



Liebert®

EXL S1™ Touchscreen Control Panel

User Manual

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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.VertivCo.com/en-us/support/> for additional assistance.

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1.0 INTRODUCTION

The Touchscreen Control Panel's integrated interface simplifies monitoring and managing single or multiple Liebert® UPS modules. The control collects a profusion of information about the health of the modules and presents it in a standardized format. This simple, dynamic display speeds operator response to changing power input and demand.

Many of the settings will depend on the UPS type and features. Many settings will be made by Vertiv personnel when setting up the UPS.

The Touchscreen Control Panel's interface will display data either graphically or in text. The Status Scroll Bar at the top of the touchscreen display summarizes system conditions. The bar changes color to indicate status and includes an icon matched to the status. The Status Gauge displays such details as power demand from the connected load, input power quality, output and bypass on each phase and battery capacity.

The Touchscreen Control Panel's mimic display shows the comprehensive system information that the operator needs:

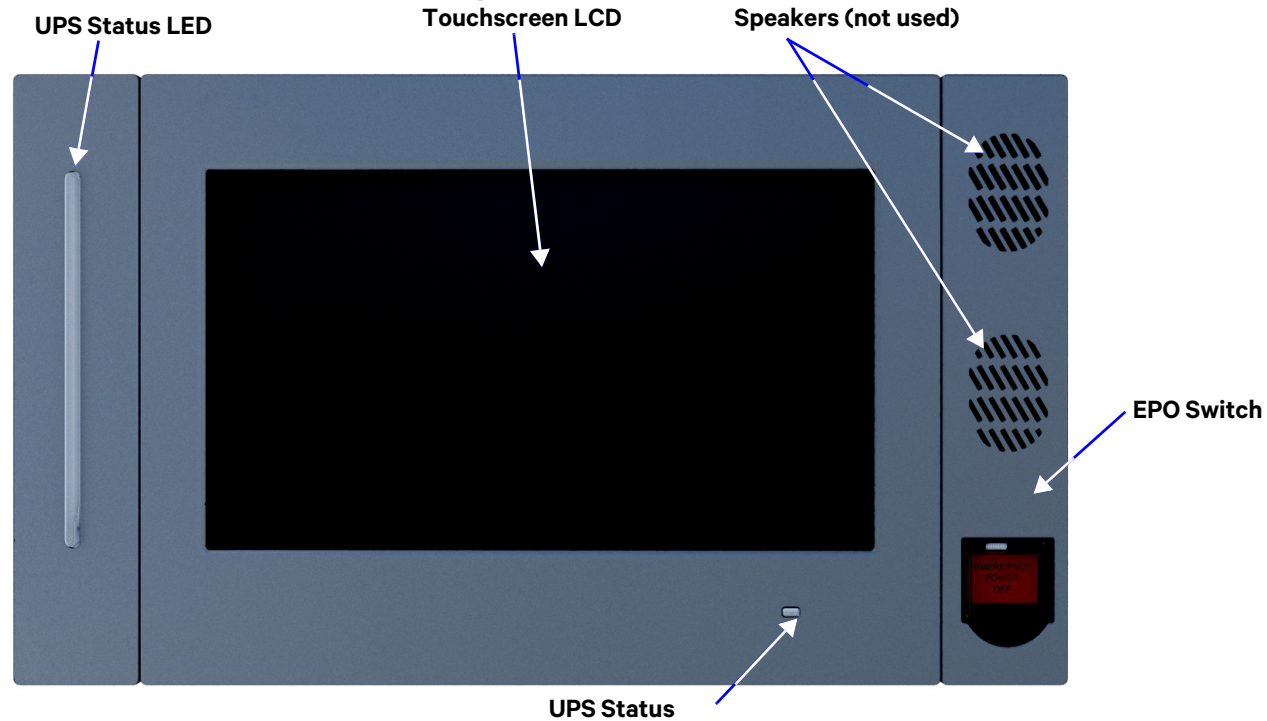
- Is input power connected?
- Are there any alarms?
- Which breakers are open and which are closed?
- Is the UPS on battery?
- How much battery run time is available?

Checking a particular component is as simple as touching it on the mimic display—Detailed data appears, allowing the operator to respond.

Visual and audible alarms alert personnel to faults and alarms requiring immediate attention.

Passcodes for each level of access—Operator, Administrator and Service—secure the UPS against unauthorized changes. Personnel without a passcode can view UPS status, but cannot change any functions or the appearance of the interface.

Figure 1 Touchscreen Control Panel components



2.0 NAVIGATING THROUGH THE TOUCHSCREEN CONTROL PANEL

The Touchscreen Control Panel is active whenever the UPS has input power. The touchscreen LCD on the front of the UPS permits:

- Logging in to the system—**3.1 - Log In to the Touchscreen Control Panel**
- Customizing the user interface—**2.4 - Customizing the Display**
- Checking the status of the UPS and its external batteries, including all measured parameters, events and alarms—**4.0 - VIEWING UPS STATUS** and **5.0 - VIEWING UPS COMPONENT STATUS**
- Determining when users logged in and out—**4.3 - Logs—Events and Log-In Times**
- Silencing alarms—**3.3.1 - OPERATE Menu—Silence an Alarm**
- Turning the UPS On —**3.3.2 - OPERATE Menu—Inverter On**
- Turning the UPS Off—**3.3.3 - OPERATE Menu—Inverter Off**
- Resetting faults—**3.3.4 - OPERATE Menu—Reset Fault**
- Enabling Energy Saving Mode—**3.3.6 - OPERATE Menu—Energy Saving Mode Activation**

The Touchscreen Control Panel's display default view is two panes: One-line animated mimic and UNIT STATUS. The appearance can be changed to multiple panes that show other data. Customizing the appearance is detailed in **2.4 - Customizing the Display**.

2.1 Restrict Physical Access with Barriers or Set Log-In Codes

NOTICE

Risk of unauthorized changes to UPS operational settings. Can cause equipment damage.

Because a UPS such as the Liebert® EXL™ S1 is usually installed in areas that restrict physical access, the Touchscreen Control Panel does not, by default, require a PIN to change UPS settings and operations.

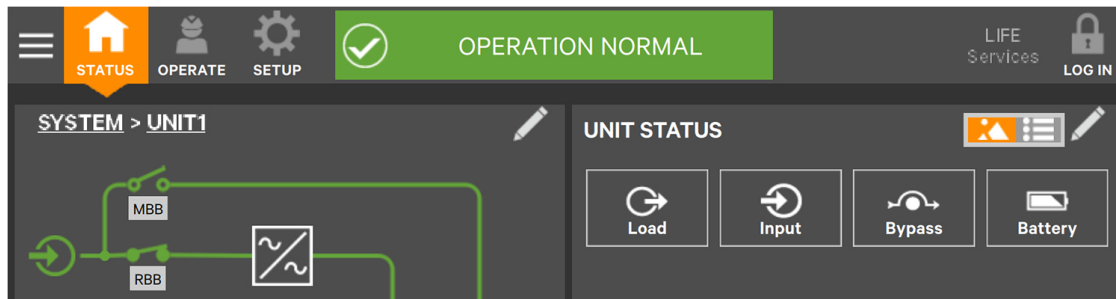
If physical access cannot be restricted with barriers and identity cards, PIN codes may be set in the Touchscreen Control Panel to prevent unwanted changes to the Liebert® EXL™ S1.

The Touchscreen Control Panel has four possible access levels—Observer, Operator, Administrator and Service—each with different levels of authority. The Service level, which permits configuration changes, is the only level that, by default, requires a PIN.

The default access level for the Touchscreen Control Panel is Administrator. When a PIN is set for the Administrator, the control panel opens at the Operator level.

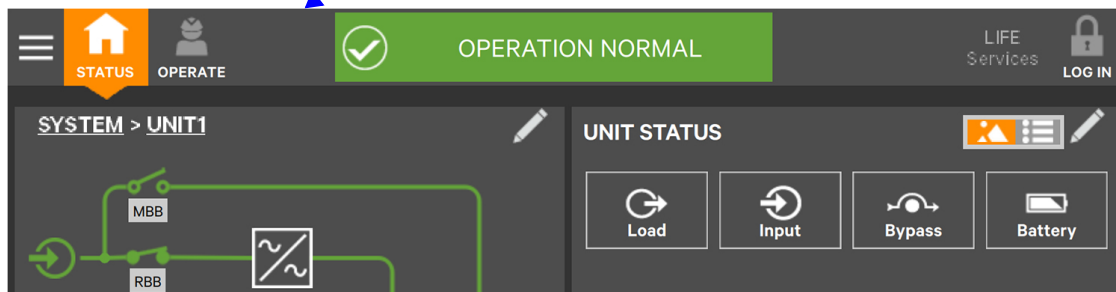
To set or change a PIN, refer to **3.1 - Log In to the Touchscreen Control Panel**.

Figure 2 Opening screens



Default opening screen; no PIN required; Administrator level access for all with

Default opening screen; PIN required; Note that the SETUP Function Menu is absent. Operator level access for all with physical



2.2 Touchscreen Control Panel Components

The main areas of the Touchscreen Control Panel are shown in **Figure 3**. The display arrangement and the information displayed can be changed.

At log-in for all access levels, the Touchscreen Control Panel opens to the STATUS screen in graphic display. The status of Unit 0 will be shown if the system is a single-unit configuration. In a parallel setup, the STATUS screen shows the unit where the HMI is installed or the system view. The STATUS screen will show the animated mimic and system status readings at each log-in level. The appearance will differ only in the function menus displayed (see **Figure 4**).

