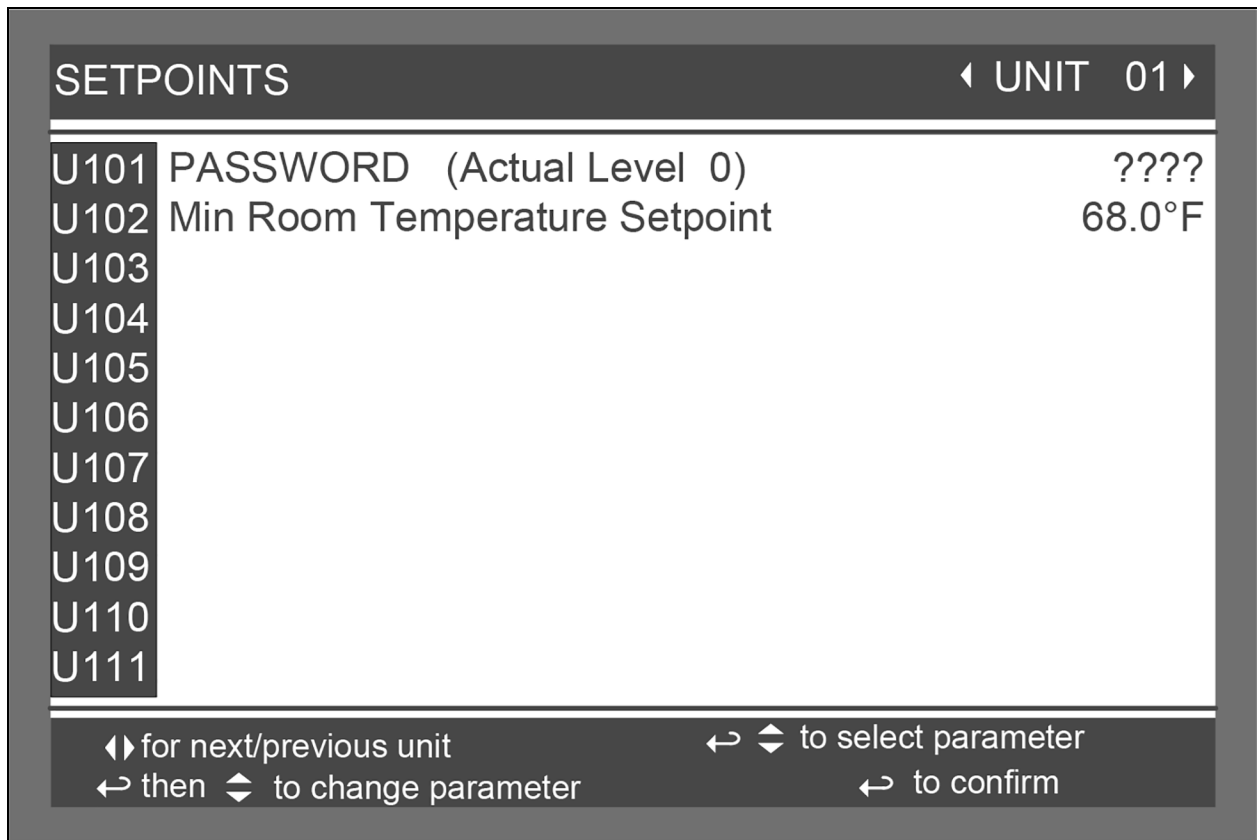
Min Room Temperature Setpoint—Sets the minimum room temperature the unit will attempt to maintain. If the temperature falls below this point, the unit will raise the refrigerant temperature setpoint to reduce the amount of cooling.

The setting is intended to keep the room temperature above the setpoint. Without a proper setpoint, the Vertiv™ Liebert® XDP can lower the room temperature too much, depending on the room dew point and load. This setpoint will reduce the cooling to keep the room temperature above this desired temperature.

NOTE: This is not a true room temperature setpoint. The Liebert® XDP has no heaters; it will try to cool as much as possible. If the Liebert® XDP is able to cool the room to this setpoint, it will reduce its cooling action to try to keep the room temperature at or above this setpoint.

The default setting is 50°F (10°C). The range is 50-80°F (10-27°C).

For optimal cooling performance, the minimum temperature setpoint should be at least 1-2° below the expected temperature at the remote sensors, which may affect placement of the remote sensors. If the minimum temperature setpoint is set above the typical remote temperature sensor reading, it will reduce the Vertiv™ Liebert® XD cooling output and, in extreme cases, cause erratic Liebert® XD performance.

Spare Parts

Spare Parts—The spare parts lists contain a detailed description and part number that can be used to order parts for the unit. These part numbers are specific to each model and option installed on the unit.

Event Log

Event Log—The event log displays all events and actions that have been generated by the unit. When multiple units are networked you will see the event log of the whole system. Each event shows the unit that generated the alarm, time and date stamp, a description and the event type.

Figure 2.7   Set Alarms Screen

```
SET ALARMS 1/1                          ◄UNIT  01►

U201 PASSWORD    (Actual Level  0)              ????
U202 High Room Air Temperature               80.0°F
U203 Low Room Air Temperature                55.0°F
U204 High Room Dewpoint                      65.0°F
U205 High Supply Refrigerant Temp            80.0°F
U206
U207 High Sup Chilled Water Temperature      60.0°F
U208 High Return Refrigerant Temp            86.0°F
U209 Low Return Refrigerant Temp             68.0°F
U210
U211

◄►for next/previous unit   ↵⬦to select parameter
↵then  ⬦to change parameter      ↵to confirm
```
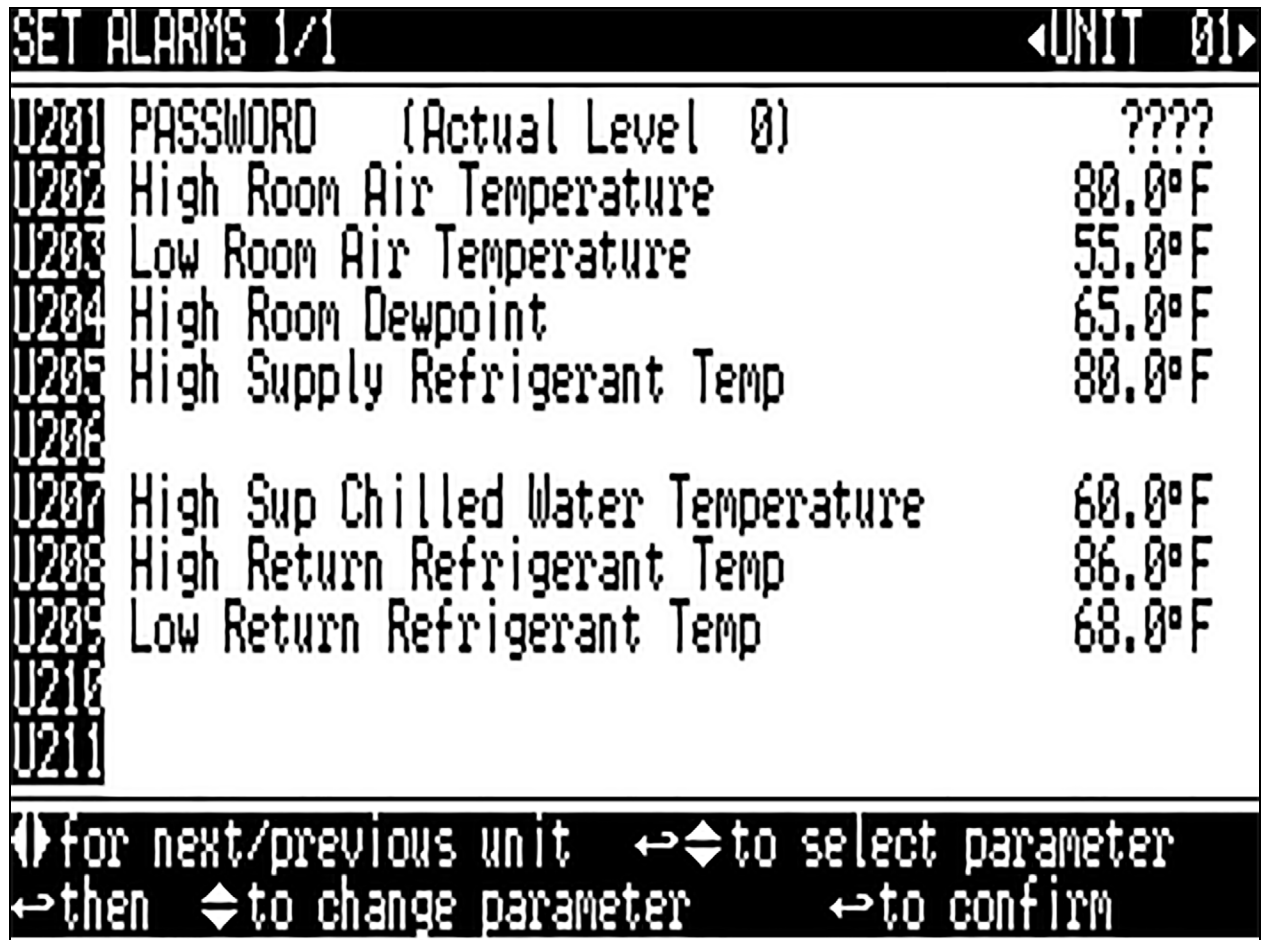
High Room Air Temperature—Sets the threshold where a high room temperature alarm will occur, based on the actual reading from either remote Sensor A or B. The range for the high room air temperature alarm is 33.8 to 113°F (1 to 45°C); the default is 80.0°F (26.7°C).

Low Room Air Temperature—Sets the threshold where a low room temperature alarm will occur, based on the actual reading from either remote Sensor A or B. The range for the high room air temperature alarm is from 33.8 to 95°F (1 to 35°C); the default is 55.0°F (12.8°C).

High Room Dewpoint—Sets the threshold where a high room dew point alarm will occur, based on the calculated values from either remote Sensor A or remote Sensor B. The range for the high room dew point alarm is from 33.8 to 95°F (1 to 35°C); the default is 65°F (18.3°C).

High Supply Refrigerant Temp—Sets the threshold where a high supply refrigerant temperature alarm will occur based on the actual reading from the supply refrigerant sensor. The supply refrigerant temperature is from the Vertiv™ Liebert® XDP to the modules. The range for the high supply refrigerant temperature alarm is from 33.8 to 140°F (1 to 60°C); the default is 122°F (50°C).

High Sup Chilled Water Temperature—Sets the threshold where a high supply chilled water temperature alarm will occur based on the actual reading from the supply chilled water sensor. The range for the high supply chilled water temperature is from 33.8 to 95°F (1 to 35°C); the default is 113°F (45°C).

High Return Refrigerant Temp – Sets the threshold where a high return refrigerant temperature alarm will occur based on the actual reading from the return refrigerant sensor. The return refrigerant temperature is from the modules to the Vertiv™ Liebert® XDP. The range for the high return refrigerant temperature alarm is from 33.8 to 140°F (1 to 60°C); the default is 122°F (50°C).

Low Return Refrigerant Temp – Sets the threshold where a low return refrigerant temperature alarm will occur based on the actual reading from the return refrigerant sensor. The return refrigerant temperature is from the modules to the Liebert® XDP. The range for the high return refrigerant temperature alarm is from 33.8 to 140°F (1 to 60°C); the default is 68°F (20°C).

Figure 2.8   Sensor Data Screen, page 1 of 2

Sensor A Temperature—Displays the temperature of the remote CAN Temp Humidity sensor designated as Sensor A.

Sensor A Humidity—Displays the humidity of the remote CAN Temp Humidity sensor designated as Sensor A.

Sensor A Dew Point—Displays the dew point of the remote CAN Temp Humidity sensor designated as Sensor A.

Sensor B Temperature—Displays the temperature of the remote CAN Temp Humidity sensor designated as Sensor B.

Sensor B Humidity—Displays the humidity of the remote CAN Temp Humidity sensor designated as Sensor B.

Sensor B Dew Point—Displays the dew point of the remote CAN Temp Humidity sensor designated as Sensor B.

Supply Refrigerant Temperature—Displays the actual supply refrigerant temperature from the Liebert® XDP to the modules.

Return Refrigerant Temperature—Displays the actual return refrigerant temperature from the modules to the Liebert® XDP.

Supply Chilled Water Temperature—Displays the actual the Supply Chilled Water temperature to the Liebert® XDP.

Return Chilled Water Temperature—Displays the actual the return Chilled Water temperature leaving the Liebert® XDP.

Figure 2.9   Sensor Data Screen, page 2 of 2

Daily High Temperature—Shows the highest temperature in a rolling 24 hour period for either remote Sensor A or remote Sensor B.

Daily Low Temperature—Shows the lowest temperature in a rolling 24 hour period for either remote Sensor A or remote Sensor B.

Daily High Humidity—Shows the highest humidity in a rolling 24 hour period for either remote Sensor A or remote Sensor B.

Daily Low Humidity—Shows the lowest humidity in a rolling 24 period for either remote Sensor A or remote Sensor B.

Daily High Dew Point—Shows the highest dew point in a rolling 24 hour period for either remote Sensor A or remote Sensor B.

Daily Low Dew Point—Shows the lowest dew point in a 24 hour period for either remote Sensor A or remote Sensor B.

Daily High Sup Refrig Temp—Shows the highest supply refrigerant temperature in a rolling 24 hour period from the Vertiv™ Liebert® XDP to the modules.

Daily Low Sup Refrig Temp—Shows the lowest supply refrigerant temperature in a rolling 24 hour period from the Liebert® XDP to the modules.

Daily High Supply CW Temp—Shows the highest chilled water supply temperature being delivered to the Liebert® XDP in a rolling 24 hour period.

Daily Low Supply CW Temp—Shows the lowest chilled water supply temperature being delivered to the Liebert® XDP in a rolling 24 hour period.

Figure 2.10   Display Setup Screen

Language—Sets the language on the display. Changing this setting changes all menu parameters to the selected language.

Date—Sets the internal date of the unit. If this unit is connected to other units with the unit-to-unit network connection, each unit will reflect the last date set.

Time—Sets the internal time of the unit. If this unit is connected to other units with the unit-to-unit network connection each unit will reflect the last time set.

Temperature Indication—Selects the actual and setpoint temperature scale. Selecting C will set the unit to display in Celsius and F will set the unit to display in Fahrenheit.

Display Contrast—Changes the contrast of the display to adjust for different viewing angles, low light and bright light conditions. As the display ages, the contrast may require adjustment for viewing.

Buzzer Frequency—Changes the audible noise frequency of the built-in buzzer. The buzzer will sound when its frequency is being adjusted, easing selection of a frequency easily detected when an alarm occurs.

Backlite Off After—Controls how long the back-light remains active when the display is unused. When the buttons on the front display have not been pressed for the time selected in this parameter, the back-light will turn Off, extending the life of the display and saving energy.

Screen—Controls the screen layout. The Vertiv™ Liebert® XDP has one view, Unit View.

Display Colors—Selects the background color. Inverted sets the display to show white font with blue background and Normal sets a white background with blue font.

Date Format—Date format changes the month, day and year arrangement shown on the front display and on event time stamps.