Figure 3 Interface overview—STATUS screen; graphic display

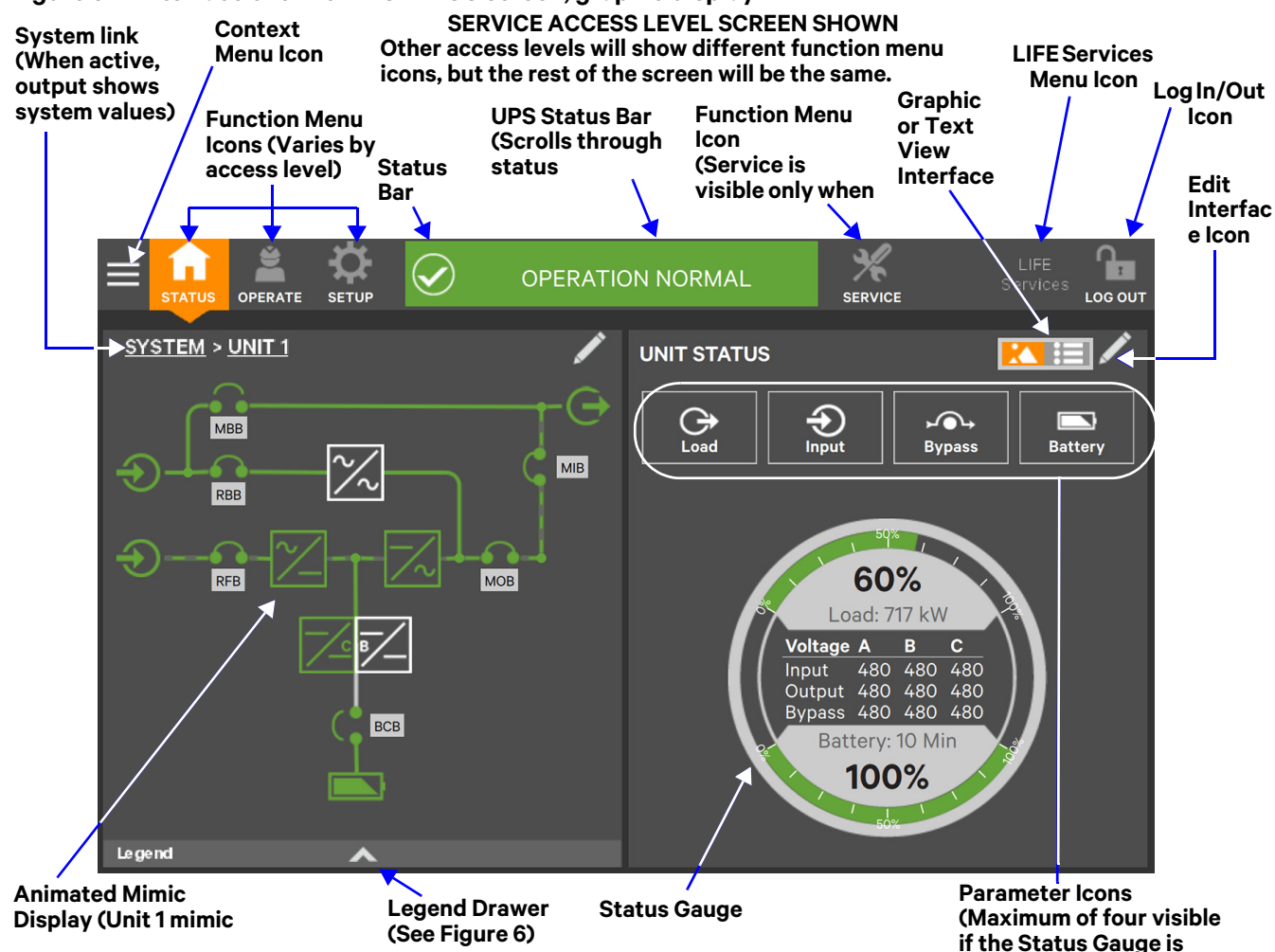
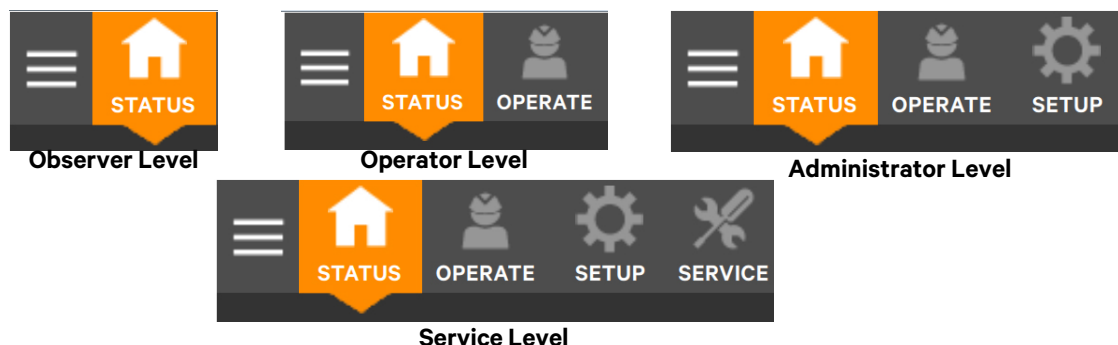


Figure 4 Control display by access level—if PIN's are required



Each Function Menu offers different information and control choices.

If PIN's are not required, the user will see the STATUS, OPERATE, SETUP and LIFE Services Function Menus.

If PIN's are required, the user's access level determines which Function Menu icons are displayed. For example, logging in as Operator will show the STATUS, OPERATE and LIFE Services Function Menus; logging in as Administrator will show those menus as well as the SETUP Function Menu (see **Figure 4**).

- STATUS: Condition of the UPS modules and components and data affecting operation and performance; visible at all access levels.
- OPERATE: UPS operation controls, such as Inverter On, Inverter Off and Energy Saving Status; visible to Operator, Administrator and Service
- SETUP: Manage permissions through PIN's; visible to Administrator and Service
- SERVICE: Input wiring and breaker configuration, parallel status, protocol used and battery charging method; visible only to Service
- LIFE Services: Information for assistance to enable LIFE customer care. LIFE Services requires a maintenance contract. The service must be activated with assistance by calling the listed telephone number; visible to all, including Observers.



Function Menu icons are orange and white when selected, except the LIFE Services icon; it remains dark gray with green text, if LIVE

2.2.1 Context Menus

The Context Menu, available by touching the Menu icon at the top left corner of the interface, display information about the UPS and permit changing various settings. The functions possible through the Context Menu are determined by the user's access level and on the Function Menu that is active (see **Figure 5**).

The items under Display Options on the STATUS Context Menu, for example, differ for each access level.

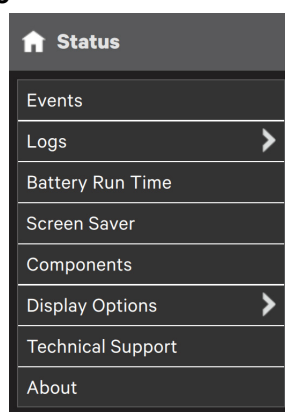
Some information available through the Context Menu, such as alarms and run hours, are available through other areas of the Touchscreen Control Panel.



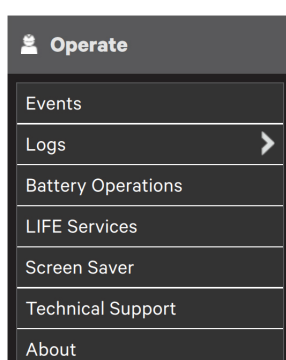
NOTE

The LIFE Services Function Menu icon has no associated Context Menu. Commands and operations related to LIFE Services are found on the OPERATE Context Menu.

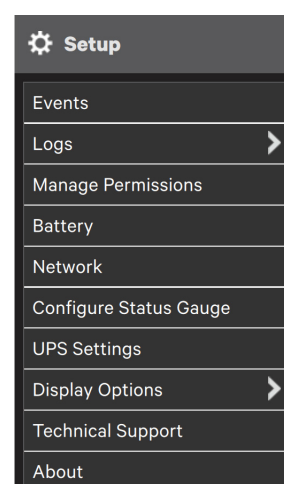
Figure 5 Context Menus



STATUS Function Menu



OPERATE Function Menu



**SETUP Function Menu Selected
(Not shown to Observer or Operator)**

Context Menu—STATUS

Selecting the STATUS icon and touching the Menu icon reveals a Context Menu that permits performing several actions or accessing additional information (see **Figure 5**). Touching a Context Menu item will reveal data or expand the menu to show additional options.

The Context Menu for the STATUS icon shows these items:

- **Events:** Date and time of occurrence, type of event, Event ID, component affected and description. Events can be sorted by type, event ID, component, description. The touchscreen also permits filtering events by

severity (Status, Alarm or Fault); or by component (bypass, monitoring process or the module where the event occurred).

- Logs: UPS Event Log and Audit Log
 - UPS Event Log shows date and time of event occurrence, type of event, Event ID, status, component affected and description; same options for all access levels. The Event Log can be exported as a CSV file for record-keeping, analysis and similar uses.
 - Audit Log shows date and time that users with UPS control access logged into and out of the system. The Audit log can be exported as an XML or CSV file for record-keeping, analysis and similar uses.
- Battery Run Time: Battery Cycle Monitor with duration and count
- Screen Saver: Display Sleep Mode notification (immediate entry into screen saver); screen goes dark and user is logged off; touching the screen reactivates the interface.
- Total Run Hours: Component and hours it has operated; touching a component displays details in the right panel.
- Components: Component status, name and details
- Display Options (changes affect the view for all viewers)
 - Customize Layout: Change panel content and layout (see **2.4 - Customizing the Display**)
 - Display Properties: Language, back-light timer, alarm timeout, auto-log-out timer, display brightness, status indicator brightness and touchscreen calibration (see **2.4 - Customizing the Display**)
 - Date & Time: Drop-down lists for time zone, date, local time and UTC time (Coordinated Universal Time) (see **2.4 - Customizing the Display**); permits synchronizing time to network time.
 - Formats: Drop-down lists for date and time format and measurement system (metric or imperial) (see **2.4 - Customizing the Display**)
 - Custom Labels: Rename settings, serial ports and network interfaces to ease troubleshooting and refine data. (The default name of COM1 may be adequate, but renaming it with the connected device may ease determining the cause of an alarm).
- Technical Support: Manufacturer's support: Web site, e-mail address and telephone numbers
- About: Information about the UPS and its software and firmware; UPS model, rating, configured capacity, model number and serial number.

Context Menu—OPERATE

Selecting the OPERATE icon and touching the Menu icon reveals a Context Menu that permits performing several actions or accessing additional information (see **Figure 5**). Touching a Context Menu item will reveal data or expand the menu to show additional options.

The Context Menu for the OPERATE icon shows these items:

- Events: Date and time of occurrence, type of event, Event ID, component affected and description. Events can be sorted by type, event ID, component, description. The touchscreen also permits filtering events by severity (Status, Alarm or Fault); or by component (bypass, monitoring process or the module where the event occurred).
- Logs: UPS Event Log and Audit Log
 - UPS Event Log shows date and time of event occurrence, type of event, Event ID, status, component affected and description; same options for all access levels. The Event Log can be exported as a CSV file for record-keeping, analysis and similar uses.
 - Audit Log shows date and time that users with UPS control access logged into and out of the system. The Audit log can be exported as an XML or CSV file for record-keeping, analysis and similar uses.
- Battery Operations: Battery testing and charging; automatic, manual and calibration battery testing and battery equalize charging.
- LIFE Services: Customer care assistance contact and reporting center; must be activated with assistance by calling the listed telephone number;
- Screen Saver: Display Sleep Mode notification (immediate entry into screen saver); screen goes dark and user is logged off; interface reactivated by touching the screen; same options for all access levels
- Technical Support: Manufacturer's support: Web site, e-mail address and telephone numbers
- About: Information about the UPS and its software and firmware; UPS model, rating, configured capacity, model number and serial number

Context Menu—SETUP

Selecting the SETUP icon and touching the Menu icon reveals a Context Menu that permits performing several actions or accessing additional information (see **Figure 5**). Touching a Context Menu item will reveal data or expand the menu to show additional options.



The Context Menu for the SETUP icon shows these items:

- Events: Date and time of occurrence, type of event, Event ID, component affected and description. Events can be sorted by type, event ID, component, description. The touchscreen also permits filtering events by severity (Status, Alarm or Fault); or by component (bypass, monitoring process or the module where the event occurred).
- Logs: UPS Event Log and Audit Log
 - UPS Event Log shows date and time of event occurrence, type of event, Event ID, status, component affected and description; same options for all access levels. The Event Log can be exported as a CSV file for record-keeping, analysis and similar uses.
 - Audit Log shows date and time that users with UPS control access logged into and out of the system. The Audit log can be exported as an XML or CSV file for record-keeping, analysis and similar uses.
- Manage Permissions: Change or require PIN for users of Administrators or Operators.
- Network: Modify communication settings.
- Configure Status Gauge: Modify information shown on Status Gauge.
- UPS Settings: Enable or disable audible alarm and modify energy saving configuration (Eco Mode or Intelligent Parallel).
- Display Options (Changes affect view for all access levels)
 - Customize Layout: Change panel content and layout (see **2.4 - Customizing the Display**).
 - Display Properties: Language, back-light timer, alarm timeout, auto-log-out timer, display brightness, status indicator brightness and touchscreen calibration (see **2.4 - Customizing the Display**).
 - Date & Time: Drop-down lists for time zone, date, local time and UTC time (Coordinated Universal Time) (see **2.4 - Customizing the Display**); permits synchronizing time to network time.
 - Formats: Drop-down lists for date and time format and measurement system (metric or imperial) (see **2.4 - Customizing the Display**).
 - Custom Labels: Rename settings, serial ports and network interfaces to ease troubleshooting and refine data. (The default name of COM1 may be adequate, but renaming it with the connected device may ease determining the cause of an alarm).
- Technical Support: Manufacturer's support: Web site, e-mail address and telephone numbers.
- About: Information about the UPS and its software and firmware; UPS model, rating, configured capacity, model number and serial number.

2.3 SYSTEM PANE—Mimic Display Components

The animated mimic display, the default view for the control, shows each configured major component of the UPS system, for both single-module and multi-module systems. The mimic display is the same for all access levels. The power path is shown by animated lines; moving dashes show the active power path. Touching a component (except a breaker) brings up details about the component's status. Breakers are shown as open or closed (see **Figure 6**), but they are not interactive.

Components in the mimic display signify their operational status by their color, green, amber or red. **Tables 9** through **11** describe the various states of the indicators.

The animated mimic display can be changed to any of five other views: Status, Alarms, Run Hours, Event Log and Battery Cycle Monitor Summary (see **2.4 - Customizing the Display**).