Figure 2.11   Total Run Hours Screen
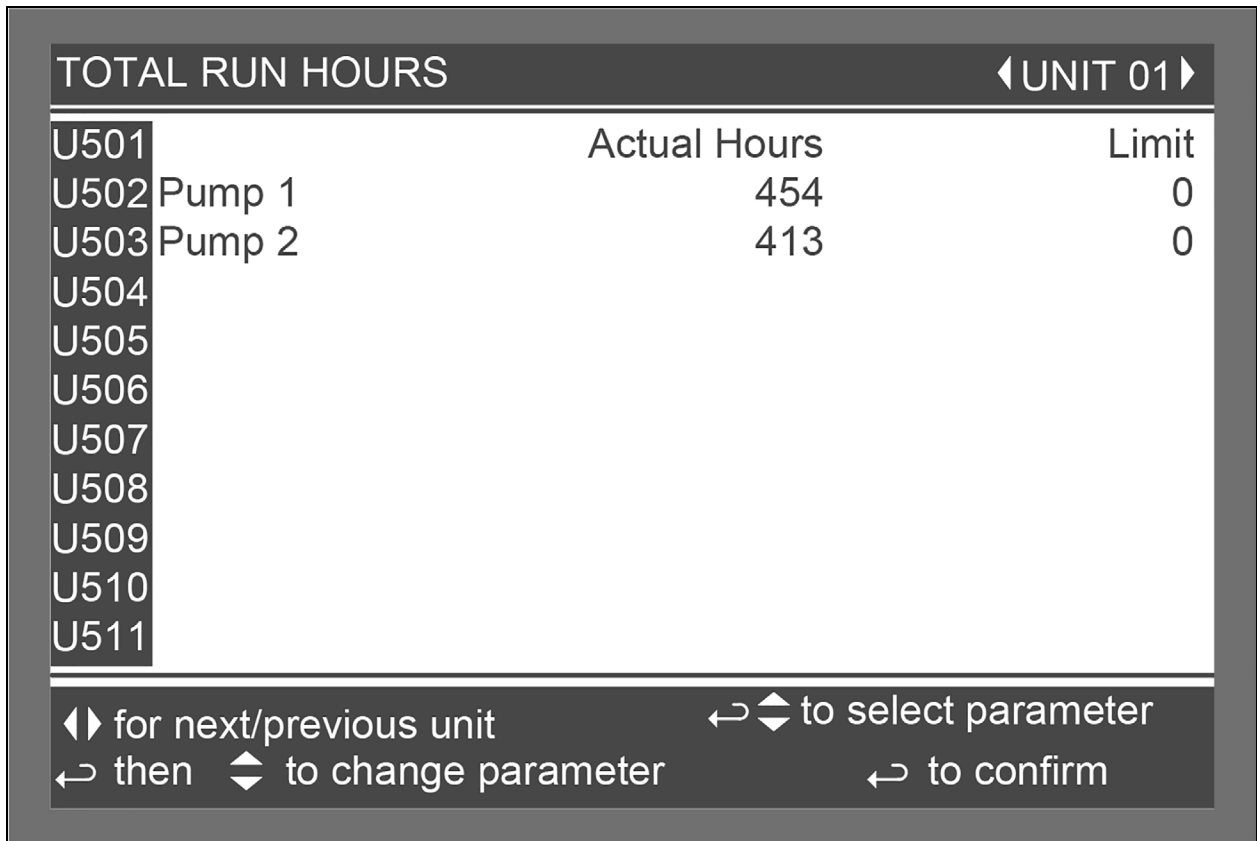
The parameter shows the actual hours Pump 1 and Pump 2 have operated and the maximum time Pump 1 can operate before the next maintenance.

       2 Vertiv™ Liebert® iCOM™ Control

2.9 Vertiv™ Liebert® iCOM™ Service Menu Icons and Legend

Table 2.3 Liebert® iCOM™ Service Menu Icons Descriptions

Icon	description	Icon	description
°C / °F % RH SET	Setpoints - View and change operational setpoints	+/- ⊗	Sensor Calibration/Setup - Set up and calibrate sensors for site
(unit diary icon)	Unit Diary - Shows all program changes and maintenance performed,	NETWORK	Network - Set up or alter network setting
+ WELLNESS	Maintenance/Wellness Settings - Shows all maintenance records, calculates next maintenance date	SET UP	Options Setup - Enter specific settings for various options
SERVICE	Diagnostics/Service Mode - Enter Diagnostics/Service Mode for troubleshooting and repair	XDIO	Smart Module - Setup of alarms and events. Set temperature limits for supply and return sensors. Label smart modules, view firmware version
SET ALARMS	Set Alarms - Change settings for alarms	(service contacts icon)	Service Contacts - Contains key contact information for service

NOTE: Menu shows icons only; text is explanatory and does not appear on the Vertiv™ Liebert® iCOM™ display.

Figure 2.12   Vertiv™ Liebert® XDP Service Menu Screen
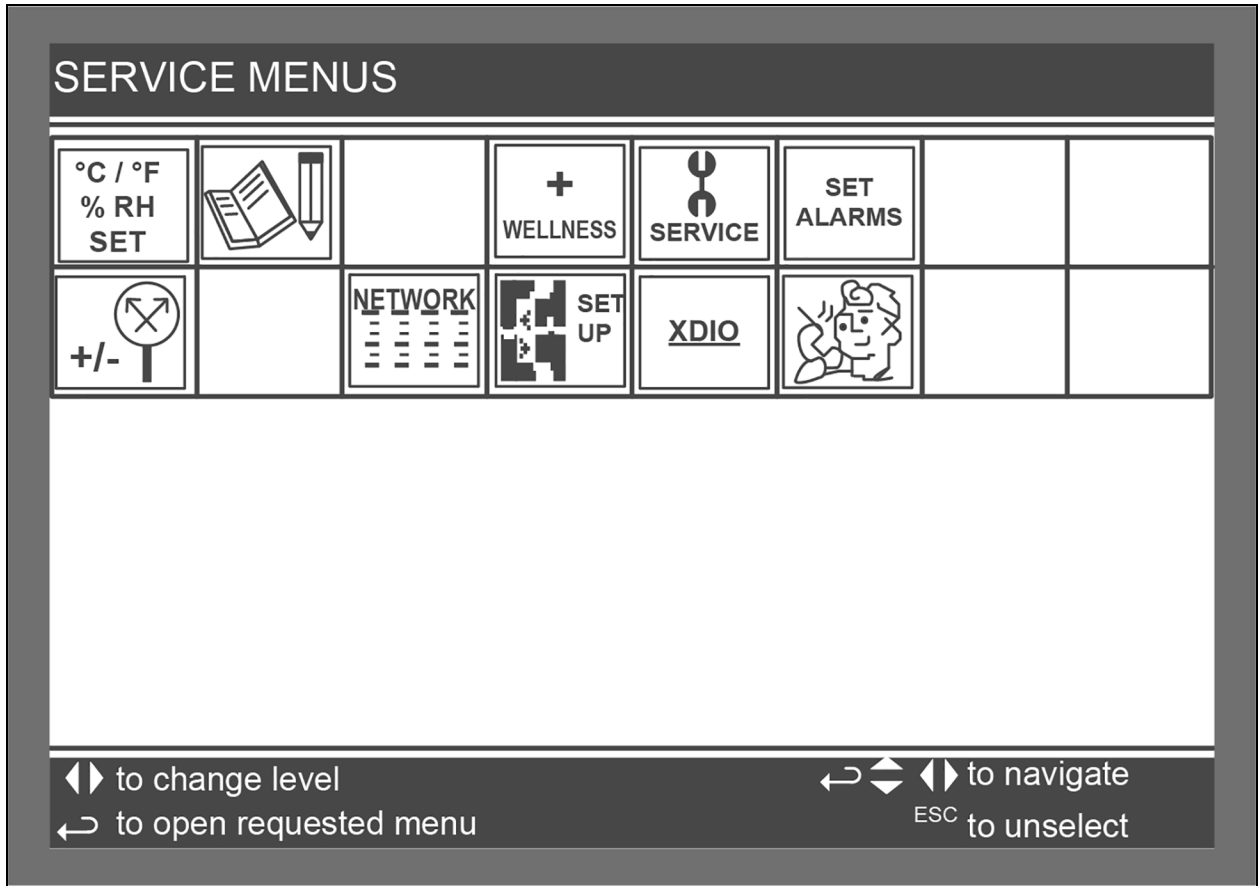
2.10 Vertiv™ Liebert® iCOM™ Service Menu Screens

Service menus allow customized settings for site operations. Service Menu screens employ a coding that begins with "S" and is followed by parameters and information, such as settings. Gaining access to most Service Menus requires entering a password; the Service Menu password is **5010**; see Entering the Password on page 7 for assistance.

The Liebert® iCOM™ control firmware is being updated constantly. As a result, the Service Menu parameters in this manual may be slightly different from what is shown on a cooling unit's display. Check *www.Vertiv.com* for the latest Liebert® iCOM™ user manual updates.

                       2 Vertiv™ Liebert® iCOM™ Control

Figure 2.13   Setpoints Screen

```
SETPOINTS 1/1                    ◄UNIT  01►
─────────────────────────────────────────────
S101 PASSWORD    (Actual Level  0)       ????
S102 Min Room Temperature Setpoint     50.0°F
S103 Temperature Control Type      Intelligent
S104 Temperature Proportional Band      7.0°F
S105 Temperature Integration Time         min
S106 Temperature Derivative Time          sec
S107 Dewpoint Margin                    4.0°F
S108 Minimum Control Point             55.0°F
S109 Min Percent Cooling Setpoint         5 %
S110 Return Ref Temp Setpoint          77.0°F
S111

◄►for next/previous unit   ↵♦to select parameter
↵then   ♦to change parameter       ↵to confirm
```

Min Room Temperature Setpoint—Sets the minimum room temperature the unit will attempt to maintain. If the temperature falls below this point, the unit will raise the refrigerant temperature setpoint to reduce the amount of cooling. Adjustable from 50 to 80°F (10.0 to 26.7°C), the factory default setting is 50°F (10°C).

NOTE: This is not a true room temperature setpoint. The Vertiv™ Liebert® XDP has no heaters; it will try to cool as much as possible. If the Liebert® XDP is able to cool the room to this setpoint, it will reduce its cooling action to try to keep the room temperature at or above this setpoint.

For optimal cooling performance, the minimum temperature setpoint should be 1-2° below the expected temperature at the remote sensors, which may affect placement of the remote sensors. If the minimum temperature setpoint is set above the typical remote temperature sensor reading, it will reduce the Vertiv™ Liebert® XD cooling output and, in extreme cases, cause erratic Liebert® XD performance.

Temperature Control Type—Selects the type of control the system will use to activate cooling. The Vertiv™ Liebert® iCOM™ control has three temperature control types: Proportional, PI and Intelligent. The factory default is Intelligent.

> **Proportional**—If Proportional Control is selected, the percent cooling requirement is determined by the difference between the air temperature sensor reading and the temperature setpoint. As the air temperature rises above the temperature setpoint, the percent cooling required increases proportionally (from 0 to 100%) over half the programmable temperature proportional band. The percent heating requirement (0 to 100%) is determined the same way when the air temperature falls below the setpoint.

PI—If PI Control is selected, the percent cooling requirement is calculated by adding together two individual terms, proportional and integral. The proportional term is calculated in a manner similar to the previously described Proportional control. The integral term (sometimes called reset action) is calculated by measuring how much and for how long the air temperature has been above or below the setpoint. If the actual air temperature is above the setpoint, the percent requirement is slowly but continuously increased until the total is sufficient to bring the return room air back to the setpoint.

Intelligent—If Intelligent Control is selected, the air temperature is controlled at or near the setpoint. The percent temperature adjustment required is calculated based on logic that is programmed into the control. These rules simulate the actions that would be taken by a human operator manually controlling the system.

Temperature Proportional Band—Adjusts the activation points of compressors or rate of change based on the actual sensor values deviation from setpoint. The smaller this number the faster the compressors and valve(s) will increase capacity. Too small of a number may cause the unit to short cycle the compressors or excessively reposition the valve. This parameter is adjustable from 1.8 to 54.0°F (1.0 to 30.0°C). The factory default setting is 7.0°F (3.9°C).

Temperature Integration Time—Temperature integration takes into consideration the amount of time the actual temperature has deviated from the setpoint. The larger this deviation is the longer the unit will wait before corrective action is taken to achieve the setpoint. This parameter is adjustable from 0 to 15 minutes. The factory default is 0.

Temperature Derivative Time—Monitors the rate of change and will reduce or increase the amount of corrective action based on the actual temperature increasing or decreasing toward the temperature setpoint. This parameter is adjustable from 0-900 seconds. The factory default is 0.

Dewpoint Margin—Selects the difference between the room dew point and the supply refrigerant temperature control point. This parameter is adjustable from 4.0 to 10.0°F (2.2 to 5.6°C). The factory default setting is 4.0°F (2.2°C).

Minimum Control Point—Sets the minimum supply refrigerant temperature the Vertiv™ Liebert® XDP will maintain. This parameter is adjustable from 40 to 113°F (4.4 to 45°C). The factory default is 55°F (12.8°C).

Min Percent Cooling Setpoint—Selects the lowest percent call for cooling during normal operations. Whenever the unit is not in start-up mode or OFF, the percent call for cooling cannot go below this value. The parameter is adjustable from 0 to 30%. The factory default is 0%.

Return Ref Temp Setpoint – Sets the actual return refrigerant temperature control point. This parameter is adjustable from 68 to 140°F (20 to 60.0°C). The factory default is 77°F (25.0°C).

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Figure 2.14   Wellness—Basic Settings Screen, Page 1 of 8


```
WELLNESS Basic Settings 1/8                  SYSTEM
S001 PASSWORD    (Actual Level  0)               ????
S002 Maintenance Frequency Per Year                 1
S003 Max Bonus                                      0
S004 Max Penalty                                    0
S005 Last Maintenance                      01/01/2000
S006 Service Engineer                         NOBODY
S007 Confirm PM                                    No
S008 Calculated Next Maintenance              01/2001
S009
S010
S011

()for next/previous unit   ↵⬍to select parameter
↵then   ⬍to change parameter        ↵to confirm
```

Maintenance Frequency Per Year—Sets the number of expected maintenance visits in a one year time span.

Max Bonus—Increases the time until the next required maintenance. Service personnel should assign a bonus when a service visit finds all components working optimally.

Max Penalty—Decreases the time until the next maintenance cycle. Service personnel should assign a penalty when a service visit finds excessive wear on components.

Last Maintenance—Date set during the service call. It also indicates to other service personnel the date of the last visit.

Service Engineer—Provides a label for the service representative to list either the company name or representative's name.

Confirm PM—Confirms that the service representative has completed the preventive maintenance and resets the next maintenance date.

Calculated Next Maintenance—Provides a date to for the next expected maintenance based on the last preventive maintenance performed (Confirm PM), component starts, run hours and the penalty or bonus set in the Vertiv™ Liebert® iCOM™ control.

Figure 2.15   Wellness—Pump 1 Settings Screen, Page 2 of 8

```
WELLNESS Pump 1 Settings 2/8          ◄UNIT  1 ►
─────────────────────────────────────────────────
S012  PASSWORD    (Actual Level  0)          ????
S013  Number of Starts                         11
S014  Run Hours                            96hrs
S015  Average Run Time                    523min
S016  Starts per Day Best                      1
S017  Starts per Day Worst                    24
S018  Number of Alarms                         0
S019  Actual Bonus                             0
S020
S021
S022
─────────────────────────────────────────────────
◄► for next/previous unit  ↵◆to select parameter
↵then  ◆to change parameter       ↵to confirm
```
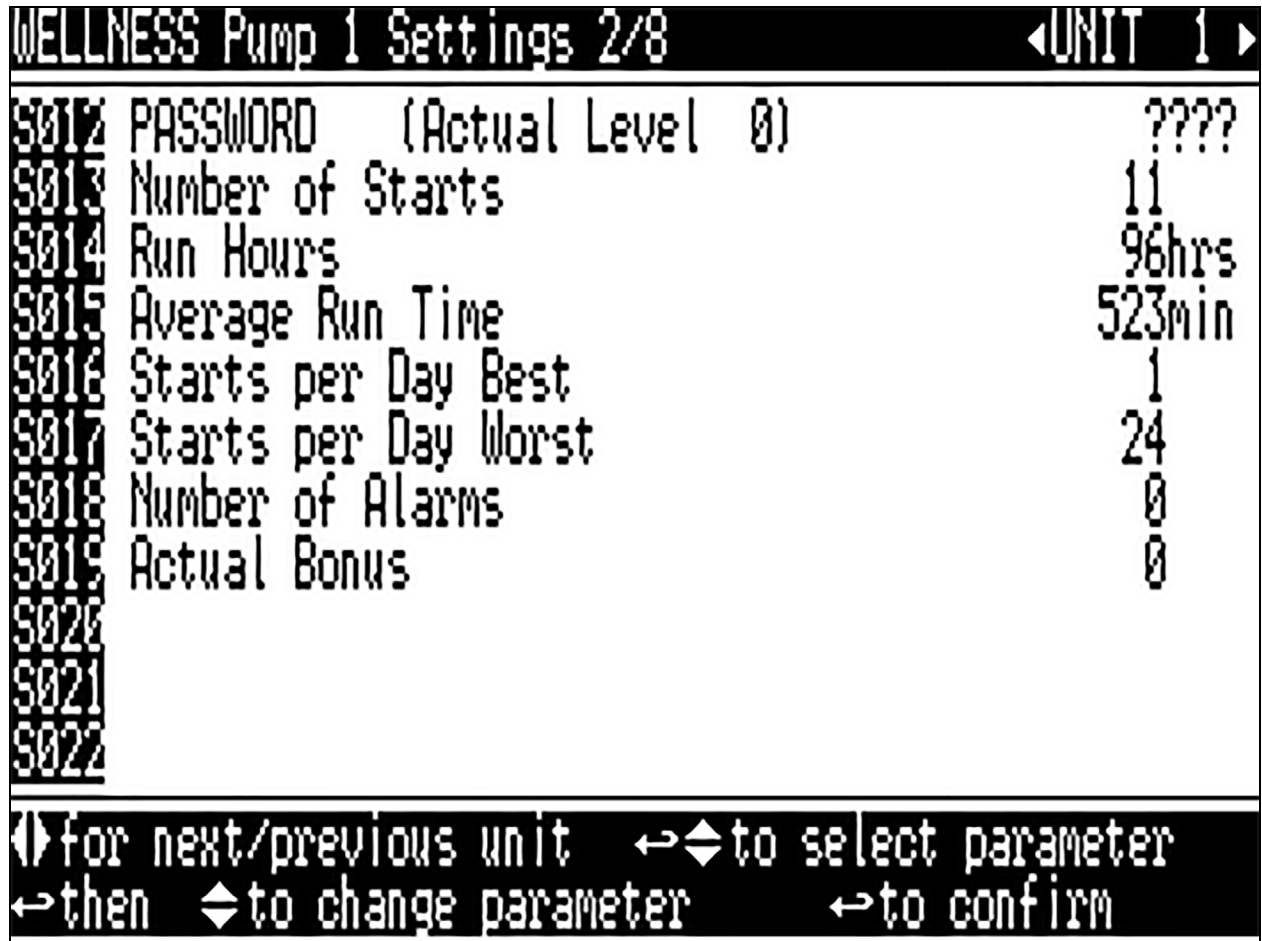
Number of Starts—Shows the number of starts for the unit's Pump 1.