Figure 6 Mimic display, normal operation, default view/unit view

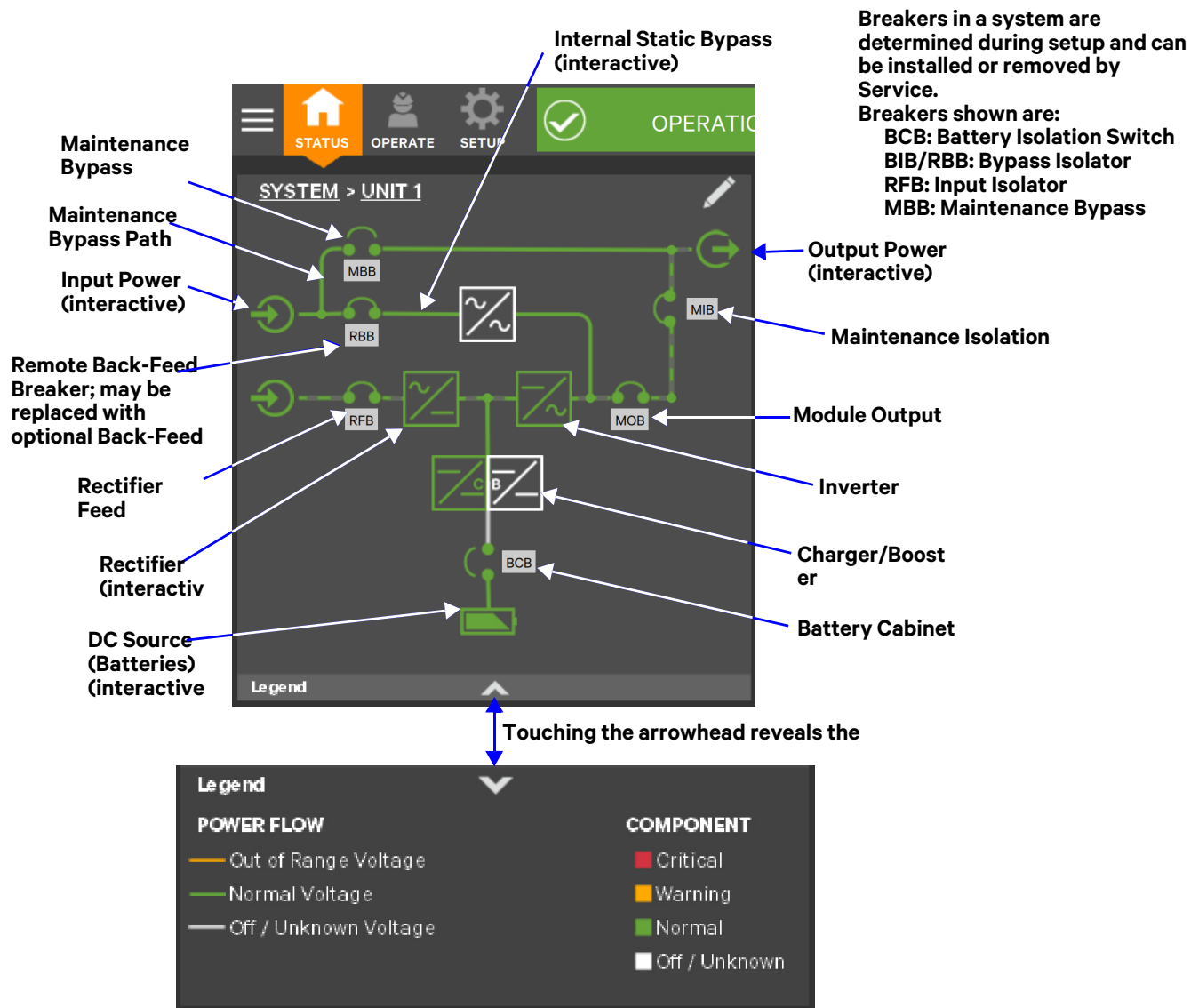


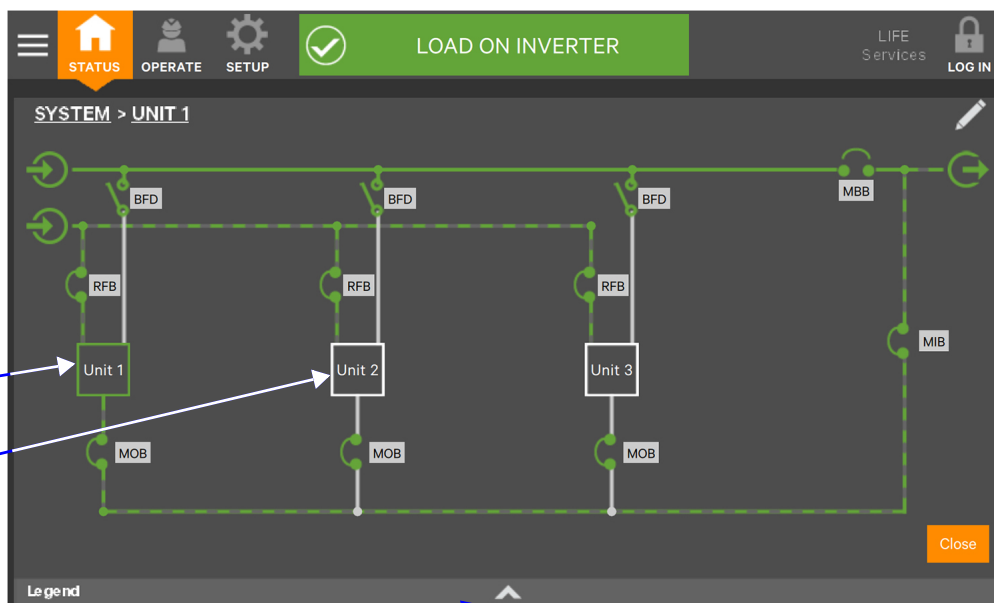
Figure 7 Mimic display, normal operation, system view

System view is obtained by touching **SYSTEM** in the default mimic view. To return to default view, touch Unit 1 or

Green outline indicates communication is active and operating normally.

White outline indicates no communication occurring.

Yellow indicates the unit is communicating but in a warning state.



Touching the arrowhead reveals the

2.3.1 UNIT STATUS Pane Components

The UNIT STATUS pane is identical for all PIN access levels (see **Figure 8**), if PIN's are required. Observers will not have the edit icon (pencil). In the default graphic view, the UNIT STATUS pane shows:

- Status Gauge—Connected load shown in kW and as a percentage of capacity; input, output and bypass voltage for each phase (default data may be changed; see **4.1 - Viewing UPS Data with the Status Gauge**).
- Load Detail Icon
- Input Detail Icon
- Bypass Detail Icon
- Battery Detail Icon

The detail icon for Environmental may be added to the UNIT STATUS pane if there is space.



NOTE

If the Status Gauge is showing, no more than four detail icons will be visible. Removing the Status Gauge permits showing all five detail icons. The view may be customized to show fewer than four.

Touching any of the detail icons reveals additional data about that selection in the opposite pane. The data pane may be closed by touching the *Close* button or by touching any detail icon. The read-only information is available to all access levels (see **Figures 9 through 13**).

Figure 8 UNIT STATUS pane components—Graphic display

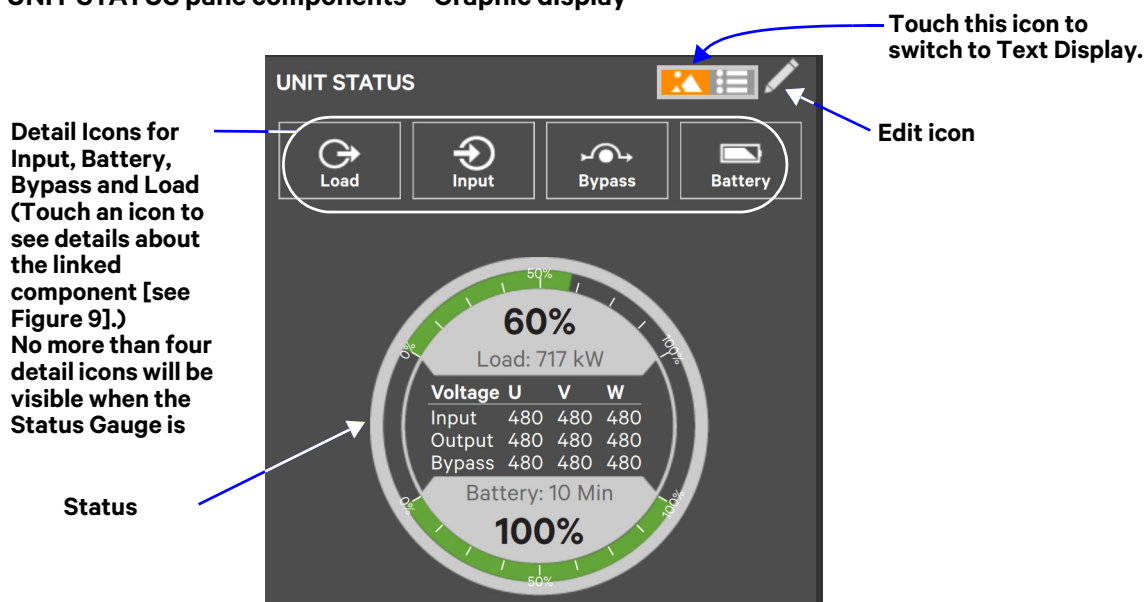


Figure 9 UNIT STATUS pane—Load details; graphic display

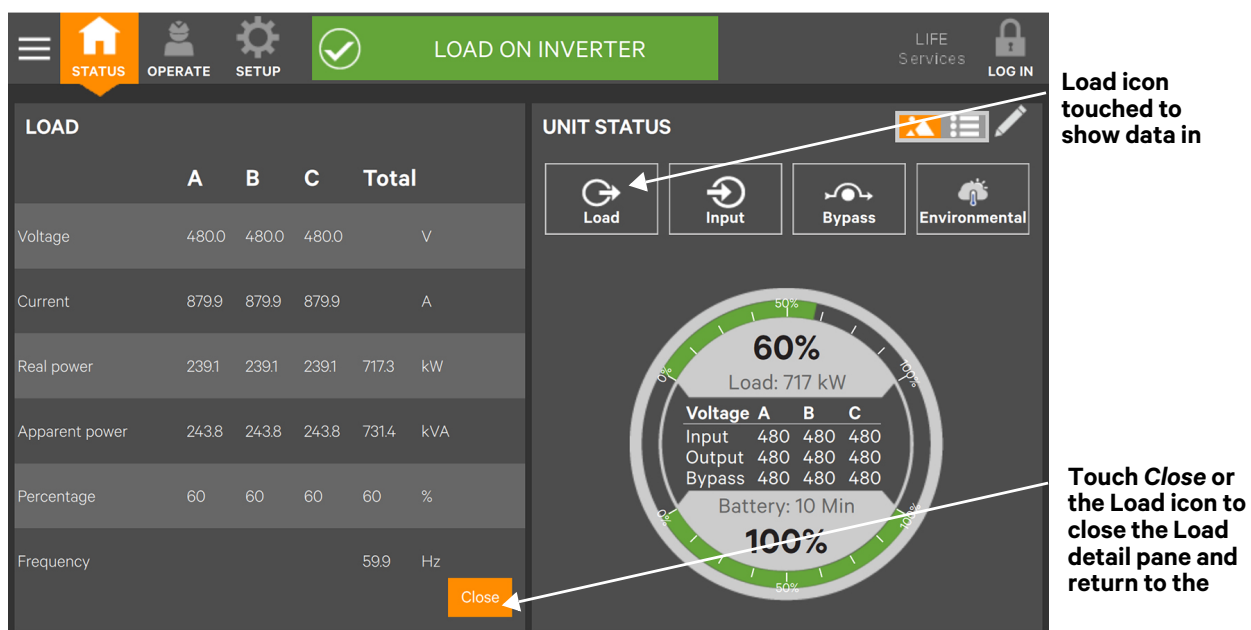


Figure 10 UNIT STATUS pane—Input details; graphic display

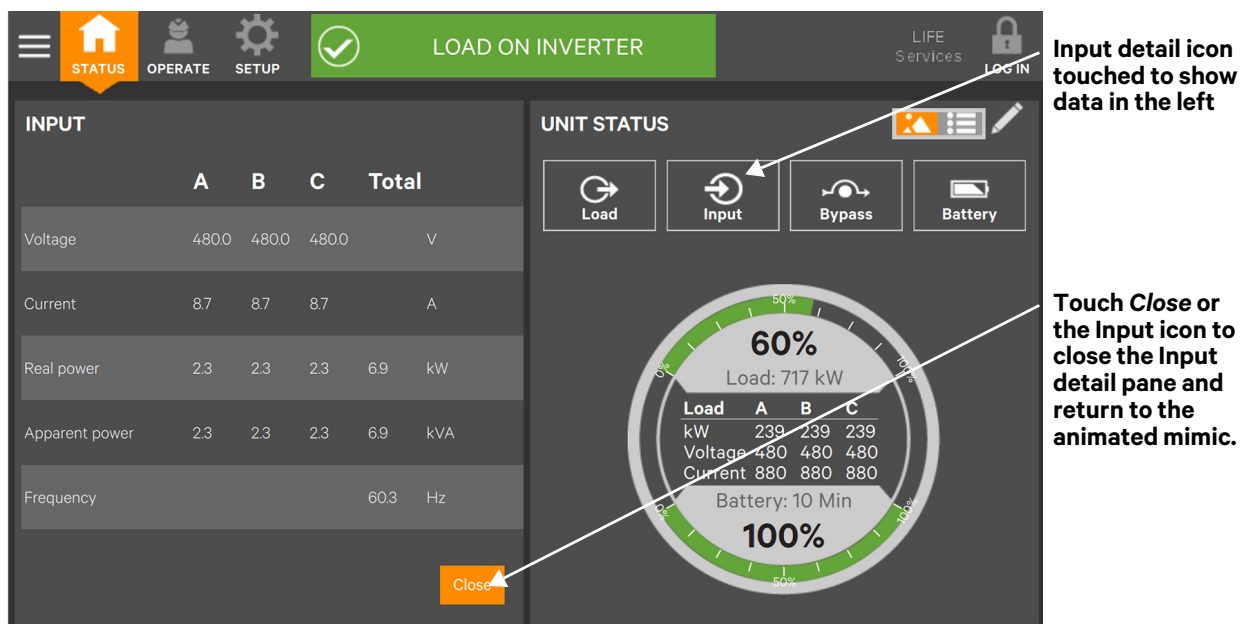


Figure 11 UNIT STATUS pane—Bypass details; graphic display

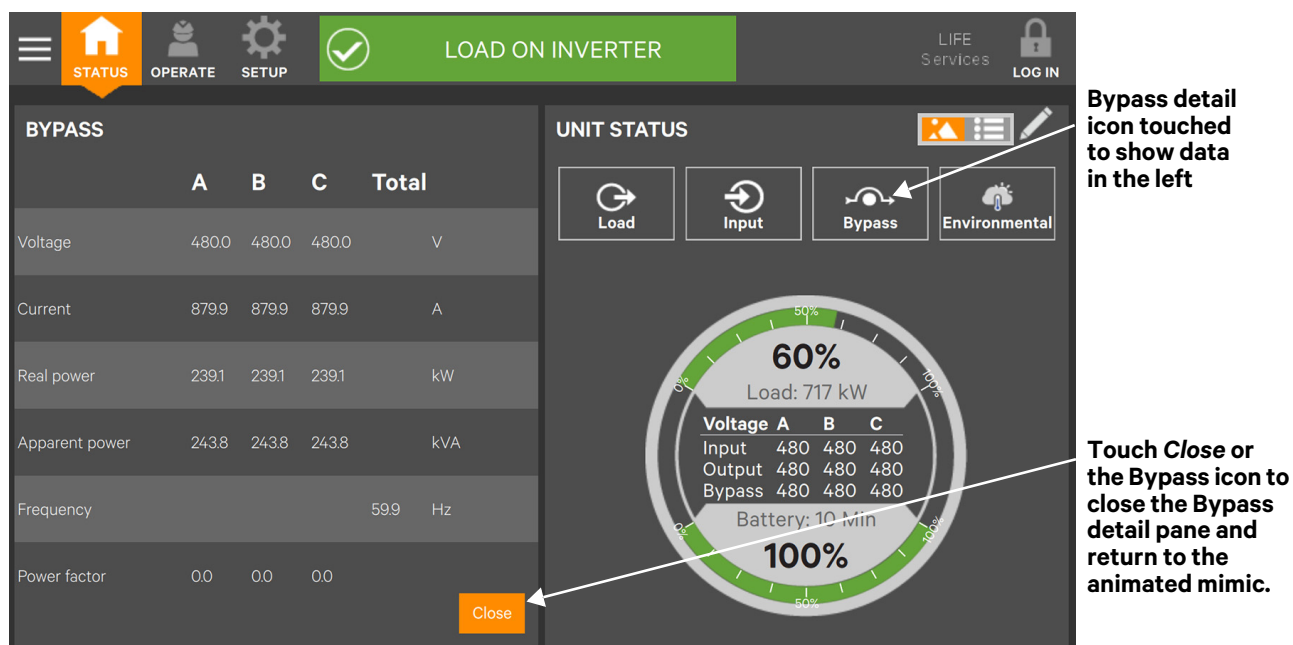


Figure 12 UNIT STATUS pane—Battery and cabinet details; graphic display

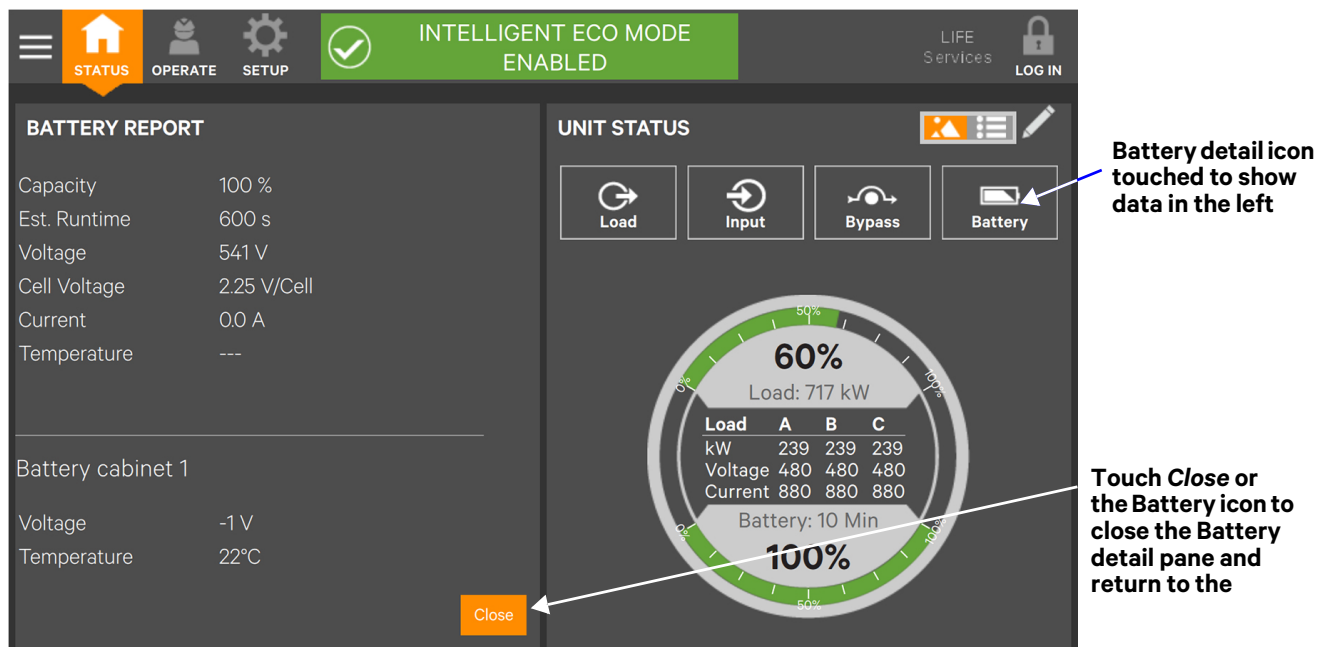
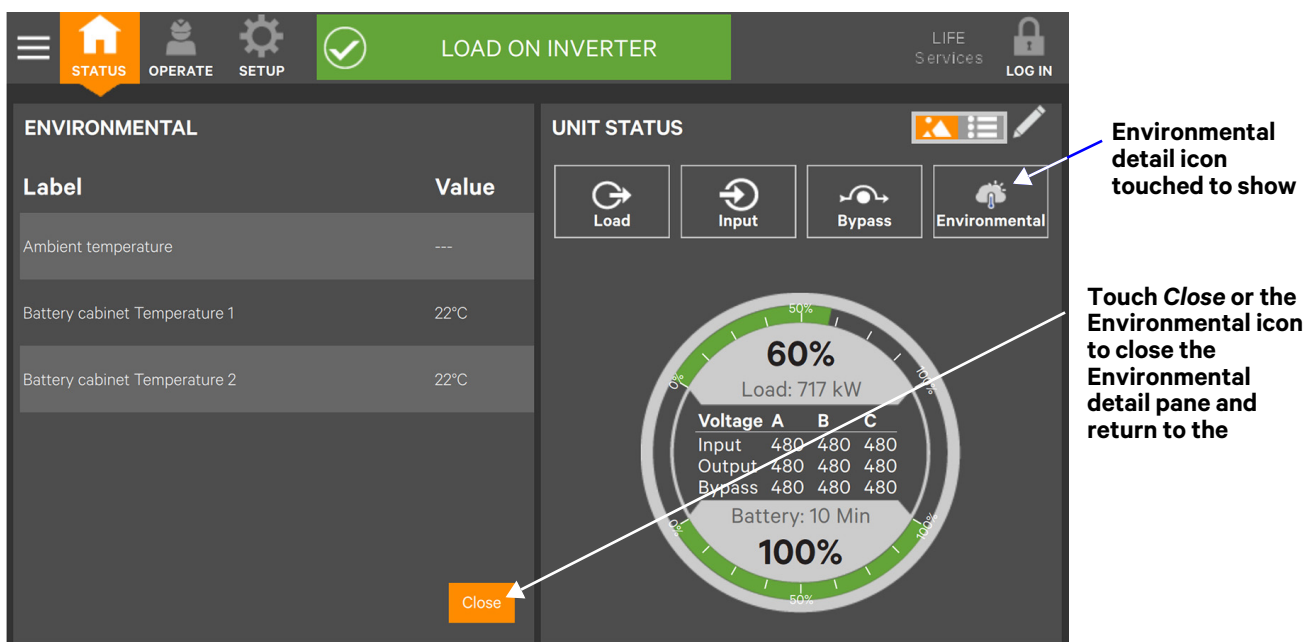


Figure 13 UNIT STATUS pane—Environmental details; graphic display



2.4 Customizing the Display

The Touchscreen Control Panel's default appearance will be adequate for most installations, but the Status panels can be altered to show additional or different data. The layout selected will be

applied to all users. If PIN's have been activated, layouts may be created or altered with Operator, Administrator or Service Access.