Run Hours—Shows the number of run hours for the unit's Pump 1.

Average Run Time—Shows the average run time of the unit's Pump 1.

Starts per Day Best—Displays the lowest number of starts in a rolling 24 hour period for Pump 1.

Starts per Day Worst —Displays the highest number of starts in a rolling 24 hour period for Pump 1.

Number of Alarms—Displays the number of alarms that have occurred with the unit's Pump 1.

Actual Bonus—Displays the actual calculation of wellness for the unit's Pump 1. The unit will always take the value from the worst component for the next maintenance indication.

Figure 2.16   Wellness—Pump 2 Settings Screen, Page 3 of 8

```
WELLNESS Pump 2 Settings 3/8        ◄UNIT  1 ►
S023  PASSWORD   (Actual Level  0)            ????
S024  Number of Starts                           4
S025  Run Hours                             168hrs
S026  Average Run Time                    2520min
S027  Starts per Day Best                        1
S028  Starts per Day Worst                      24
S029  Number of Alarms                           0
S030  Actual Bonus                               0
S031
S032
S033
◄►for next/previous unit  ↵↕to select parameter
↵then  ↕to change parameter      ↵to confirm
```

Number of Starts—Shows the number of starts for the unit's Pump 2.

Run Hours—Shows the number of run hours for the unit's Pump 2.

Average Run Time—Shows the average run time of the unit's Pump 2.

Starts per Day Best—Displays the lowest number of starts in a rolling 24 hour period for Pump 2.

Starts per Day Worst—Displays the highest number of starts in a rolling 24 hour period for Pump 2.

Number of Alarms—Displays the number of alarms that have occurred with the unit's Pump 2

Actual Bonus—Displays the actual calculation of wellness for the unit's Pump 2. The unit will always take the value from the worst component for the next maintenance indication.

Figure 2.17   Wellness Screens, Pages 4 through 8
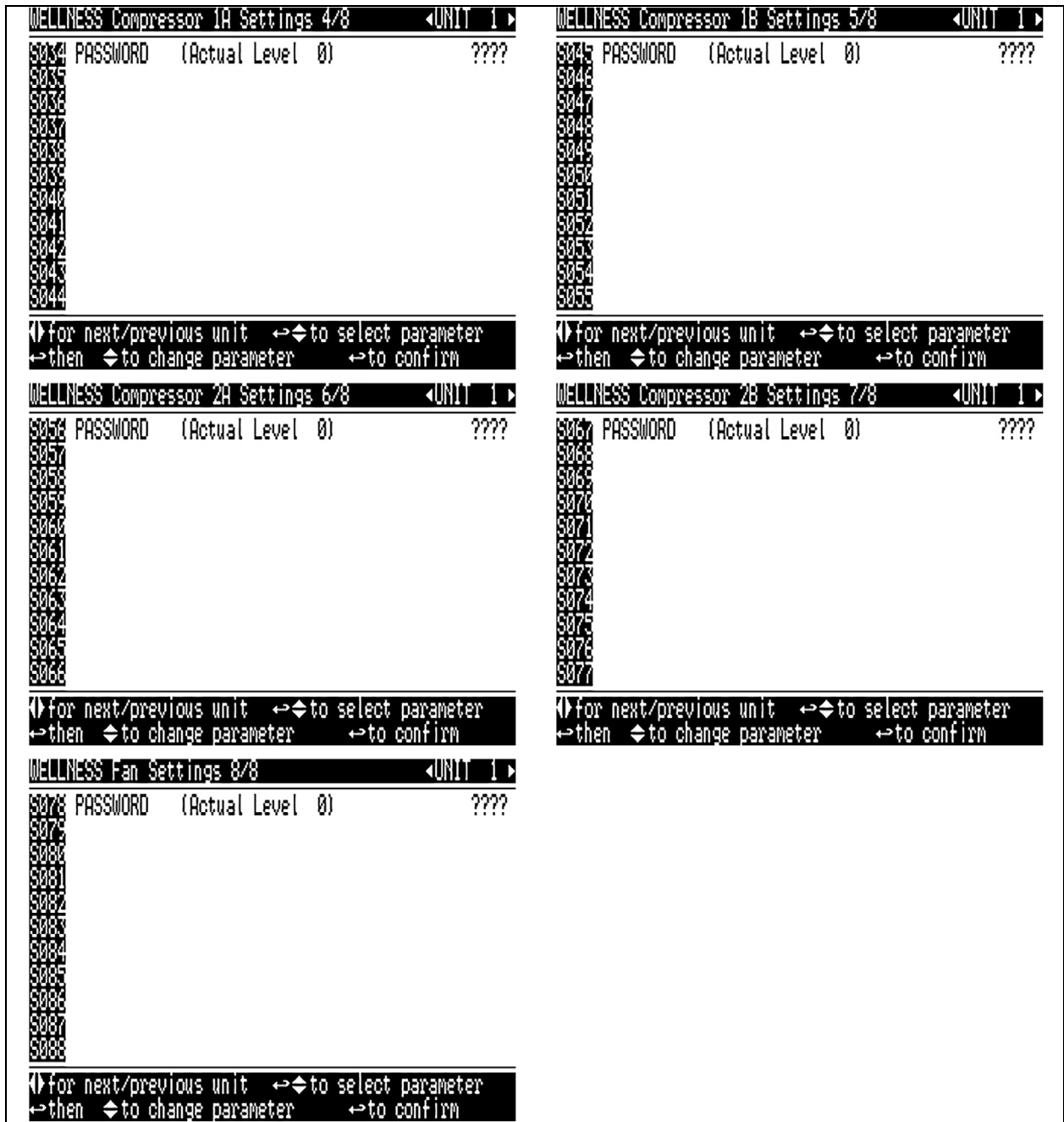
Pages 4 through 7 apply only to the other Vertiv products.

Figure 2.18   Diagnostics/Service Mode Screen, Page 1 of 6

```
DIAGNOSTICS / SERVICE MODE 1/6          ◄UNIT  01►
S301  PASSWORD    (Actual Level  0)              ????
S302
S303
S304
S305
S306
S307
S308
S309
S310
S311

◄►for next/previous unit   ↵◆to select parameter
↵then  ◆to change parameter      ↵to confirm
```
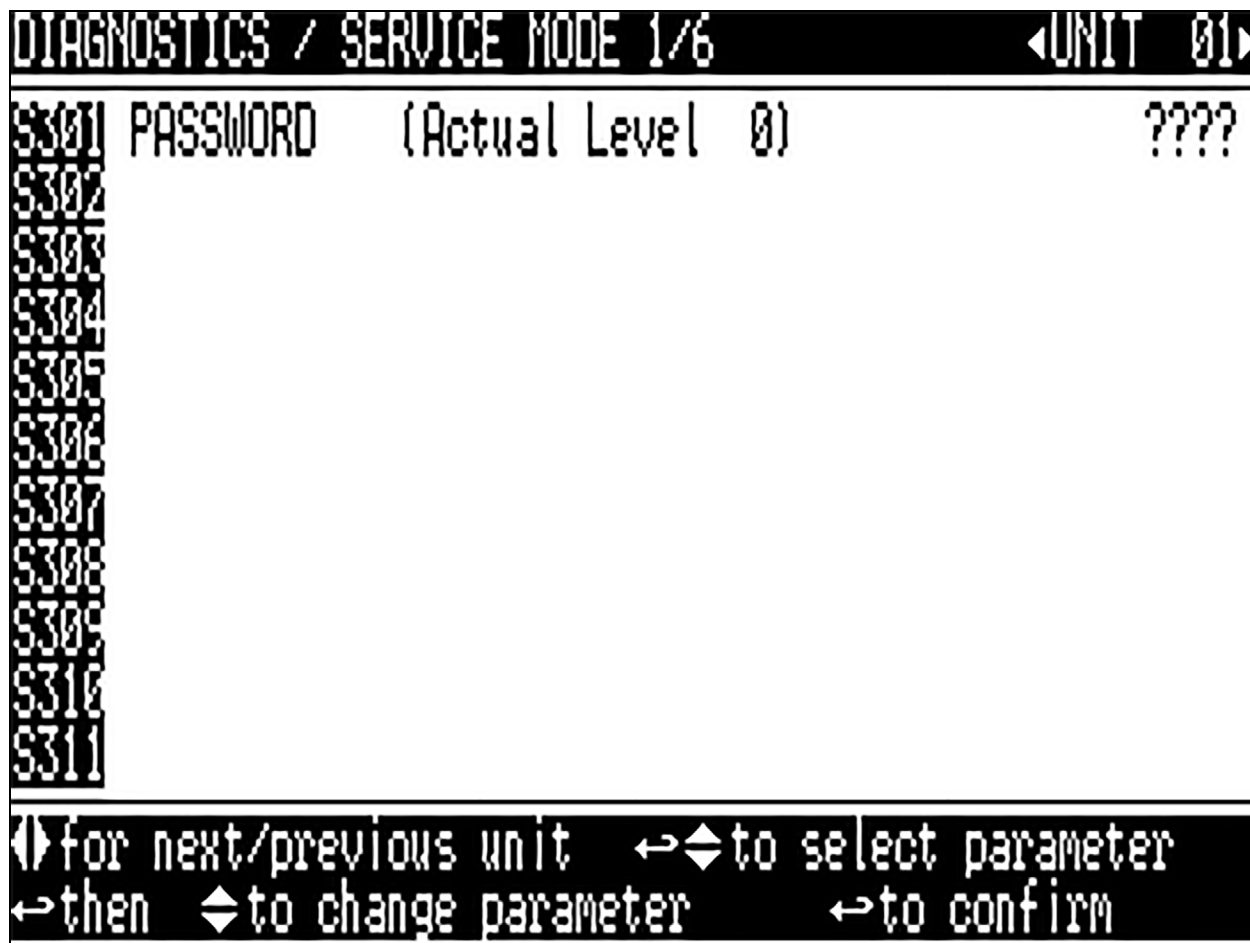
Page 1 applies to the Liebert® XDC only. No Liebert® XDP parameters are present.

Figure 2.19   Diagnostics/Service Mode Screen, Page 2 of 6

```
DIAGNOSTICS / SERVICE MODE 2/6          ◄UNIT  01►

SS12  PASSWORD   (Actual Level  0)                ????
SS13  Manual Mode                                   No
SS14  Pump 1 Action / Status                       Off
SS15  Pump 2 Action / Status                       Off
SS16
SS17  Valve Start Status / Done / Act   3    No   No
SS18  Actuator Input Request                     5.00%
SS19  Actuator Position                             6%
SS20
SS21
SS22  Valve Feedback                                6%

◄►for next/previous unit   ↵♦to select parameter
↵then  ♦to change parameter        ↵to confirm
```
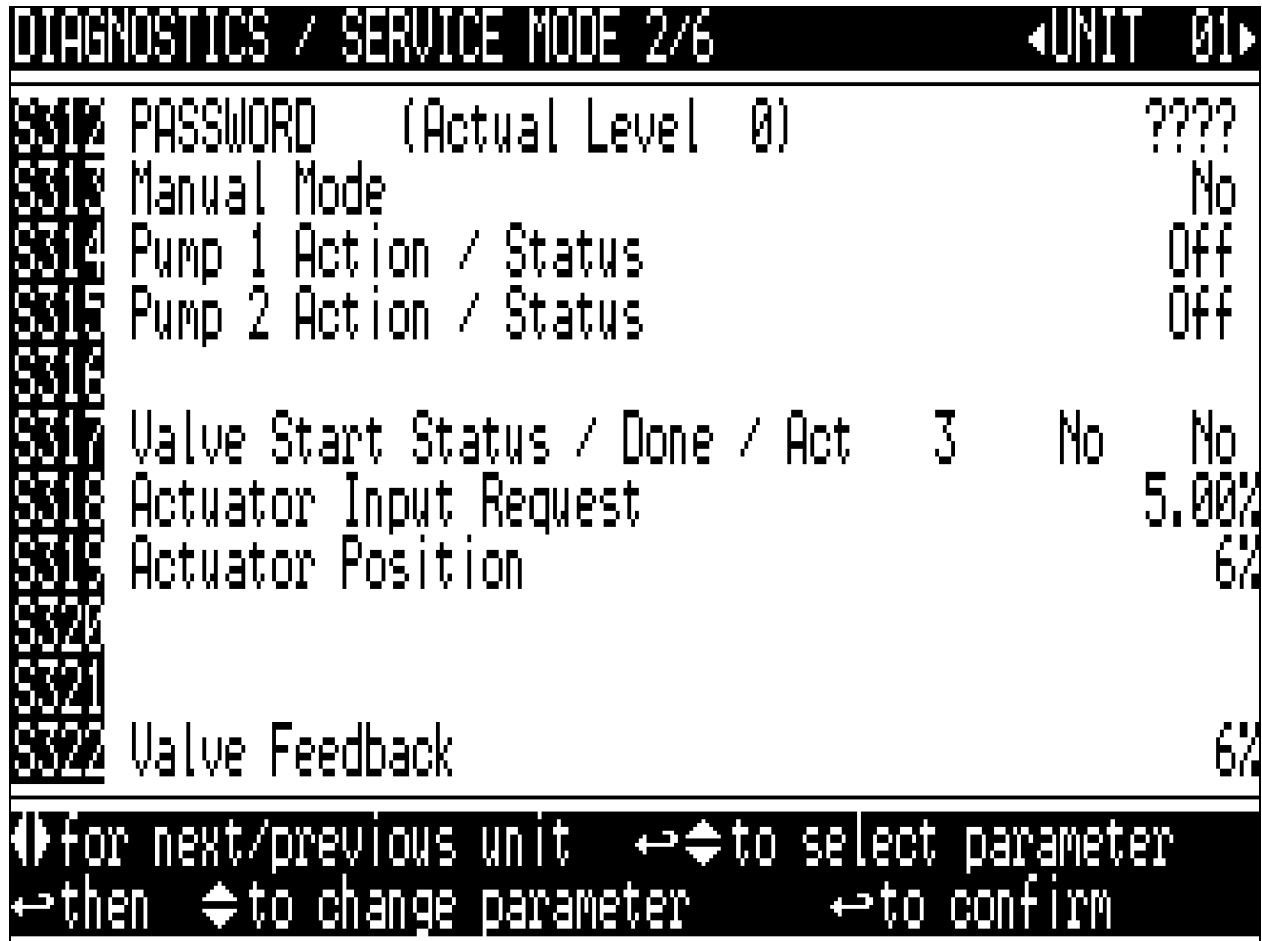
Manual Mode—Used to place the Vertiv™ Liebert® iCOM™ control in manual mode. This is the initial setting necessary to activate any of the following items. When the Liebert® iCOM™ is not in manual mode, each service menu item shows the current status of each parameter.

Pump 1—Starts the unit's Pump 1.

Pump 2—Starts the unit's Pump 2.

Valve Start—Displays if the start-up routine is active, and if it is completed.

Actuator Input Request—Shows the % call for cooling.

Actuator Position—Sets the position of the actuator 0-100% in manual mode.

Valve Feedback—Opens the valve % in manual mode.

Figure 2.20 Diagnostics/Service Mode Screen, Page 3 of 6


```
DIAGNOSTICS / SERVICE MODE 3/6          ◄UNIT  01►
S323  PASSWORD     (Actual Level  0)              ????
S324
S325
S326
S327
S328
S329
S330
S331
S332
S333

◄►for next/previous unit   ↵◆to select parameter
↵then  ◆to change parameter      ↵to confirm
```

Page 3 applies to the Vertiv™ Liebert® XDC only. No Vertiv™ Liebert® XDP parameters are present.

Figure 2.21   Diagnostics/Service Mode Screen, Page 4 of 6

```
DIAGNOSTICS / SERVICE MODE 4/6              ◄UNIT  01►
S334  PASSWORD      (Actual Level   0)              ????
S335
S336
S337  Manual Mode Control Type                      Full
S338  Manual Deviation                               47%
S339  Analog Output Ramp 1                           47%
S340  Analog Output Ramp 2                           47%
S341  Analog Output Ramp 3                           55%
S342  Analog Output Ramp 4                           62%
S343  Alarm Relay                                    Off
S344  Warning Relay                                  Off

◄►for next/previous unit   ↵⬍to select parameter
↵then  ⬍to change parameter        ↵to confirm
```
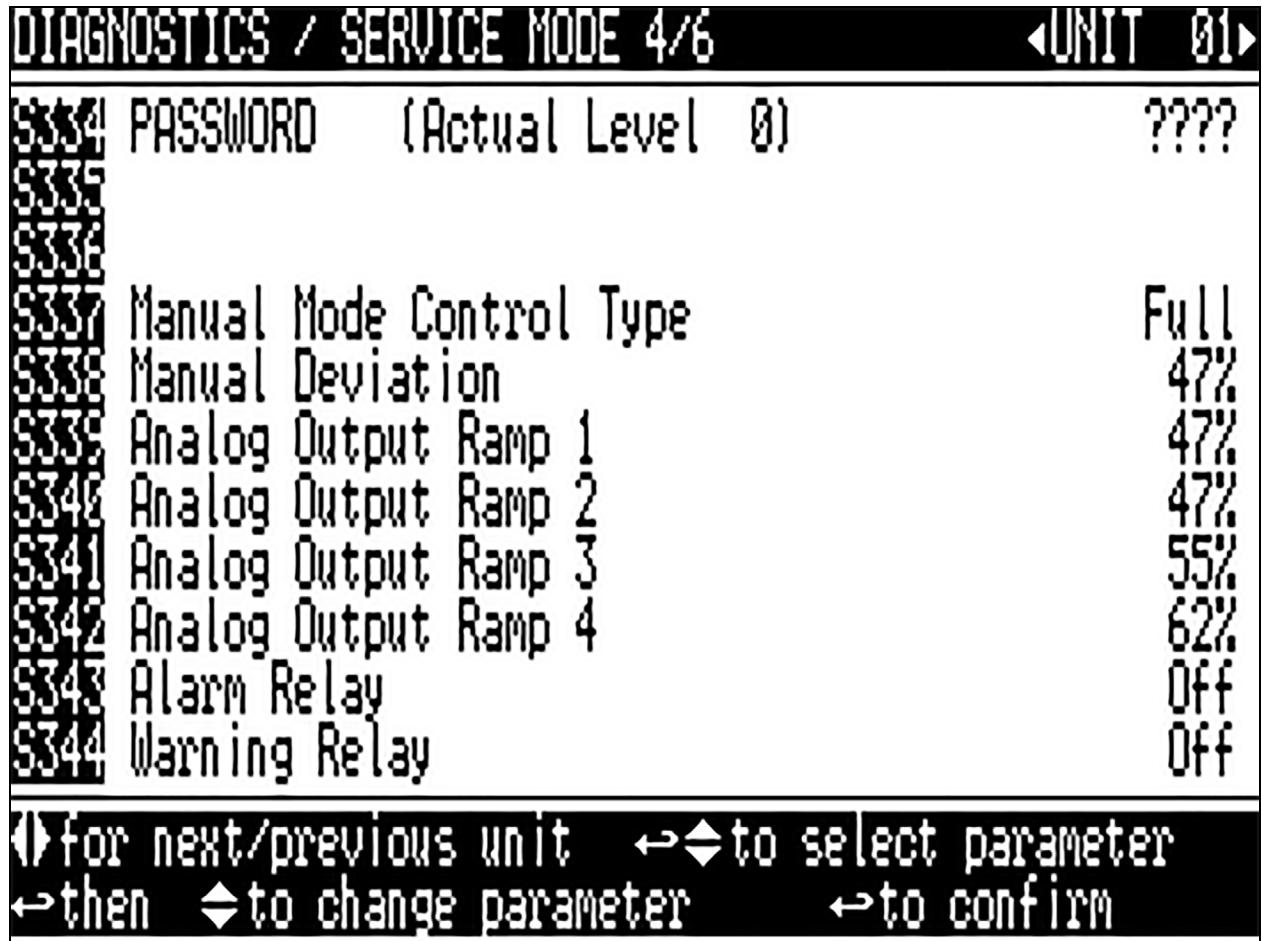
Manual Mode Control Type—Not currently used.

Manual Deviation—Not currently used.

Analog Output Ramp 1—Sets the value of Analog Output 1 value as a percentage. The factory default for the Vertiv™ Liebert® XDP is the Valve % Open.

Analog Output Ramp 2—Sets the value of Analog Output 2 value as a percentage. The factory default for the Liebert® XDP is the Call for Cooling.

Analog Output Ramp 3—Sets the value of Analog Output 3 value as a percentage. The factory default for the Liebert® XDP is the CW Temp.

Analog Output Ramp 4—Sets the value of Analog Output 4 value as a percentage. The factory default for the Liebert® XDP is the CW 2-10V.

Alarm Relay—Used to activate the Vertiv™ Liebert® iCOM™ common alarm relay output.

Warning Relay—Used to activate the Liebert® iCOM™ warning relay output.

Figure 2.22   Diagnostics/Service Mode Screen, Page 5 of 6


```
DIAGNOSTICS / SERVICE MODE 5/6        ◄UNIT  01►
S345  PASSWORD    (Actual Level  0)              ????
S346  Status Remote Shutdown             o——o    On
S347  Status Fan Failure                 o╱o     Ok
S348  Status Diff Press Switch 1         o——o    Ok
S349
S350
S351
S352  Status Customer Input 1            o╱o     Ok
S353  Status Condensation Detect         o╱o     Ok
S354
S355

◄►for next/previous unit   ↵▲to select parameter
↵then   ▲to change parameter       ↵to confirm
```

Status Remote Shutdown—Displays the status of the unit's remote shutdown input.

Status Fan Failure—Displays the status of the dry contact to communicate fan failure at a module. (The dry contacts are not used to communicate a fan failure alarm when using CANbus.)

Status Diff Press Switch 1—Displays the status of the differential pressure switch.

Status Customer Input 1—Displays the status of the customer input 1 alarm.

Status Condensation Detect—Displays the status of the dry contact to communicate condensate detection at a module.

Figure 2.23   Diagnostics/Service Mode Screen, Page 6 of 6
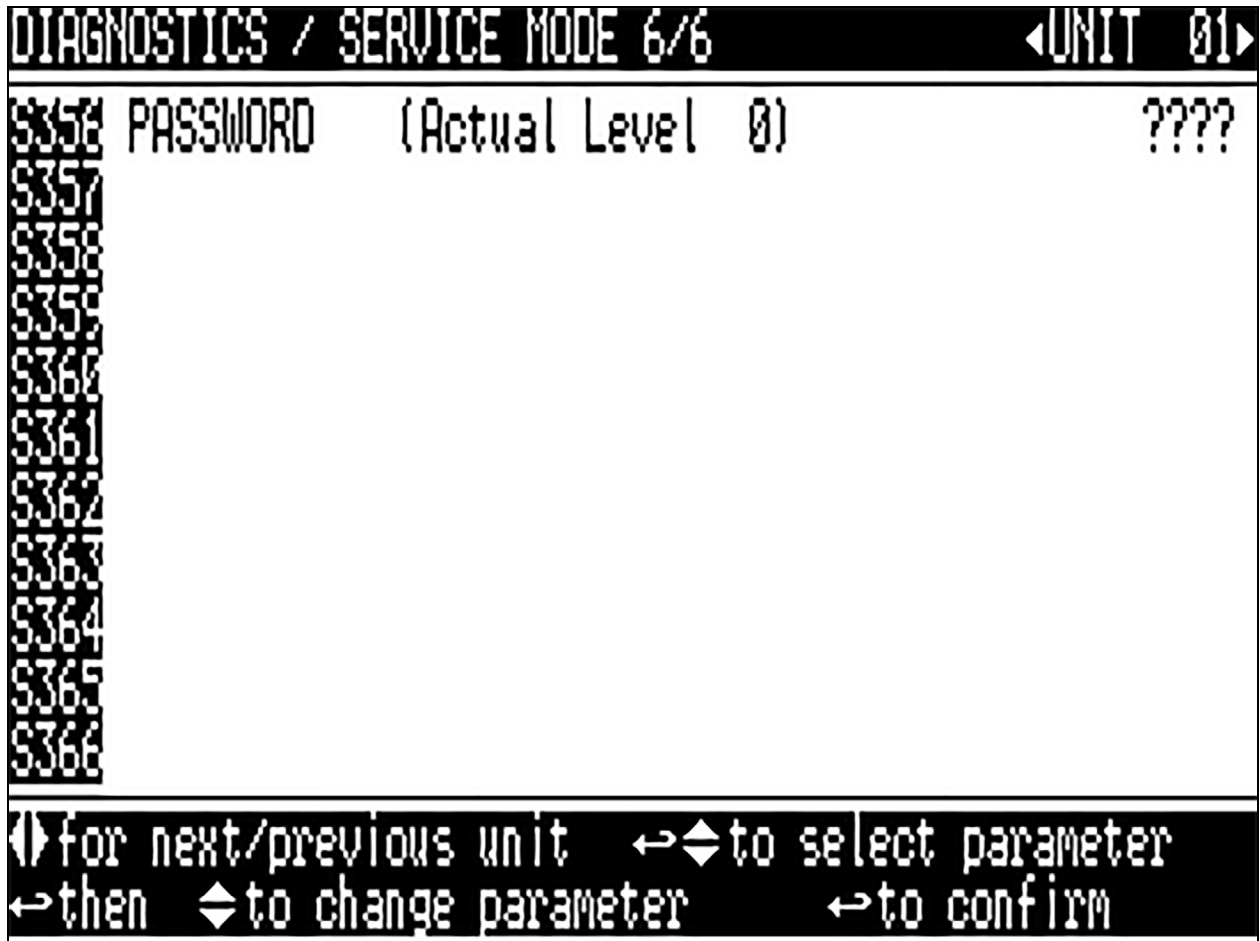
Page 6 applies to the Vertiv™ Liebert® XDC only. No Vertiv™ Liebert® XDP parameters are present.

Figure 2.24   Set Alarms Screen, Page 1 of 7

```
SET ALARMS 1/7                          ◄UNIT  01►
─────────────────────────────────────────────────
S201 PASSWORD   (Actual Level  0)            ????
S202 High Room Air Temperature            80.0°F
S203 Low Room Air Temperature             55.0°F
S204 High Room Dewpoint                   65.0°F
S205 High Supply Refrigerant Temp         80.0°F
S206

S207 High Sup Chilled Water Temperature   60.0°F
S208 High Return Refrigerant Temp         86.0°F
S209 Low Return Refrigerant Temp          68.0°F
S210
S211
─────────────────────────────────────────────────
◄►for next/previous unit  ↵♦to select parameter
↵then  ♦to change parameter      ↵to confirm
```

High Room Air Temperature—Sets the threshold for a high room air temperature alarm. The range for the high room air temperature alarm is from 33.8 to 113°F (1 to 45°C); the default is 80°F (26.7°C).

Low Room Air Temperature—Sets the threshold for a low room air temperature alarm. The range for the low room air temperature alarm is from 33.8 to 95°F (1 to 35°C); the default is 55°F (12.8°C).

High Room Dewpoint—Sets the threshold for a return high dew point alarm. The range for the high room dew point alarm is from 33.8 to 95°F (1 to 35°C); the default is 65°F (18.3°C).

High Supply Refrigerant Temp—Sets the threshold where a high supply refrigerant temperature alarm will occur based on the actual reading from the supply refrigerant sensor. The supply refrigerant temperature is from the Vertiv™ Liebert® XDP to the modules. The range for the high supply refrigerant temperature alarm is from 33.8 to 140°F (1 to 60°C); the default is 122°F (50°C).

High Sup Chilled Water Temperature—Sets the threshold where a high supply chilled water temperature alarm will occur based on the actual reading from the supply chilled water sensor. The range for the high supply chilled water temperature is from 33.8 to 95°F (1 to 35°C); the default is 113°F (45°C).

High Return Refrigerant Temp – Sets the threshold where a high return refrigerant temperature alarm will occur based on the actual reading from the return refrigerant sensor. The return refrigerant temperature is from the modules to the Liebert® XDP. The range for the high return refrigerant temperature alarm is from 33.8 to 140°F (1 to 60°C); the default is 122°F (50°C).

Low Return Refrigerant Temp – Sets the threshold where a low return refrigerant temperature alarm will occur based on the actual reading from the return refrigerant sensor. The return refrigerant temperature is from the modules to the Liebert® XDP. The range for the high return refrigerant temperature alarm is from 33.8 to 140°F (1 to 60°C); the default is 68°F (20°C).