NOTE

*The original configuration, Default View 1, cannot be deleted, though it can be changed. Editing it will create a modified view with the new settings. The Default View 1 can be altered with the edit icon (pencil) in the display (see **2.4.2 - Using the Edit Icon to Customize Layout**).*

To customize the display's appearance:

1. Log in to the Touchscreen Control Panel, if a PIN is required.
2. From the STATUS view, touch the Context Menu icon in the top left corner.
3. Select *Display Options > Customize Layout*. (The right pane details how to edit or create a view; see **Figure 14**.)

Edit a View

4. Touch a view to highlight it.
5. Touch *Edit* to change that view.
6. Alter the layout—Add or remove a panel or associate different options with a panel.
7. Touch the *Save* button to keep your changes or touch *Cancel* to exit without saving.

Create a View

8. Touch the *New* button to create a view.



Edit Icon

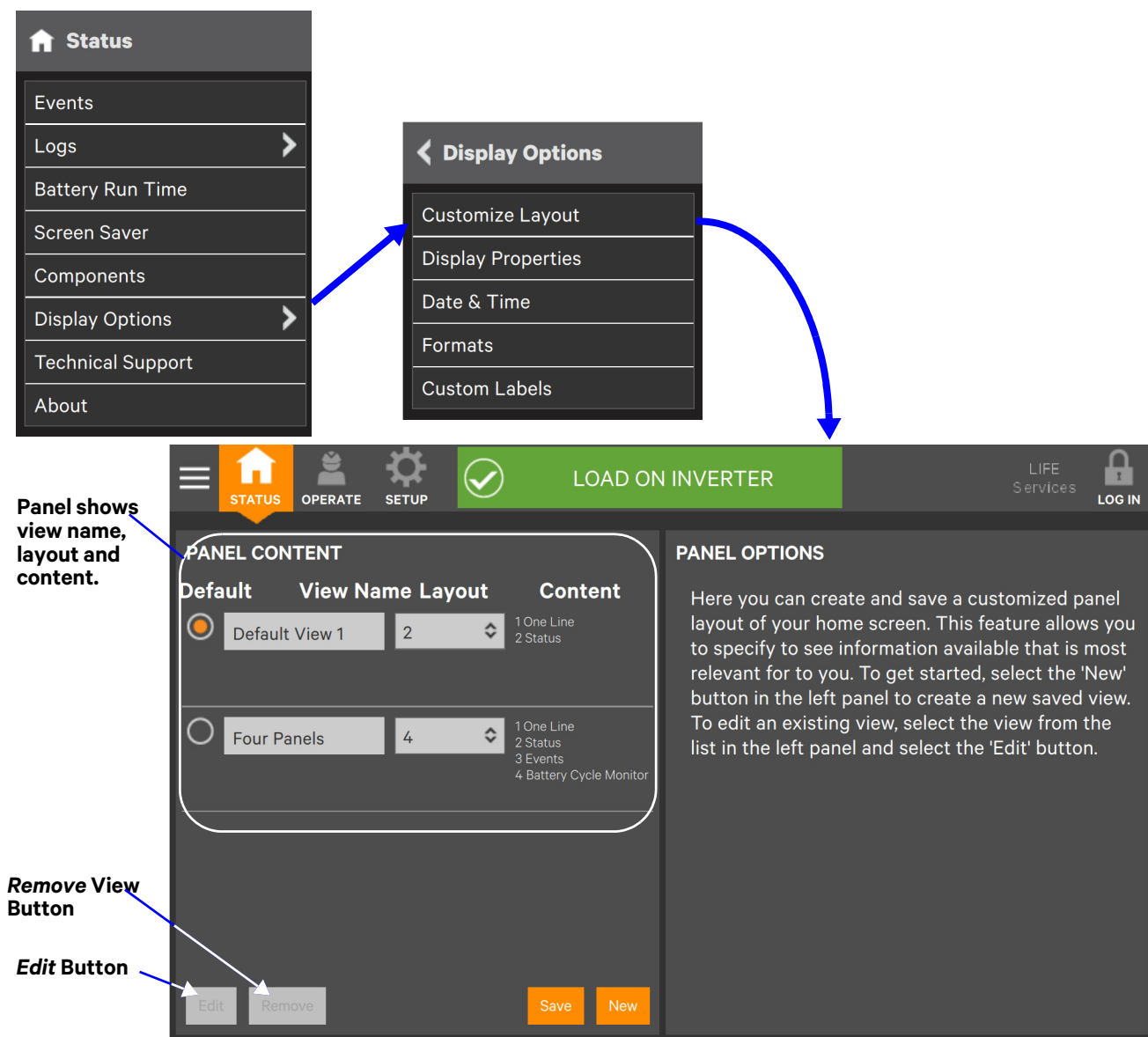


Context



STATUS

Figure 14 Customize the display

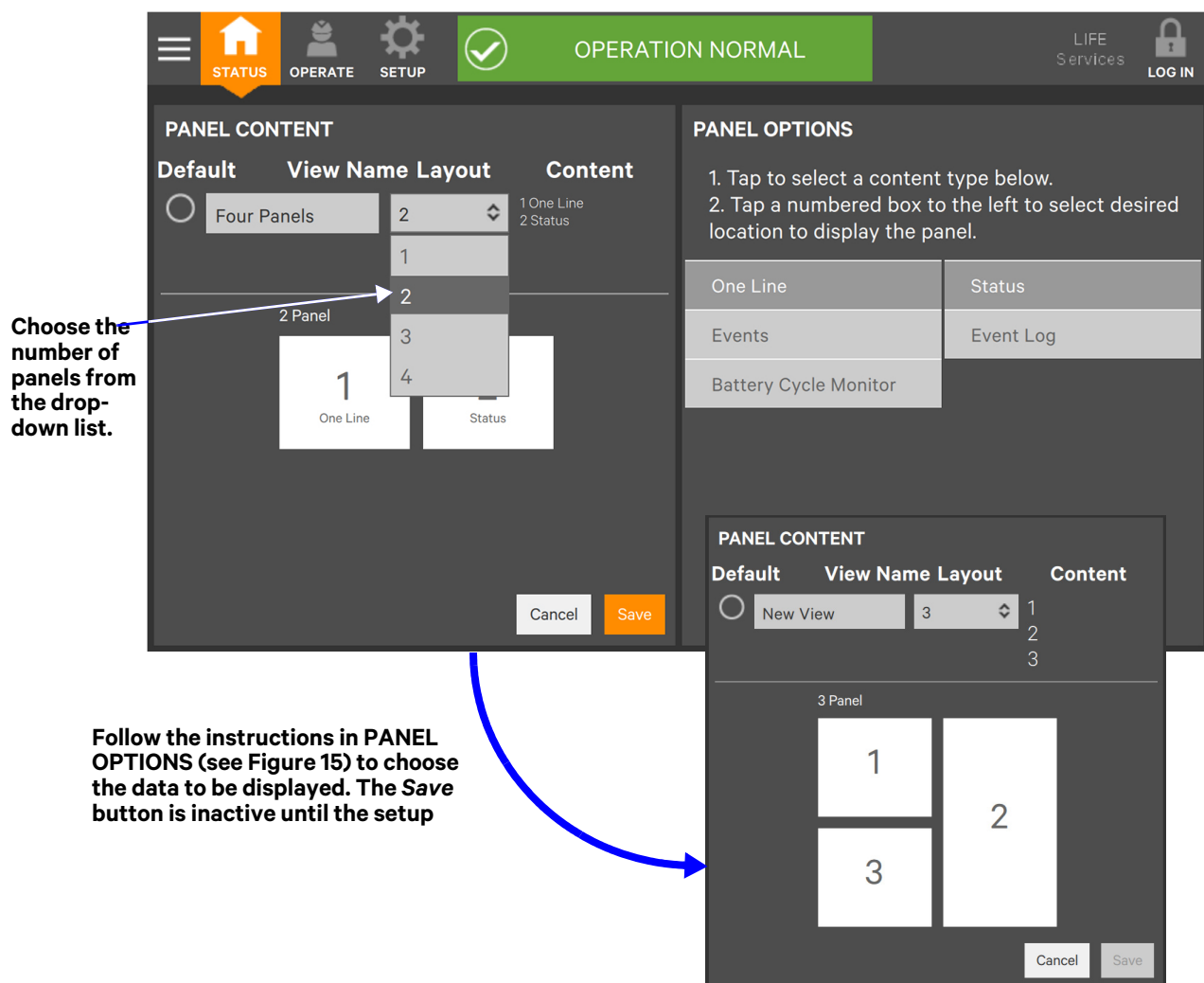


9. Either accept the generated name (New View) or touch the view's name to rename it using the on-screen keyboard (maximum length is 15 characters including spaces). Touch the *Enter* key on the on-screen keyboard after entering the new name.
10. Select the number of panels in the new or edited view from the drop-down list under the *Layout* heading. The maximum is four.
11. Choose the data to be displayed in each pane by touching a choice in the **PANEL OPTIONS** pane and then touching the appropriate panel. Repeat for each panel.
12. Touch the *Save* button to keep the changes or touch the *Cancel* button to exit the screen without saving.



Enter Key

Figure 15 Set number of panes and choose data



13. Touch the Save button.
14. When the window returns to two screens—PANEL CONTENT and PANEL OPTIONS—touch the radio button beside the new view to activate it (this puts a dot in the circle).
15. Touch Save.
16. Touch the STATUS Menu icon to see the new appearance.

To choose an existing layout, navigate to the PANEL CONTENT screen and touch the radio button beside the layout, then touch the STATUS Function Menu.

2.4.1 Remove a Layout

To delete a layout:

1. Log in with Administrator or Service access, if a PIN is required.
2. From the STATUS view, touch the Context Menu icon in the top left corner.
3. Select *Display Options > Customize Layout*. (The right pane details how to edit or create a view; see **Figure 14**.)
4. Touch a view to highlight it.