Figure 2.25   Set Alarms Screen, Page 2 of 7
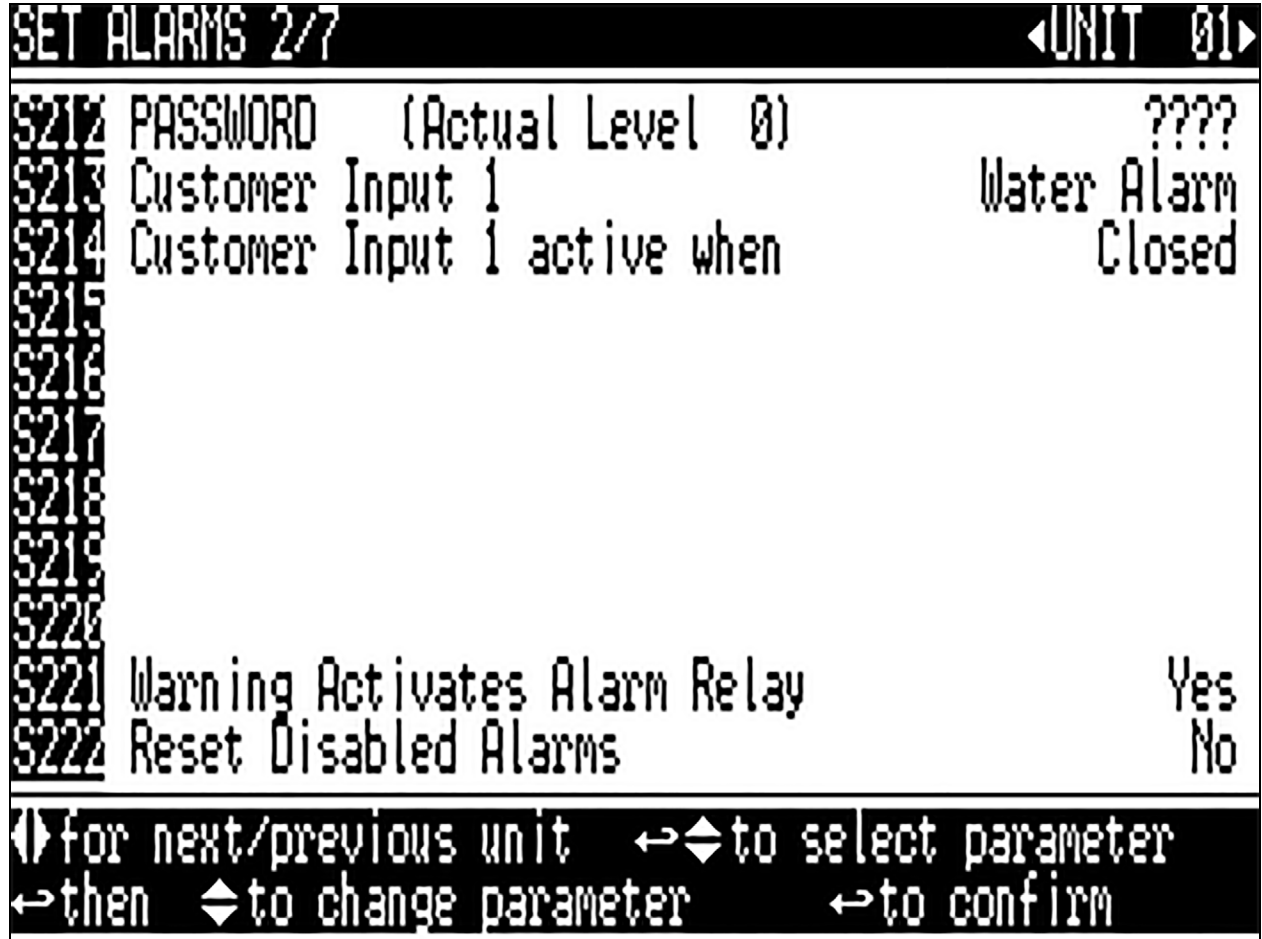
Customer Input 1—Selects the device and operation of the customer input. Each event reflects a different alarm and possible action to the unit. Selectable options are:

> Call Service
>
> C-Input
>
> Water
>
> Smoke

Customer Input 1 active when—Selects whether the Customer Input 1 input is normally closed or normally open.

WARNING ACTIVATES ALARM RELAY—Sets the alarm relay (K3) to activate when a warning occurs.

Reset Disabled Alarms—Resets disabled events.

The Set Alarm Screens (**Figure 2.26** below through **Figure 2.30** on page 38) permit setting the operation of an active alarm. Each event can be enabled or disabled and can be set to operate as an alarm, warning or message. The delay is the time the control waits before reporting the event.

Alarm: Annunciates the buzzer, triggers a monitoring event, triggers the alarm relay and flashes the red LED on the display.

Warning: Annunciates the buzzer, triggers a monitoring event, shows the event in the event viewer / front display and flashes the red LED on the display.

Message: Shows the event in the event viewer and on the front display.

Figure 2.26 Set Alarms Screen, Page 3 of 7

HIGH TEMP SENSOR A—Enables or disables the High Temperature Sensor A event, which occurs when the reading from Sensor A is above the user-specified alarm setpoint. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

LOW TEMP SENSOR A—Enables or disables the Low Temperature Sensor A event, which occurs when the reading from Sensor A is below the user-specified alarm setpoint. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

HIGH TEMP SENSOR B—Enables or disables the High Temperature Sensor B event, which occurs when the reading from Sensor B is above the user-specified alarm setpoint. Sets how the event is reported as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

LOW TEMP SENSOR B—Enables or disables the Low Temperature Sensor B event, which occurs when the reading from Sensor B is below the user-specified alarm setpoint. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

HIGH DEWPOINT—Enables or disables the High Dewpoint event, which occurs when the calculated dew point at Sensor A or Sensor B is above the user-specified alarm setpoint. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

SENSOR A FAILURE—Enables or disables the Sensor A Failure event, which occurs when the control no longer senses a signal from Sensor A. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

SENSOR B FAILURE—Enables or disables the Sensor B Failure event, which occurs when the control no longer senses a signal from Sensor B. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

HIGH SUP CW TEMP—Enables or disables the High Supply Chilled Water Temp event, which occurs when the reading from Supply Chilled Water Sensor is above the user-specified alarm setpoint. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

SUPPLY CW SENSOR FAIL—Enables or disables the Supply CW Sensor Failure event, which occurs when the control no longer senses a signal from Supply CW Sensor. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

PUMP 1 OVERLOAD—Enables or disables the Pump 1 Overload event which occurs when an overload condition is detected if equipped on the unit. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

PUMP 2 OVERLOAD—Enables or disables the Pump 2 Overload event which occurs when an overload condition is detected if equipped on the unit. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

Figure 2.27   Set Alarms Screen, Page 4 of 7

HIGH SUPPLY REF TEMP—Enables or disables the High Supply Refrigerant Temp event, which occurs when the reading from supply refrigerant temperature sensor is above the user-specified alarm setpoint. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

LOW SUPPLY REF TEMP—Enables or disables the Low Supply Refrigerant Temp event, which occurs when the reading from supply refrigerant temperature sensor is below the user-specified alarm setpoint. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

SUP REF SENSOR FAIL—Enables or disables the Supply Refrigerant Sensor Failure event, which occurs when the control no longer senses a signal from the Supply Refrigerant Sensor. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

LOSS OF FLOW PUMP 1—Enables or disables the Loss of Flow Pump 1 event, which occurs when Pump 1 is commanded to run and the differential pressure switch does not sense differential pressure or a high pressure trip. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

LOSS OF FLOW PUMP 2—Enables or disables the Loss of Flow Pump 2 event, which occurs when Pump 2 is commanded to run and the differential pressure switch does not sense differential pressure or a high pressure trip. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

PUMP SHORT CYCLE—Enables or disables the Pump Short Cycle event, which occurs when flow is not established by either pump for 30 minutes. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

CONTROL VALVE FAILURE—Enables or disables the Control Valve Failure event, which occurs when the chilled water control valve has been commanded by the control to open or close and no change is detected by the valve position signal. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

Figure 2.28   Set Alarms Screens, Pages 5 and 6

HIGH RETURN REF TEMP—Enables or disables the High Return Refrigerant Temp event, which occurs when the reading from return refrigerant temperature sensor is above the user-specified alarm setpoint. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

LOW RETURN REF TEMP—Enables or disables the Low Return Refrigerant Temp event, which occurs when the reading from return refrigerant temperature sensor is below the user-specified alarm setpoint. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

RTN REF SENSOR FAIL—Enables or disables the Return Refrigerant Sensor Failure event, which occurs when the control no longer senses a signal from the Return Refrigerant Sensor. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.
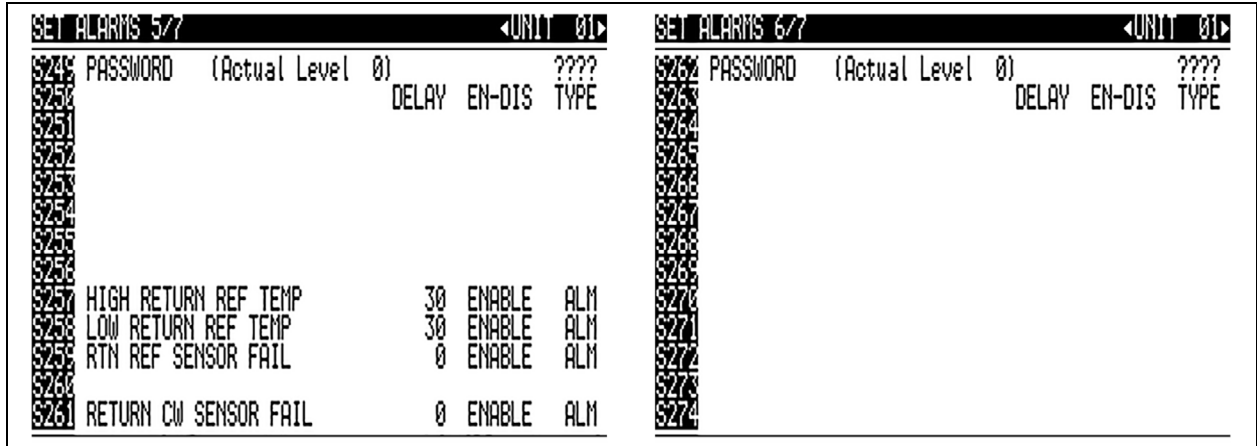
RETURN CW SENSOR FAIL—Enables or disables the Return Chilled Water Sensor Failure event, which occurs when the control no longer senses a signal from the Return Chilled Water Sensor. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

Page 6 applies to the Vertiv™ Liebert® XDC only. No Vertiv™ Liebert® XDP parameters are present.

 2 Vertiv™ Liebert® iCOM™ Control

Figure 2.29   Set Alarms Screen, Page 7 of 7

```
SET ALARMS 7/7                     ◄UNIT  01►

S275  PASSWORD    (Actual Level  0)              ????
S276                           DELAY  EN-DIS  TYPE
S277
S278  CONDENSATION DETECTED       3   ENABLE   ALM
S279  FAN FAILURE                 3   ENABLE   ALM
S280  CUSTOMER INPUT 1            5   ENABLE   ALM
S281  SMOKE DETECTED              5   ENABLE   ALM
S282  WATER UNDER FLOOR           5   ENABLE   ALM
S283  UNIT X DISCONNECTED             ENABLE   WRN
S284  PUMP HRS EXCEEDED               ENABLE   WRN
S285  CALL SERVICE                5   ENABLE   ALM
S286  LOSS OF POWER                   ENABLE   WRN
S287
```

CONDENSATION DETECTED—Enables or disables the Condensation Detected event, which occurs when water is detected at a Vertiv™ Liebert® XD cooling module. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

FAN FAILURE—Enables or disables the Fan Failure event, which occurs when a fan failure occurs at a Liebert® XD cooling module. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

CUSTOMER INPUT 1—Enables or disables the Customer Input 1 event, which occurs when 24VAC is applied to the input. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

SMOKE DETECTED—Enables or disables the Smoke Detected event, which occurs when the Customer Input 1 is configured for "Smoke Detected" and 24VAC is applied to the input. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

NOTE: This is not a room smoke detector and is not intended to replace external smoke detectors.

WATER UNDER FLOOR—Enables or disables the Water Under Floor event, which occurs when the Customer Input 1 is configured for "Water Under Floor" and 24VAC is applied to the input. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

UNIT X DISCONNECTED—Not currently used.

WORKING HOURS EXCEEDED—Enables or disables the Working Hrs Exceeded event, which occurs when a component has exceeded the user-specified limit. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

CALL SERVICE—Enables or disables the Call Service event, which occurs when the Customer Input 1 is configured for "Call Service" and 24VAC is applied to the input. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.
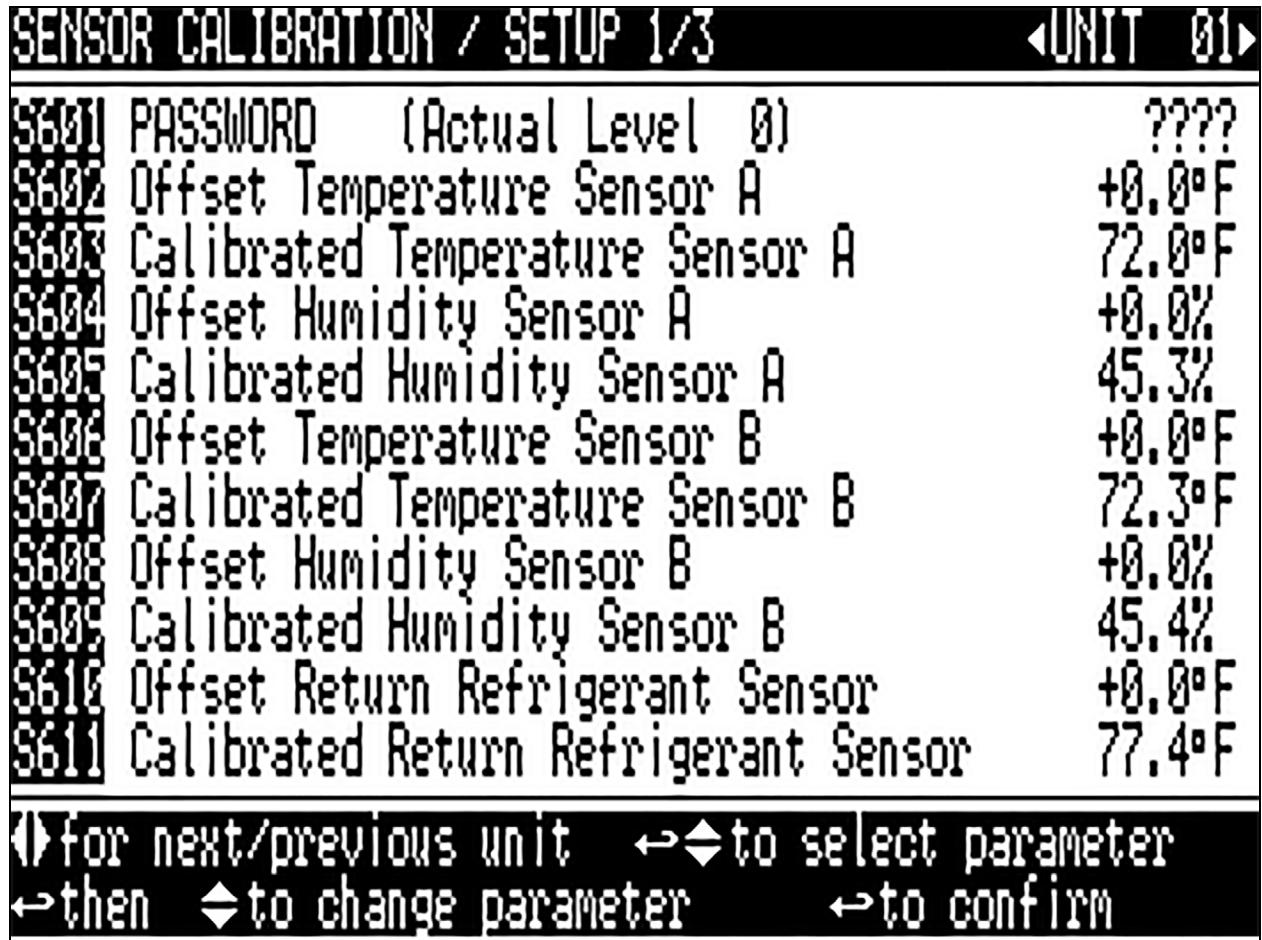
LOSS OF POWER—Enables or disables the Loss of Power event, which occurs when the unit is On and operational and the 24VAC power to the control is lost. Sets how the event is reported: as an alarm, a warning or a message. Specifies how long the control waits before reporting the event.

Figure 2.30   Sensor Calibration/Setup Screen, Page 1 of 3

Offset Temperature Sensor A—Adjusts the temperature reading from the actual remote CAN Temp Humidity sensor designated as Sensor A to compensate for any error of the sensor or to match other sensors in the room.

Calibrated Temperature Sensor A—Displays the adjusted temperature value of the remote CAN Temp Humidity sensor designated as Sensor A. This value is the actual sensor reading plus or minus the offset Temperature Sensor A.

Offset Humidity Sensor A—Adjusts the humidity reading from the actual remote CAN Temp Humidity sensor designated as Sensor A to compensate for any error of the sensor or to match other sensors in the room.

Calibrated Humidity Sensor A—Displays the adjusted humidity value of the remote CAN Temp Humidity sensor designated as Sensor A. This value is the actual sensor reading plus or minus the offset Humidity Sensor A.

             2 Vertiv™ Liebert® iCOM™ Control

Offset Temperature Sensor B—Adjusts the temperature reading from the actual remote CAN Temp Humidity sensor designated as Sensor B to compensate for any error of the sensor or to match other sensors in the room.

Calibrated Temperature Sensor B—Displays the adjusted temperature value of the remote CAN Temp Humidity sensor designated as Sensor B. This value is the actual sensor reading plus or minus the offset Temperature Sensor B.

Offset Humidity Sensor B—Adjusts the humidity reading from the actual remote sensor designated as Sensor B to compensate for any error of the sensor or to match other sensors in the room.

Calibrated Humidity Sensor B—Displays the adjusted humidity value of the remote CAN Temp Humidity sensor designated as Sensor B. This value is the actual sensor reading plus or minus the offset Humidity Sensor B.

Offset Return Refrigerant Sensor—Adjusts the temperature reading from the actual supply refrigerant sensor to compensate for any error of the sensor.

Calibrated Return Refrigerant Sensor—Displays the adjusted temperature value of the return refrigerant sensor. This value is the actual sensor reading plus or minus the offset Supply Refrigerant Sensor.

Figure 2.31   Sensor Calibration/Setup Screen, Page 2 of 3
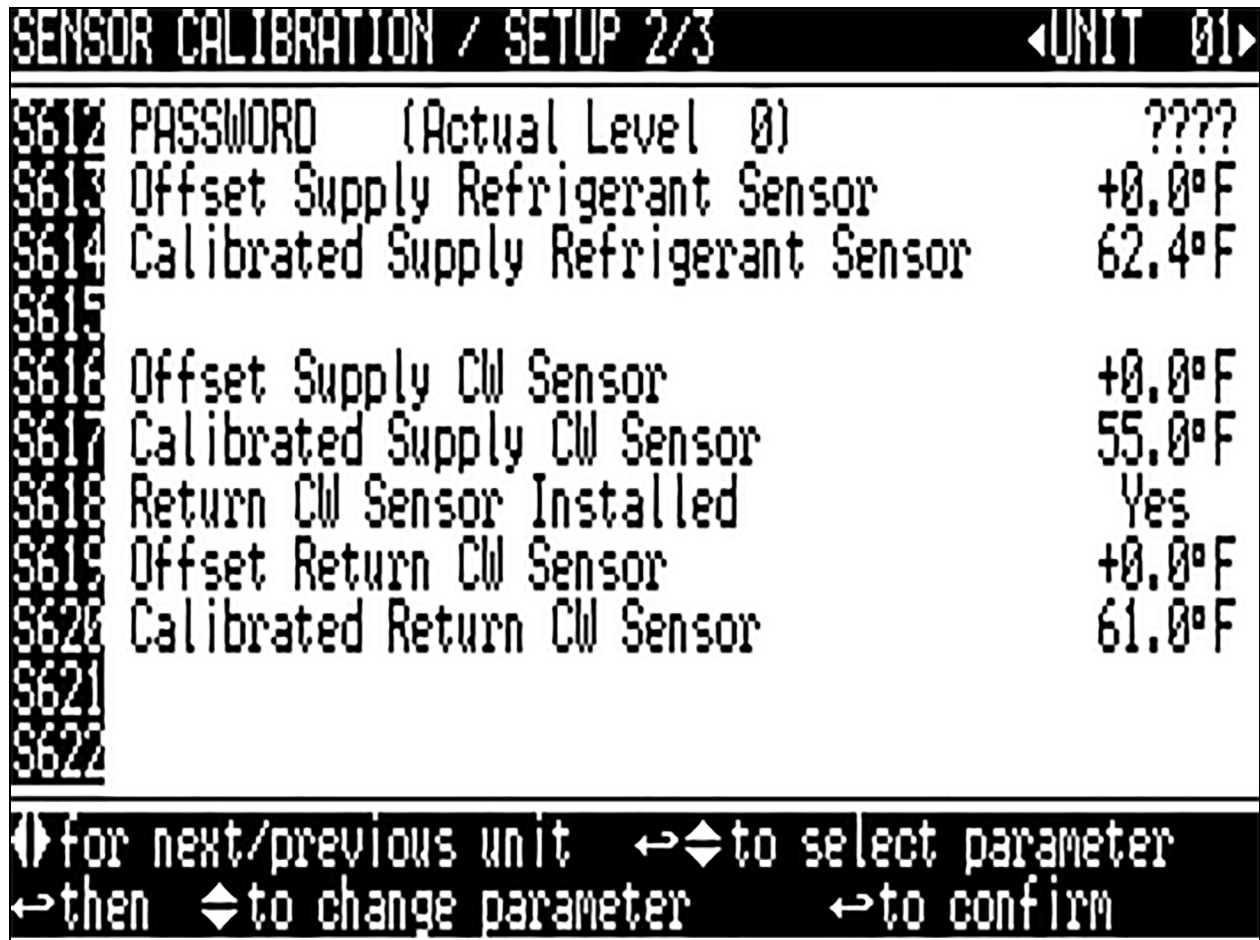
Offset Supply Refrigerant Sensor—Adjusts the temperature reading from the actual supply refrigerant sensor to compensate for any error of the sensor.

Calibrated Supply Refrigerant Sensor—Displays the adjusted temperature value of the supply refrigerant sensor. This value is the actual sensor reading plus or minus the offset Supply Refrigerant Sensor.

Offset Supply CW Sensor—Adjusts the temperature reading from the actual supply chilled water sensor to compensate for any error of the sensor.

Calibrated Supply CW Sensor—Displays the adjusted temperature value of the supply chilled water sensor. This value is the actual sensor reading plus or minus the offset Supply Chilled Water Sensor.

Return CW Sensor Installed – chooses if a return chilled water temperature sensor is installed in the unit.

Offset Return CW Sensor—Adjusts the temperature reading from the actual return chilled water sensor to compensate for any error of the sensor.

Calibrated Return CW Sensor—Displays the adjusted temperature value of the supply chilled water sensor. This value is the actual sensor reading plus or minus the offset Supply Chilled Water Sensor.

Figure 2.32   Sensor Calibration/Setup Screen, Page 3 of 3
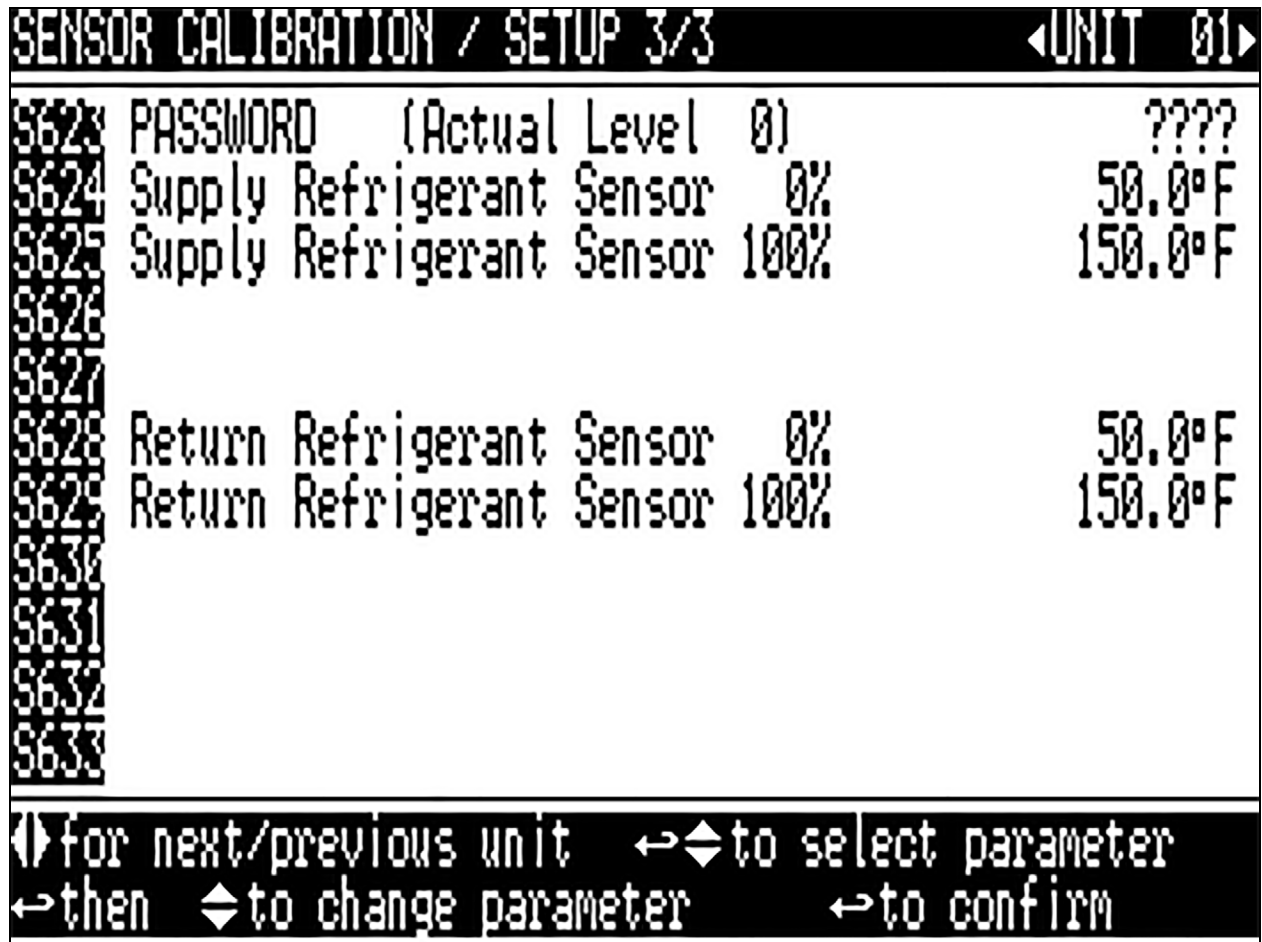
Supply Refrigerant Sensor 0%—Allows the sensor reading to be calibrated at the lowest reading of the sensor. This calibration changes the start point of the sensor reading.

Supply Refrigerant Sensor 100%—Allows the sensor reading to be calibrated at the highest reading of the sensor. This calibration changes the end point of the sensor reading.

Return Refrigerant Sensor 0%—Allows the sensor reading to be calibrated at the lowest reading of the sensor. This calibration changes the start point of the sensor reading.

         2 Vertiv™ Liebert® iCOM™ Control

Return Refrigerant Sensor 100%—Allows the sensor reading to be calibrated at the highest reading of the sensor. This calibration changes the end point of the sensor reading.

Figure 2.33   System/Network Setup Screen—System, Page 1 of 2

Number of Connected Units—Shows the number of displays connected. This is always 1.

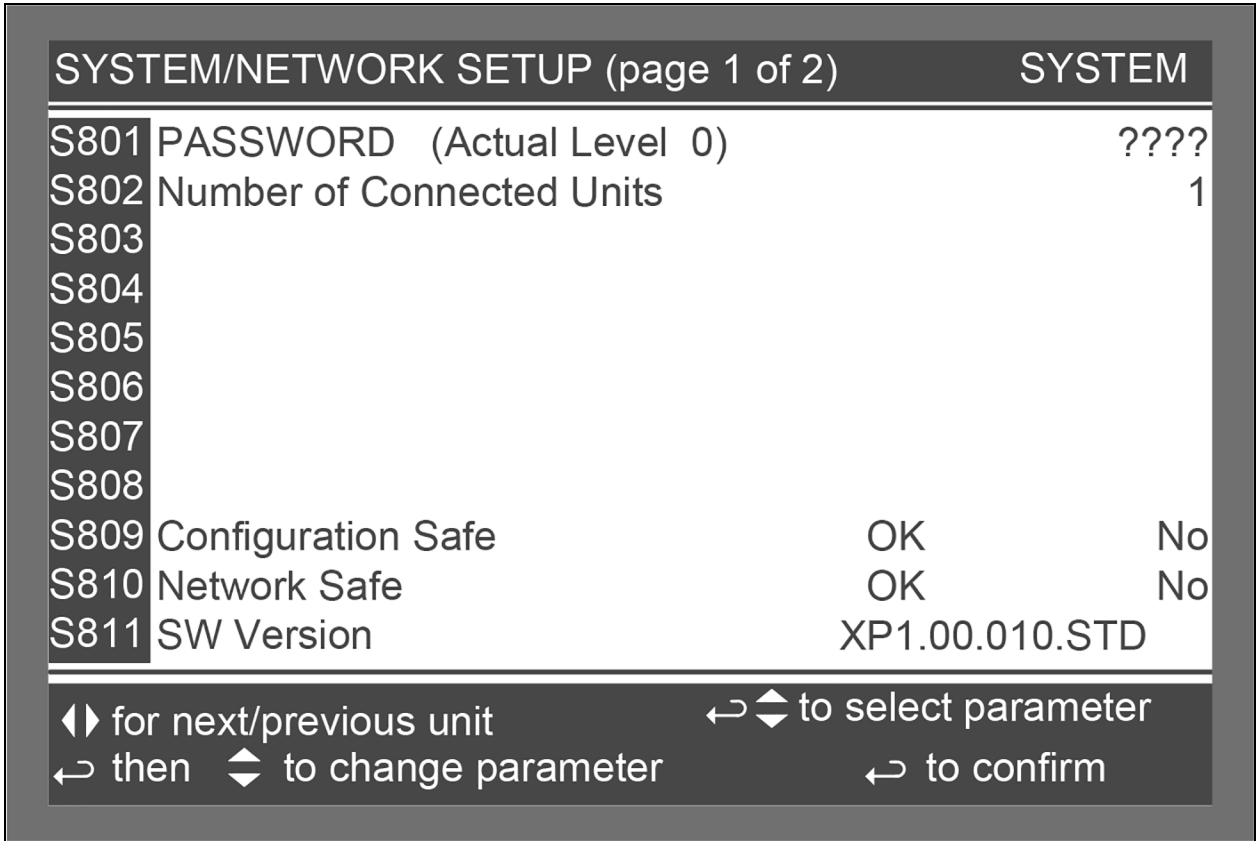**Configuration Safe**—Saves or loads configuration settings for the display that have been modified from the factory defaults to an internal file that can be downloaded/uploaded using the Vertiv™ Liebert® iCOM™ Service Tool. Selecting Save will write the settings to the internal storage file and selecting Load will write the settings from the internal storage file to the application software. The internal file is updated automatically every 12 hours.

Network Safe—Saves or loads network settings for the display that have been modified from the factory defaults to an internal file that can be downloaded/uploaded using the Liebert® iCOM™ Service Tool. Selecting Save will write the settings to the internal storage file and selecting Load will write the settings from the internal storage file to the application software.

SW Version—Contains the application software version loaded onto the Liebert® iCOM™ display.

Figure 2.34   System/Network Setup Screen—System, Page 2 of 2

SYSTEM/NETWORK SETUP (page 2 of 2)		SYSTEM
S812 PASSWORD (Actual Level 0)		????
S813 IP Address		192.168.254.003
S814 Netmask		255.255.255.000
S815 Gateway		0.000.000.000
S816 MAC		00:00:68:19:40:C7
S817 U2U Protocol		GBP
S818 U2U Address		33
S819 U2U Group		1
S820		
S821 Bootloader Variables	OK	No
S822		

Attention: any changes done on these parameters must be followed by a 'Save+Reboot' command.

IP Address—Contains the network address of the display. This address must be unique on the network. The factory default is 192.168.254.003.

Netmask—Defines which part of the IP address is used for the network. The factory default is 255.255.255.000.

Gateway—A network point that acts as an entrance to another network. The factory default is 0.000.000.000.

MAC—A unique hardware identifier for the Ethernet device. The following parameters (U2U Protocol, U2U Address and U2U Group) are for displaying other networked Vertiv™ Liebert® XDPs. The Liebert® XDP does not perform Teamwork Operations.

U2U Protocol—This is always set to GBP.

U2U Address—A unique identifier for each display on the network. Display addresses range from 33 to 64. Each display on the U2U network must have a different U2U address. Not currently used.

U2U Group—Used to create zones or groups within a U2U network. Once a group number is selected, the display will see only other devices with the same group number. The group number can be changed to view other devices in different groups. Not currently used.

Bootloader Variables—Indicates the bootloader has changed since it was last loaded. This parameter should only be activated by an authorized service person.

Figure 2.35 System/Network Setup Screen—Unit, Page 1 of 2


```
SYSTEM/NETWORK SETUP (page 1 of 2)        ◀UNIT 01▶
S823 PASSWORD   (Actual Level  0)                          ????
S824 Monitoring Address                                        3
S825
S826
S827 Unit Name                                             UNIT
S828
S829
S830
S831 Configuration Safe                    OK              No
S832 Network Safe                          OK              No
S833 SW Verson                             XP1.00.008.STD
  ◀▶ for next/previous unit        ↩⬍ to select parameter
  ↩ then  ⬍ to change parameter          ↩ to confirm
```

Monitoring Address—Sets the address used by the Vertiv™ Liebert® IntelliSlot™ cards. This is set to 3 at the factory and should not be changed.