Edit a View

5. Touch *Edit* to change the highlighted view.
6. Make the changes.
7. Touch *Save* to keep the changes

Remove a View

8. Touch *Remove* to delete the highlighted view.



Context
Menu Icon

2.4.2 Using the Edit Icon to Customize Layout

The Touchscreen Control Panel layout can also be changed with the Edit icons on the screen. The Edit icon can be used to add or remove panels, resize panels, rearrange panels and change monitored parameters.

To use the Edit icon:

1. Touch the Edit icon on the panel to be edited and hold it until a *Change content* button appears on the panel (about 1 second).

Change Panel

2. Touch an icon to choose the data to be displayed in the panel (see **Figure 17**); choices are:

One-Line	Event Log
Status	Battery Cycle Monitor
Events	Energy Log
Run Hours	Battery Log
Service History	Battery Time Remaining

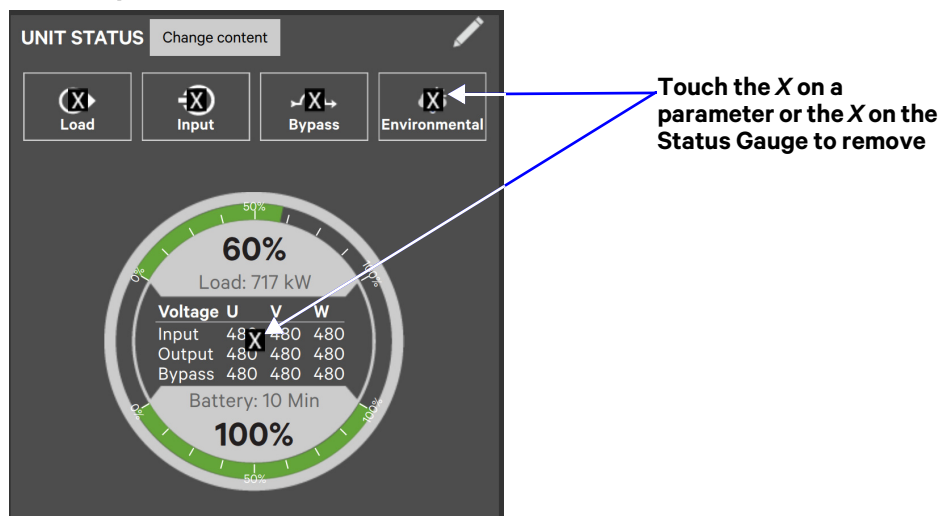


Edit Icon

Change UNIT STATUS Panel Content (see **Figure 16**)

3. To change the UNIT STATUS panel's content:
 - a. Touch the Edit icon on the UNIT STATUS panel and hold it until the *Change content* button and X's appear on the parameters.
 - b. Touch the X on the parameter to be removed from the panel.

Figure 16 Edit UNIT STATUS panel



The Add Parameter icon (+) will appear in the panel if another parameter can be added. The number of parameters that may be shown is based on whether the Status Gauge is showing.

- c. Touching the Add Parameter icon brings up a window to add parameters not already shown on the UNIT STATUS panel.
- d. Touch a parameter's icon to add it to the UNIT STATUS panel.



Add Parameter Icon

Resize or Remove a Panel (see Figure 18)

4. Touch and hold the Edit icon again while the *Change content* button is displayed.
5. Release the icon. Resize handles will appear around the panel and a large X will appear at the top right corner.
6. Pull on a handle to resize the panel, or
7. Touch the large X to delete the panel.

Rearrange Panels (see Figure 18)

8. With the resize handles and X's visible, touch the circle in the center of the panel and drag the panel to its new position.

Exit Edit Mode

9. Edit Mode will deactivate after some changes. If all changes have been made and Edit Mode is active, touch the panel's header area to exit Edit Mode.

Figure 17 Change panel content

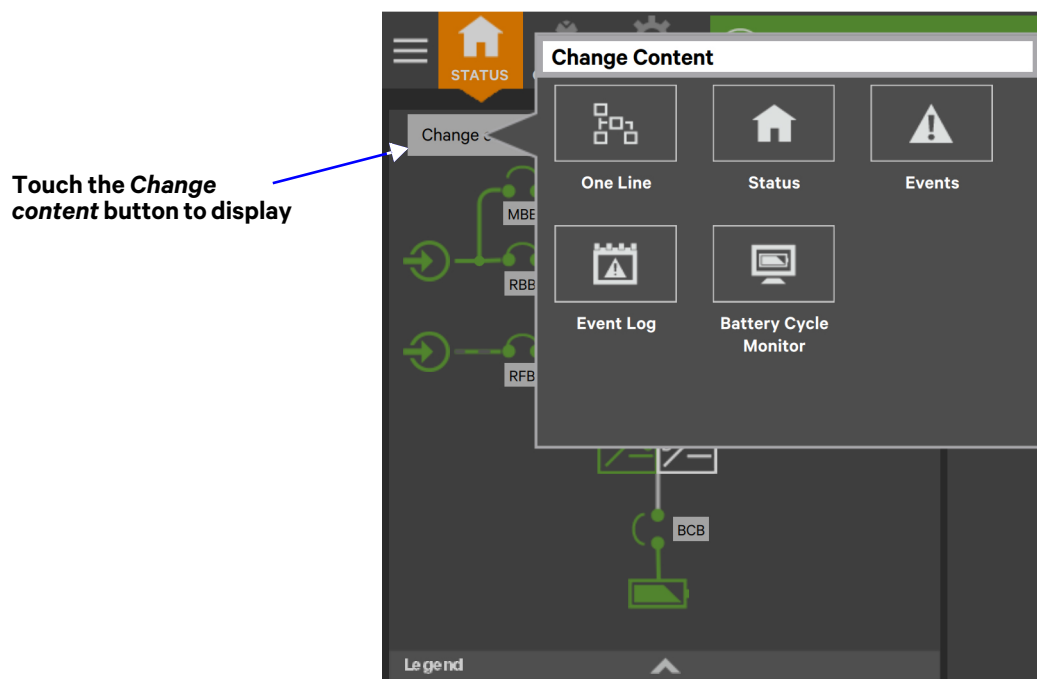
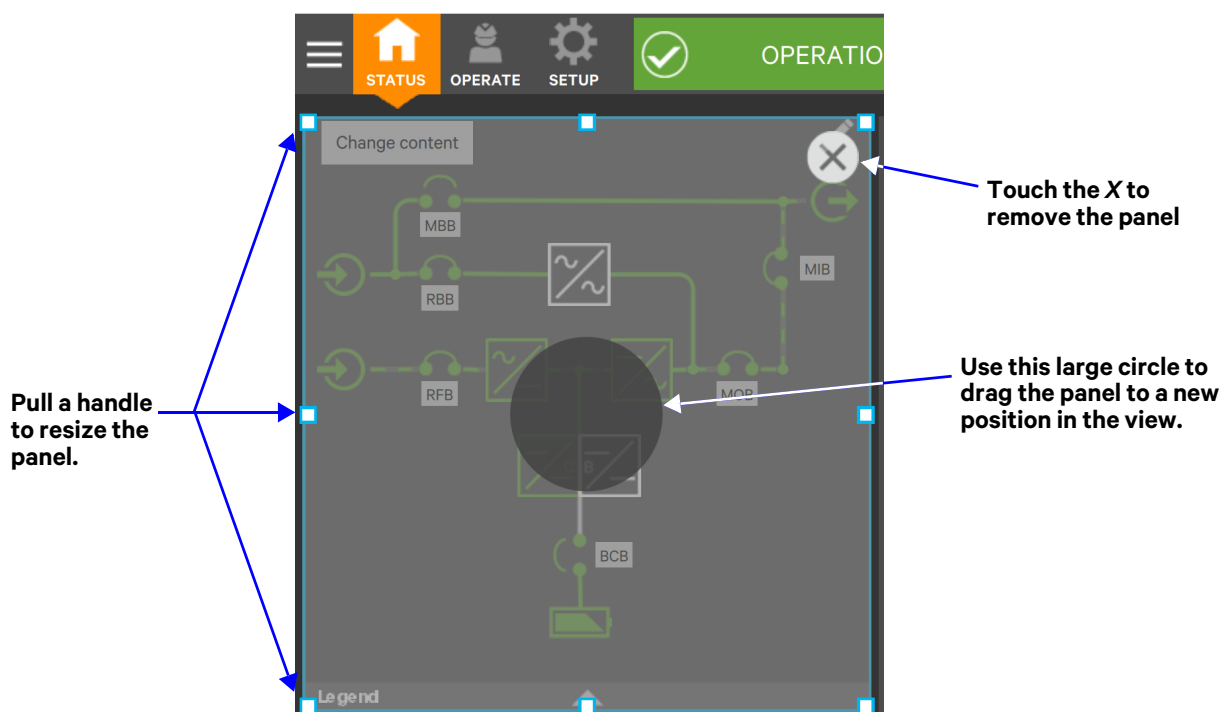


Figure 18 Resize, remove or rearrange a panel



2.4.3 Edit the UNIT STATUS Panel with the Edit Icon

The UNIT STATUS panel may be changed to add or remove data. The panel has four default parameters. Any or all can be deleted or replaced using the Edit icon.

Possible parameters for the UNIT STATUS panel are:

- Input
- Bypass
- Battery
- Environmental
- Load



NOTE

Changes made to the UNIT STATUS panel will be applied to all views using the panel for all viewers.



NOTE

If the Status Gauge is showing, no more than four detail icons will be visible. Removing the Status Gauge permits showing all five detail icons. The view may be customized to show fewer than four.