Unit Name—Identifies the unit from the local or remote display. This label will show at the top right of every screen that has monitoring or configuration of that unit

Configuration Safe—Saves or loads configuration settings for the control board that have been modified from the factory defaults to an internal file that can be downloaded / uploaded using the Vertiv™ Liebert® iCOM™ Service Tool. Selecting "Save" will write the settings to the internal storage file and selecting "Load" will write the settings from the internal storage file to the application software. The internal file is updated every 12 hours automatically.

Network Safe—Saves or loads network settings for the control board that have been modified from the factory defaults to an internal file that can be downloaded / uploaded using the Liebert® iCOM™ Service Tool. Selecting "Save" will write the settings to the internal storage file and selecting "Load" will write the settings from the internal storage file to the application software.

SW Version—Contains the application software version loaded onto the Liebert® iCOM™.

Figure 2.36   System/Network Setup Screen—Unit, Page 2 of 2


```
SYSTEM/NETWORK SETUP (page 2 of 2)          ◄ UNIT 01 ►

S834  PASSWORD   (Actual Level  0)                        ????
S835  Monitoring Protocol                          Velocity V4
S836  IP Address                              192.168.254.003
S837  Netmask                                 255.255.255.000
S838  Gateway                                   0.000.000.000
S839  MAC                                     00:00:68:19:9B:42
S840  U2U Protocol                                        GBP
S841  U2U Address                                           1
S842  U2U Group                                             1
S843  Bootloader Variables              OK                 No
S844  Static RAM                        OK                 No

Attention: any changes done on these parameters
must be followed by a 'Save+Reboot' command.
```

Monitoring Protocol—Selects the monitoring protocol. Velocity V4 is the factory default which will provide communications to the Vertiv™ Liebert® IntelliSlot™ housing. IGMnet will activate the 77/78 terminals for communication to the Vertiv™ Liebert® SiteLink(-E). Vertiv™ Liebert® Hironet™ is only used on Vertiv™ Liebert® HPM units.

IP Address—Contains the network address of the display. This address must be unique to every other device on the network. The factory default is 192.168.254.003.

Netmask—Defines which part of the IP address is used for the network. The factory default is 255.255.255.000.

Gateway—A gateway is a network point that acts as an entrance to another network. The factory default is 0.000.000.000.

MAC—The MAC address is a unique hardware identifier of the Ethernet device.

The following parameters (U2U Protocol, U2U Address and U2U Group) are for displaying other Vertiv™ Liebert® XDPs that are networked. The Liebert® XDP does not perform Teamwork Operations.

U2U Protocol—Always set to GBP.

U2U Address—Unique identifier for each display on the network. Display addresses range from 1 to 32. Each display on the U2U network must have a different U2U address. Not currently used.

U2U Group—Creates zones or groups within a U2U network. Once a group number is selected the display will only see other devices with the same group number. The group number can be changed to view other devices in different groups. Not currently used.

Bootloader Variables—Indicates if there has been a change to the boot loader since it was last loaded. This parameter should only be activated by authorized service personnel.

Static RAM—Allows service personnel to clear and reboot the RAM of the control board. Only Vertiv service personnel should perform this function.

Figure 2.37   Options Setup Screen, Page 1 of 2

Autorestart Enabled—Restarts the unit after a power cycle when set to Yes. When this parameter is set to No, the unit will not restart after a power cycle.

Single Unit Auto Restart—Sets a time delay for the unit to restart when the Auto Restart Enabled is set to Yes. The delay begins once the boot process has completed. This parameter allows units to be staggered On to reduce the amount of simultaneous power consumption after a loss of power.

Unit Start Sequence Delay—Not currently used.

Control Delay Time—Not currently used.

Pump Start Time Delay—Sets a time delay to ensure that refrigerant begins flowing when the pump starts. If refrigerant does not begin flowing before the user-set delay expires, the pump will be turned Off.

Pump Wait Time Delay—Sets the pump wait time delay to prevent the pump from continuing to run when refrigerant is not flowing. If a pump is running normally and refrigerant flow is lost, the pump will stay On for the specified time trying to re-establish refrigerant flow. If refrigerant flow resumes during the specified interval, the pump will continue operating. If the wait time expires and refrigerant flow has not resumed, the pump will shut down.

Pump Off Time Delay—Sets the length of time a pump will remain off when refrigerant flow is interrupted or stops. After the time delay has expired, the control will try to restart the pump.

Lead Pump—Sets which pump is the active pump. It can be set to PUMP 1 or PUMP 2. The control will operate the respective pump unless a loss of flow condition occurs. On a LOSS OF FLOW condition, the control will switch to the standby pump after the LOSS OF FLOW alarm time delay has elapsed and the LOSS OF FLOW alarm has been annunciated. The default is PUMP 1.

Pump Short Cycle Delay—Sets the time to lock Off the unit if it is unable to establish refrigerant flow within this set amount of time.

Figure 2.38   Options Setup Screen, Page 2 of 2
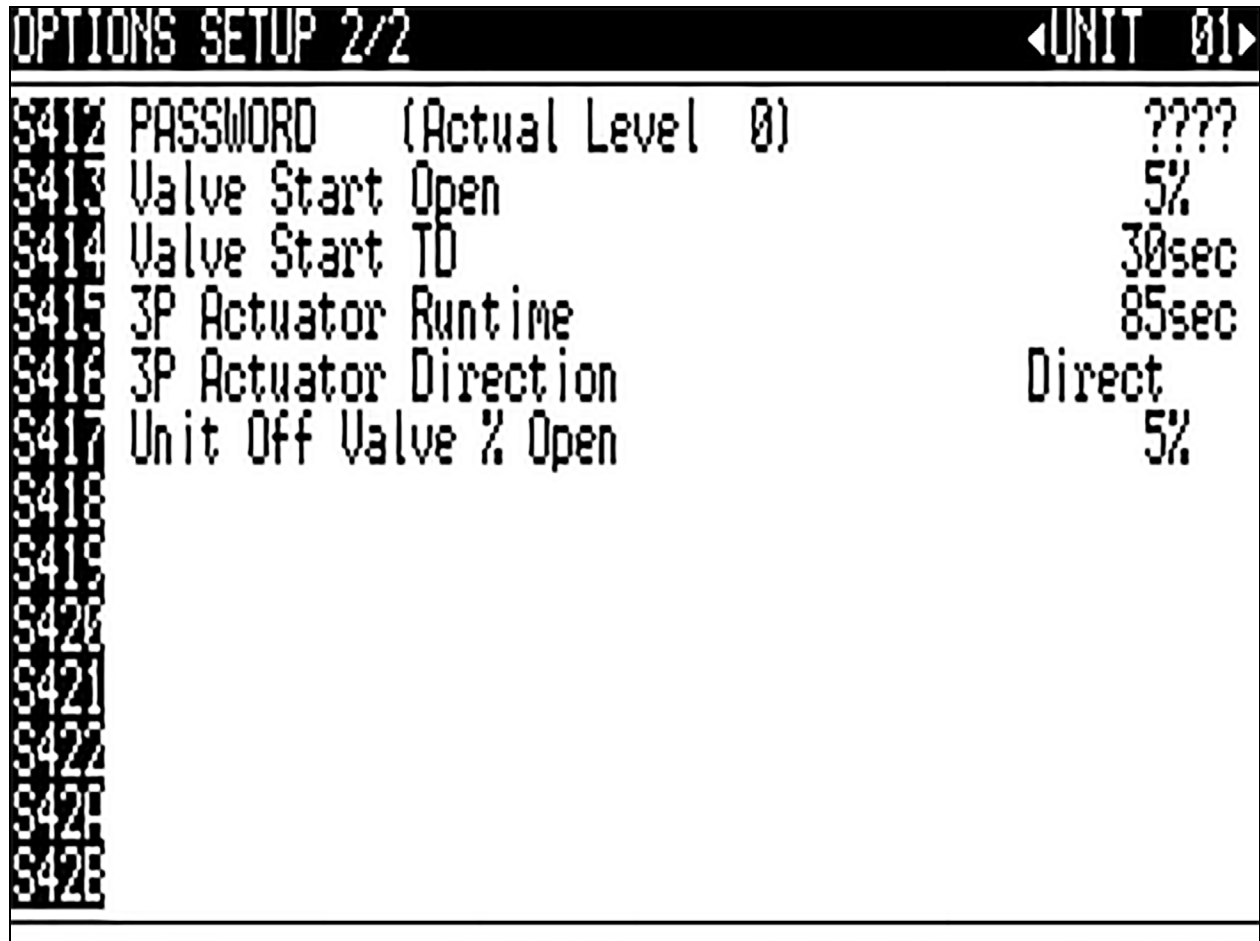
Valve Start Open—Sets position of the valve when the unit starts.

Valve Start TD—Sets a time interval for the unit to complete start-up and enter into normal operation.

3P Actuator Runtime—If Valve Control is selected for "Time" then this parameter sets the travel time of the valve to determine the full open and closed position of the valve. This parameter is set at the factory, based on the valve manufacturer's specifications.

3P Actuator Direction—Sets if the valve is a "Direct" or "Reverse" acting valve.

Unit Off Valve % Open—Sets the valve position when the unit is Off.

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 2 Vertiv™ Liebert® iCOM™ Control

3 Start the Vertiv™ Liebert® XDP with Vertiv™ Liebert® iCOM™

3.1 Checklist for Liebert® XDP Start-up

⚠️ **CAUTION: Risk of piping and component rupture. May cause equipment damage or injury. Closing service valves may isolate liquid refrigerant, causing high pressure and rupture of piping. Do not close valves without following recommended procedures for repair, maintenance and replacement of components. Install pressure relief valves in field piping that may become isolated by service valves.**

NOTICE

Risk of unintended pump start. Can cause equipment damage.

Do not install the pump fuses for 60Hz units until the system is fully charged with refrigerant. Do not remove the locking mechanisms from 50Hz circuit breakers or place in the On position until the system is fully charged with refrigerant. Operating the pumps without a full refrigerant charge can result in equipment damage.

NOTE: The Vertiv™ Liebert® XDP160 requires a minimum load of 0kW (0 BTU/H) before the system can be commissioned. This load can be supplied by commissioning flushing jumpers, actual user connected load in racks, or by independent connected load banks.

NOTE: The facility manager MUST be informed before any action is begun that could cause a disturbance in the Vertiv™ Liebert® XD system's cooling function. In addition, the facility manager MUST be informed after the action is taken and the work is finished.

1. Verify that the load is connected. This load can be supplied by commissioning flushing jumpers, actual user connected load in racks, or by independent connected load banks.
2. Check all isolation ball valves in the Liebert® XDP and verify that all are open.
3. Check pump operation.
4. Confirm that the total calculated refrigerant amount has been properly charged into the system.
5. Confirm that the remote temperature/humidity sensors provided have been installed in optimal locations
6. The Liebert® XDP system is now ready to be turned ON.

3.2 Starting the Vertiv™ Liebert® XDP with Vertiv™ Liebert® iCOM™ Controller

The Liebert® XDP is started, stopped and controlled through the Liebert® iCOM™ controller. **Figure 2.1** on page 3 shows the Liebert® iCOM™ keypad.

1. Turn the Liebert® XDP On with the user interface (I/O button). Allow the system to attempt to start for at least 2 minutes.

   If the Liebert® XDP pump cannot maintain flow and continues to switch over due to starting difficulties, refer to Troubleshooting on page 57 . After remedying the problem, proceed to step 2.

2. If constant flow is established, wait until the Vertiv™ Liebert® XDP has been operating for 10-15 minutes, then verify that the refrigerant level in the receiver sight glass is between the second and third level (see **Figure 3.1** on the facing page). To add or remove charge, refer to the XDP User Manual, Facility and Secondary Fluid Circuit Piping section.

   NOTICE

   Risk of operation with low refrigerant charge. Can cause equipment damage.

   Operating the Vertiv™ Liebert® XDP with refrigerant levels below the bottom sight glass can cause permanent pump damage.

3. Check pressure differential functionality:

   The Liebert® XDP system should be On. If it is Off:

   a. Turn the Liebert® XDP On via user interface (I/O button).

      If no "Loss of Flow" alarm is present—This suggests that there is flow. Test the pressure differential by closing the ball valve on either the suction line or discharge line to stop the flow.

      This should prompt an alarm for "loss of flow on P1." This alarm confirms that the switch has opened on low pressure (below 6 psi; 41kPa; 0.41 bars).

      If a "Loss of Flow" alarm is present—This suggests that there is no flow. Verify that this is correctly annunciated by looking at the sight glass in the receiver. If a true no-flow condition exists, the level will not move.

      However, **if there is flow, but the differential reading is faulty**, the level will slowly drop, indicating flow, while the loss of flow alarm is annunciated.

      Check the pressure differential physically by making sure that the electrical connections are properly connected. Then check the pressure differential electrically by making sure that the unit has 24VAC across it.

Figure 3.1   System R-134a Liquid Level at 160kW Load
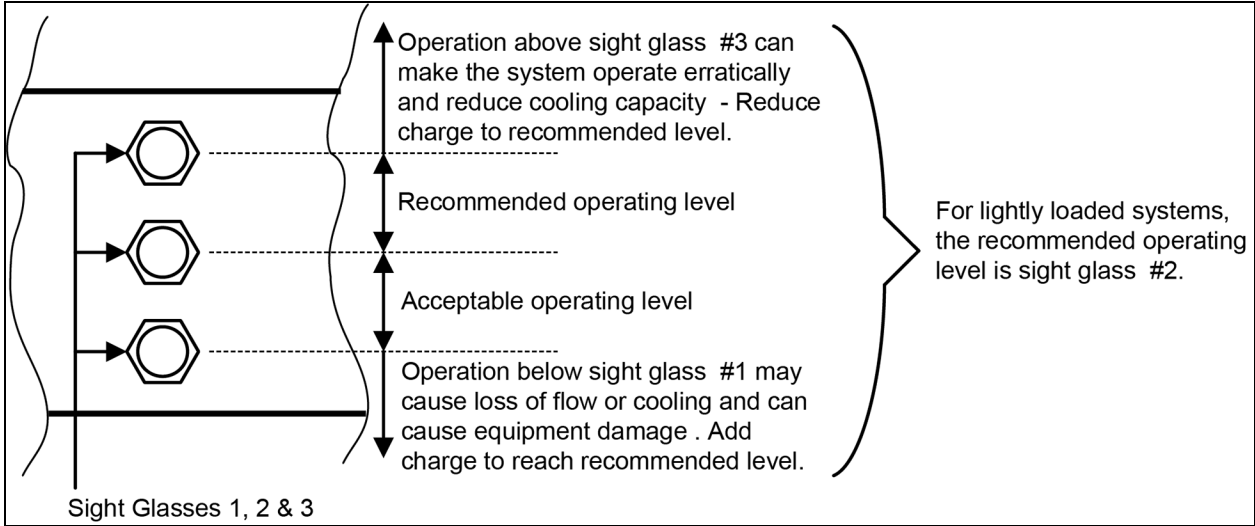
3.3 Unit Off Settings

If the unit is in the OFF position for any reason, the following components will be considered in the following positions:

Pump1 - OFF

Pump2 - OFF

Chilled Water Valve Opening - Configured for value defined by parameter S417 'Unit OFF Valve % Open.

4 Alarm Descriptions and Solutions

4.1 Alarm Descriptions

NOTE: Alarms **must be acknowledged** before they can be reset. To acknowledge or silence an alarm, press the ALARM key one time. This will silence the alarm; the red LED will remain illuminated until the alarm is reset.

CALL SERVICE—Activated when Customer Input 1 is configured for "Call Service" and 24VAC is applied to the input. This alarm is reset when the 24VAC is removed.

CONDENSATION DETECTED (optional)—Activated when water is detected at a cooling module. A 24VAC signal is applied to the condensation input on the control board using a pair of twisted wires or the alarm is sent via CANbus communication. When this alarm is active, the control will raise its refrigerant control point by 4°F (2.2°C). This alarm will reset when the alarms is acknowledged and the signal stops being sent from CANbus or condensation input. The alarm can also be reset by cycling the power. The main power must be cycled to remove the 4°F (2.2°C) offset.

CONTROL VALVE FAILURE—Activated when the chilled water control valve has been commanded to open or close by the control and no change is detected by the valve position signal. The alarm is reset when the main power is cycled.

CUSTOMER INPUT 1—Activated when a 24VAC signal is applied to the customer alarm input on the control board. This alarm will reset when the 24VAC signal stops being sent from the customer alarm input. WATER UNDER FLOOR, SMOKE DETECTED, CALL SERVICE, and COMP LOCK PD are possible designations for this alarm; they are set with the Unit Code.

HIGH SUPPLY CW TEMP—Activated when the supply chilled water sensor reads the chilled water temperature above the user-specified alarm setpoint. This alarm will reset when the reading from the supply chilled water temperature sensor drops 5°F (2.8°C) below the user-specified setpoint and the alarm has been acknowledged.

HIGH DEWPOINT—Activates when the calculated dew point at either Sensor A or B exceeds the user-specified alarm setpoint. The alarm will reset when the calculated room dew point from both Sensor A and Sensor B is 2°F (1.1°C) below the setpoint and the alarm has been acknowledged.

HIGH PRESSURE CUTOUT— Activated when pumped refrigerant loop pressure exceeds 190 psig. High Pressure is reported as a loss of flow on Vertiv™ Liebert® iCOM™ and by provided NO/NC customer contacts. The high pressure switch is manual reset.

HIGH RETURN REF TEMP—Activated when the return refrigerant temperature sensor reads the return refrigerant temperature above the user-specified alarm setpoint. This alarm will reset when the reading from the return refrigerant temperature sensor drops 2°F (1.1°C) below the user-specified setpoint and the alarm has been acknowledged.

HIGH SUPPLY REF TEMP—Activated when the supply refrigerant temperature sensor reads the supply refrigerant temperature above the user-specified alarm setpoint. This alarm will reset when the reading from the supply refrigerant temperature sensor drops 2°F (1.1°C) below the user-specified setpoint and the alarm has been acknowledged.

HIGH TEMP SENSOR A—Activated when the reading from Sensor A is above the user-specified alarm setpoint. The alarm will reset when the reading from Sensor A drops 2°F (1.1°C) below the setpoint and the alarm has been acknowledged.

HIGH TEMP SENSOR B—Activated when the reading from Sensor A is above the user-specified alarm setpoint. The alarm will reset when the reading from Sensor A drops 2°F (1.1°C) below the setpoint and the alarm has been acknowledged.

LOSS OF FLOW PUMP 1—Activated when Pump 1 is commanded to run and the differential pressure switch does not sense differential pressure (set at 6 psi; 41kPa; 0.41 bars). After attempting to start Pump 1 three times, the Vertiv™ Liebert® XDP will automatically switch to the other pump to establish flow. This alarm will reset when flow has been established on Pump 1 and the alarm has been acknowledged.

LOSS OF FLOW PUMP 2—Activated when Pump 2 is commanded to run and the differential pressure switch does not sense differential pressure (set at 6 psi; 41kPa; 0.41 bars). After attempting to start Pump 2 three times, the Liebert® XDP will automatically switch to the other pump to establish flow. This alarm will reset when flow has been established on Pump 2 and the alarm has been acknowledged.

LOW MEMORY—Activated when the control board is low in memory resources. This alarm rests automatically as soon as memory consumption falls below the threshold.

LOW RETURN REF TEMP—Activated when the return refrigerant temperature sensor reads the return refrigerant temperature below the user-specified alarm setpoint. This alarm will reset when the reading from the return refrigerant temperature sensor rises 2°F (1.1°C) below the user-specified setpoint and the alarm has been acknowledged.

LOW SUPPLY REF TEMP—Activated when the supply refrigerant temperature sensor temperature reading drops below the higher of the two calculated dew points, assuming that neither Sensor A or Sensor B has a sensor failure alarm. This alarm will reset when the supply refrigerant temperature sensor reads the refrigerant temperature above both of the two calculated dew points and the alarm has been acknowledged. This alarm can lock the unit Off. If this occurs, the main power must be cycled.

LOW TEMP SENSOR A—Activated when the reading from Sensor A drops below the user-specified alarm setpoint. The alarm will reset when the reading from Sensor A rises 2°F (1.1°C) above the setpoint and the alarm has been acknowledged.

LOW TEMP SENSOR B—Activated when the reading from Sensor B drops below the user-specified alarm setpoint. The alarm will reset when the reading from Sensor B rises 2°F (1.1°C) above the setpoint and the alarm has been acknowledged.

PUMP 1 OVERLOAD – Activated when 24VAC is applied to the input. This alarm is reset when the 24VAC is removed.

PUMP 2 OVERLOAD – Activated when 24VAC is applied to the input. This alarm is reset when the 24VAC is removed.

PUMP SHORT CYCLE—Activated when the Vertiv™ Liebert® XDP is trying to establish flow (differential pressure) and is unable to do so. The Liebert® XDP will attempt three times to establish flow on a pump before trying the other pump. The control will keep cycling three times on one pump, then three times on the other pump until it is able to establish flow (differential pressure). If this cycling occurs for 30 minutes and the Liebert® XDP still does not establish flow, a PUMP SHORT CYCLE alarm will be present. This alarm will shut down the Liebert® XDP. To reset this alarm, the main power must be cycled.

RAM/BATTERY FAIL—Activated when the RAM backup battery or the RAM itself has failed. This requires a hardware replacement.

RETURN CW SENSOR FAIL—Activate when the reading for the return chilled water temperature sensor is out-of-range, invalid, or mechanically failed. This alarm shall reset once the return chilled water temperature sensor reading is back within range or is considered valid and the alarm has been acknowledged. There is zero action associated with this event other than alarm annunciation.

RTN REF SENSOR FAIL—Activated when the control no longer senses a signal from the return refrigerant temperature sensor. This alarm will reset when the return refrigerant temperature sensor signal is returned and the alarm has been acknowledged. This alarm can lock the unit Off. If this occurs, the main power must be cycled.

SENSOR A FAILURE—Activated when no temperature and/or humidity signal is present from Sensor A, or when communication is lost from Sensor A. This alarm will reset when the temperature and humidity signals and communications is returned to Sensor A, and the alarm has been acknowledged.

SENSOR B FAILURE— Activated when no temperature and/or humidity signal is present from Sensor B, or when communication is lost from Sensor B. This alarm will reset when the temperature and humidity signals and communications is returned from Sensor B, and the alarm has been acknowledged.

SMOKE DETECTED—Activated when the Customer Input 1 is configured for "Smoke" and 24VAC is applied to the input. This alarm is reset when the 24VAC is removed.

NOTE: This is not a room smoke detector and is not intended to replace external smoke detectors.

                                       4 Alarm Descriptions and Solutions

SUPPLY CW SENSOR FAIL—Activated when the control no longer senses a signal from the supply chilled water sensor. This alarm will reset when the signal is returned, and the alarm has been acknowledged.

SUP REF SENSOR FAIL—Activated when the control no longer senses a signal from the supply refrigerant temperature sensor. This alarm will reset when the supply refrigerant temperature sensor signal is returned and the alarm has been acknowledged. This alarm can lock the unit Off. If this occurs, the main power must be cycled.

UNIT CODE MISSING—Activated when a valid unit code has not been entered and saved. To reset, enter valid unit code, save and execute.

WATER UNDER FLOOR—Activated when Customer Input 1 is configured for "Water Alarm" and 24VAC is applied to the input. This alarm is reset when the 24VAC is removed.

4.2 Warning Descriptions

LOSS OF POWER—Activated when the unit is On and operational and 24VAC power to the control is lost. This alarm will be emitted when power is restored to the control. The Vertiv™ Liebert® XDP will restart at a user-defined time delay after power is restored. Once activated, the alarm will remain activated for 30 minutes.

PUMP 1 HRS EXCEED—Activated when the Pump 1 Actual Hours exceeds the user-specified limit. To reset, Actual Hours must be reset to 0.

PUMP 2 HRS EXCEED—Activated when the Pump 2 Actual Hours exceeds the user-specified limit. To reset, Actual Hours must be reset to 0.

4.3 System Shutdown Causes

Unit is Off by High CW Temp

The entering chilled water temperature is too high to keep the refrigerant pump(s) running normally. If a HIGH CW TEMP alarm occurs and the refrigerant pump loses flow (differential pressure), then the Vertiv™ Liebert® XDP will go into a pre-chill mode. The Liebert® XDP can attempt to start again only if the entering chilled water temperature drops below the HIGH CW TEMP setpoint.

Unit is Off by Pump Short Cycle

The control was unable to get a pump started upon start-up or after a loss of differential pressure. The control looks at the SHORT CYCLE time delay. If it cannot establish differential pressure within that amount of time, the unit is shut down. Main power (disconnect switch) must be turned Off, then back On to clear this alarm.

Unit is Off by High Pressure Cutout

A high pressure switch in the pumped refrigerant loop disables the pump operation due to high pressure condition caused by excessive load or loss of facility chilled water. This condition is communicated to the Vertiv™ Liebert® iCOM™ control as loss of flow or by factory supplied, field wired indication via customer NO/NC connections. This alarm is manually reset.

4.4 Operation at Loss of Supply and Return Refrigerant Sensors

4.4.1 Loss of Return Refrigerant Sensor

In the event of the return refrigerant temperature sensor and sensor reading no longer being reported to Vertiv™ Liebert® iCOM™, the unit shall automatically transition to the supply refrigerant temperature sensor for control and annunciate a "Return Refrigerant Sensor Failure" alarm event. Once the return refrigerant temperature sensor is restored, the unit shall continue to utilize the supply refrigerant temperature sensor for control until main unit power has been reset.

4.4.2 Loss of Supply Refrigerant Sensor

In the event of the supply refrigerant temperature sensor and sensor reading no longer being reported to Liebert® iCOM™, the unit shall continue normal operation while annunciating a "Supply Refrigerant Sensor Failure" alarm event. Since the supply refrigerant temperature sensor is not the primary controlling sensor, no further action is required. Once the supply refrigerant temperature sensor is restored, the unit shall continue normal operation since the supply refrigerant temperature sensor is not the primary controlling sensor.

4.4.3 Loss of Supply and Return Refrigerant Sensors

In the event of the supply and return refrigerant temperature sensors and sensor readings no longer being reported to Vertiv™ Liebert® iCOM™, the unit shall continue cooling operation locked in on the last known call for cooling (CFC), meaning cooling valve and fan speed requests shall be kept in their current (last known) positions. "Supply Refrigerant Sensor Failure" and "Return Refrigerant Sensor Failure" alarm events shall be annunciated. Once the supply and return refrigerant temperature sensors have been restored, the unit shall continue operating with cooling and fan speed locked in to their current positions until main unit power has been reset.

5 Troubleshooting

Table 5.1   Troubleshooting the Vertiv™ Liebert® XDP

Symptom	Possible Cause	Check or Remedy
Pump will not energize	No main power	Check L1, L2 and L3 for rated voltage.
	Loose electrical connections	Tighten connections.
	Overloads tripped	Allow pump to cool. Check amp draw. Confirm that the external pump overload trip point settings are correct.
	Tripped circuit breaker	Check circuit breaker to pump(s).
	Incorrect phase wiring	See Checklist for Liebert® XDP Start-up on page 49 .
Pump will not start or run	No chilled water	Check and verify that there is supply chilled water to the Liebert® XDP.
	Isolation valve(s) on pump suction and/or discharge is closed.	Open all isolation valves completely during normal operation.
	Supply chilled water is too high	Check and verify that the chilled water temperature setpoint is at 50°F (10°C) or lower and that there is flow on the chilled water side.
	Low Refrigerant Temperature (high dew point)	Check alarm(s) history on Liebert® XDP. The Liebert® XDP was operating below the dew point for a significant amount of time. Check humidity in conditioned space, lower humidity if necessary to allow Liebert® XDP to operate at a lower temperature. (Disconnect must be switched to Off then back On to allow Liebert® XDP to reset itself).
	High pressure switch tripped	Check and reset the manual high pressure switch.
	Pressure switch not making contact.	Check differential pressure settings. If not within 6 psi, ±1 psi (41kPa, ±7kPa; 0.41 bars, ±0.07bars) then manually change accordingly.
	Not enough charge	See Checklist for Liebert® XDP Start-up on page 49 .
Pump will not start	Chilled water valve not closing completely.	Wait at least 10 minutes before calibrating. Access the Advanced Menu>Factory Settings>Calibrate Actuator. Contact Vertiv for assistance, 1-800-543-2378.
Pump noisy	Cavitation due to vapor in pump	Check for adequate charge in system, refer to the User's Manual. Checklist for Liebert® XDP Start-up on page 49 .
	Worn motor bearings	Replace pump
	Pump is rotating in reverse	See Checklist for Liebert® XDP Start-up on page 49 .

Table 5.1   Troubleshooting the Vertiv™ Liebert® XDP (continued)

Symptom	Possible Cause	Check or Remedy
Liebert® XDP (Pump) suddenly stops	Low Refrigerant Temperature	Check humidity of the room along with the location of remote sensors. Make sure that the sensors are not in a cold area where there is insufficient air flow for accurate, representative readings. Chilled Water temperature is too cold. Load is too light.
	Loss of power	When power is restored, the Liebert® XDP will automatically restart.
	Clogged filter dryer and/or impeller	Clean out debris
	Leak in system - loss of charge	Check the entire system for leaks with a refrigerant sniffer. Repair as necessary.
	Low Chilled Water Temperature Alarm and Loss of Flow Pump X Alarm	Check supply chilled water temperature.
	Supply Refrigerant Sensor Failure Alarm	Check wiring.
		Call service.
Clogged filter dryer and/or impeller	Debris or other contaminants in refrigerant	Replace.
Pipe rattle	Loose pipe connections	Check pipe connections.
Chilled water valve not working	Motor operates but valve won't open	Check linkage for adjustment and be sure that it is tight on the valve.
	No 24 VAC power to motor	Check for 24 VAC between P52-1 and P52-4.
	No signal from control	Check 24 VAC at P22-1 (close) or P22-3 (open).
	Motor not operating	Unplug P22 from the board. Jumper P22-5 to P52-4 for grounding, then jumper P22-1 to P52-1 to drive close. Remove jumper to close and then jumper P22-3 to P52-1 to drive open. If motor fails to work, replace it.
Motor burnout	Check control panel for welded contactor contacts or welded overload contacts	Replace defective components.
Main 24VAC fuse trips	Shorts or loose connections	Check the wiring connections of the 24VAC circuit.
	Faulty circuit board	Replace the circuit board.
Unstable pump operation	R-134a pump loop overcharged	While pump is running R-134a receiver level must be within recommended levels (see System R-134a Liquid Level at 160kW Load on page 51).
	R-134a pump loop undercharged	
	Filter Dryer clogged	See Clogged filter dryer and/or impeller above symptom and remedy.
Room becomes too warm	Liebert® XDP is off	Check status of the Liebert® XDP at the user interface. Turn system On at I/O button if system is Off.
	High dew point	Check temperature and relative humidity (RH) of room. Lower RH setpoint if necessary to lower dew point. At normal room temperature of 68°F (20°C), the RH should be set to 50% or lower.
	Minimum room temperature setpoint is too high	Check the setpoint in the User Setpoints menu (see Setpoints Screen on page 19).
	Temperature/humidity sensors incorrectly placed	Place the sensor on the return air side of the primary air mover (eg., Liebert® DS). Do not install the sensor near unsealed doors, windows or similar areas.

6 Maintenance

The Vertiv™ Liebert® XD system components require little maintenance when proper fluid levels are maintained and proper start-up and operation procedures are followed. Please see the Maintenance section of the *Liebert® XDP Direct to Chip Installer/User Guide* (SL-71042) for service intervals.

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Appendices

Appendix A: Technical Support and Contacts

A.1 Technical Support/Service in the United States

Vertiv Group Corporation

24x7 dispatch of technicians for all products.

1-800-543-2378

Liebert® Thermal Management Products

1-800-543-2378

Liebert® Channel Products

1-800-222-5877

Liebert® AC and DC Power Products

1-800-543-2378

A.2 Locations

United States

Vertiv Headquarters

505 N. Cleveland Ave.

Westerville, OH 43082, USA

Europe

Via Leonardo Da Vinci 8 Zona Industriale Tognana

35028 Piove Di Sacco (PD) Italy

Asia

7/F, Dah Sing Financial Centre

3108 Gloucester Road

Wanchai, Hong Kong

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