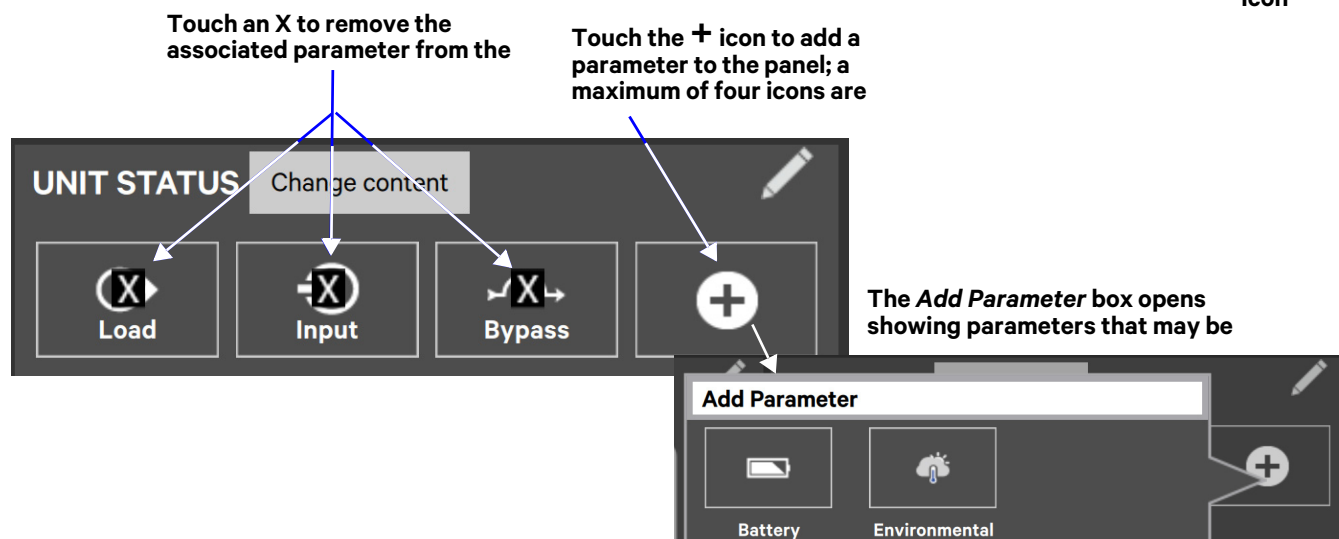
To edit the UNIT STATUS panel:

1. Activate Edit Mode by touching and holding the Edit icon on the UNIT STATUS panel.
2. Touch the large X beside a parameter icon or the X on the Status Gauge to delete the feature or touch the + icon at the right side of the panel to add a parameter icon.
3. Touch the header area or a non-interactive area of the panel to deactivate edit mode.



Add Parameter Icon

Figure 19 Edit UNIT STATUS panel



2.4.4 Setting DISPLAY PROPERTIES

The Context Menu for either OPERATE or SETUP permits determining how data is displayed. The DISPLAY PROPERTIES menu is available to any user, including Observers. However, the items that may be altered differs with each access level, if PIN's are required.

Table 1 Available display properties by access level if PIN's are required

Display Property	Access Level			
	Observer	Operator	Administrator	Service
Language	?	?	?	?
Theme	?	?	?	?
Backlight Off Timer	X	?	?	?
Alarm Window Timeout	X	?	?	?
Auto-Logout Timer	X	X	?	?
Display Brightness	?	?	?	?
Status Indicator Brightness	X	X	?	?
Calibrate Touch Screen	X	X	?	?

Language: The default setting is English; other choices are Chinese, Spanish and Canadian French.

Theme: The default setting is Dark_Gray_9; other choices are Blue_9 and Light_Gray_9. Themes change not only the background, but also the color of some menus.

Backlight Off Timer: The default setting is *Off After 5 Minutes*; other choices are *Off After 10 Minutes*, *20 minutes*, *30 minutes*, *45 minutes*, *60 minutes* and *Never*.

Alarm Window Timeout: The default setting is *Never*. It may be changed in one-day increments from one day to 14 days.

Auto-Logout Timer: The default setting is *Logout After 5 Minutes*. It may be changed in one-minute increments from one minute to 5 minutes.

Display Brightness: The default setting is 80 percent, but the brightness may be changed in increments of 20 percent from the low of 20 percent to 100 percent.

Status Indicator Brightness: The default setting is 80 percent; brightness may be changed in increments of 20 percent from the low of 20 percent to 100 percent.

Calibrate Touch Screen: No default value; instructions must be followed to calibrate the touchscreen. A notification warns that performing a calibration on a properly functioning touchscreen could cause the touchscreen to fail. The notification offers a choice of going ahead with the calibration or canceling it.

2.4.5 Setting Date, Time and Time Zone

The date, time and time zone are set when the Touchscreen Control Panel is configured.

Changing the date, the time and the time zone may be done through the Context Menu on either the STATUS or SETUP page (*STATUS>Display Options>Date & Time* or *SETUP>Display Options>Date & Time*). If PIN's are required, changing the date, time or time zone requires Administrator or Service access. These settings can be viewed, but cannot be changed, by Observers and Operators if PIN's are required.

The control permits using these time protocols:

- Manual—Manually set the time for the Liebert® EXL™ S1
- Network—Network Time Protocol (NTP), a TCP/IP protocol, synchronizes computer clock times in a network.
- Unity—The time of the UPS shall be set to the time the Liebert® IS-UNITY™ card is set to. Refer to the card's documentation.
- Life—Determined by the LIFE™ server if LIFE™ Services is enabled; if LIFE™ Services is enabled, neither the date nor the time can be changed.

The format of the date or time may be changed through the Context Menu on either the STATUS or SETUP page (*STATUS>Display Options>Date & Time* or *SETUP>Display Options>Date & Time*) (refer to **2.5 - Changing Date, Time and Measurement Formats**).

The control will display local time and UTC Time in the *STATUS>Display Options>Date & Time* view. the control will display the selected time in the Events page and the Audit and UPS Event logs.

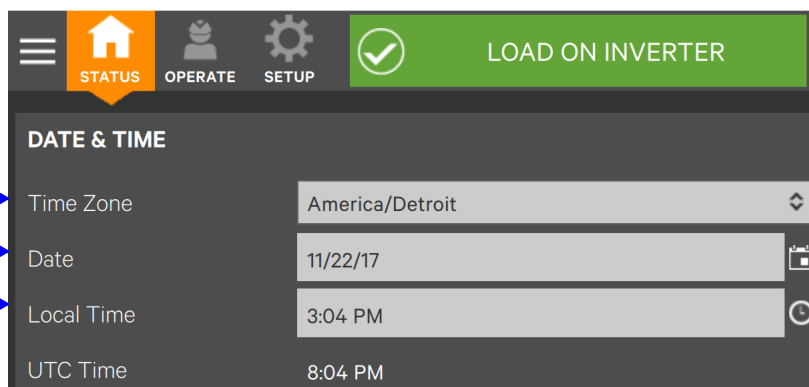


NOTE

UTC Time is a world standard that the Touchscreen Control Panel displays. It cannot be changed.

Figure 20 Date and time settings

These values are entered when the Touchscreen Control Panel is configured. Changing them requires Administrator or Service access. UTC is a world standard and

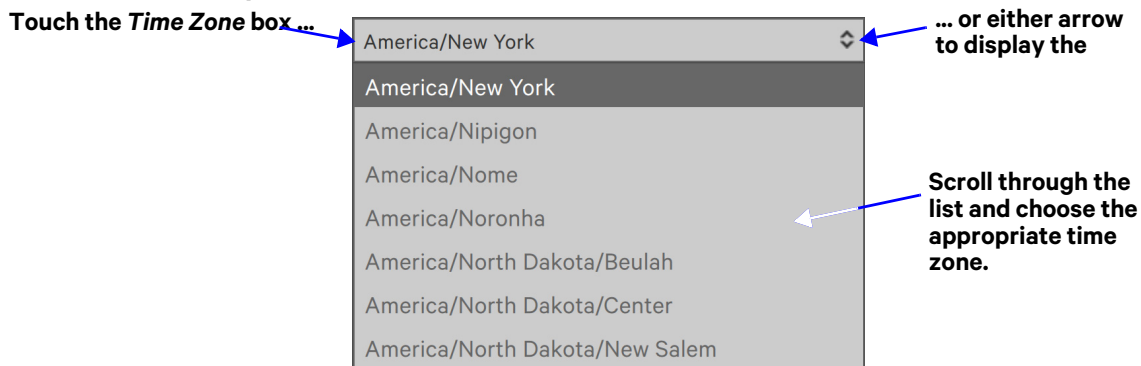


Changing the Time Zone

The time zone is set when the Touchscreen Control Panel is configured (the default is *America/New York*). The drop-down menu permits selecting any time zone on the globe, as well choosing one-hour increments before and after UTC. To change the time zone:

1. Log in with either Administrator or Service access.
2. Navigate to *STATUS>Display Options>Date & Time* or to *SETUP>Display Options>Date & Time*.
3. Touch the *Time Zone* box or either arrow on the drop-down menu.
4. Scroll to the appropriate time zone and touch it.
5. Make any other changes on the DATE & TIME page.
6. Touch the *Save* button to make the changes or touch *Cancel* to exit without saving the changes.

Figure 21 Time Zone drop-down menu



Changing the Date

The date is set when the Touchscreen Control Panel is configured. The default format is month/day/year with single numerals for months from January through September and for days 1 through 9. Changing how the date is shown requires using the Formats page found on the Context Menu on either the STATUS or SETUP menu (refer to **2.5 - Changing Date, Time and Measurement Formats**).

To change the date:

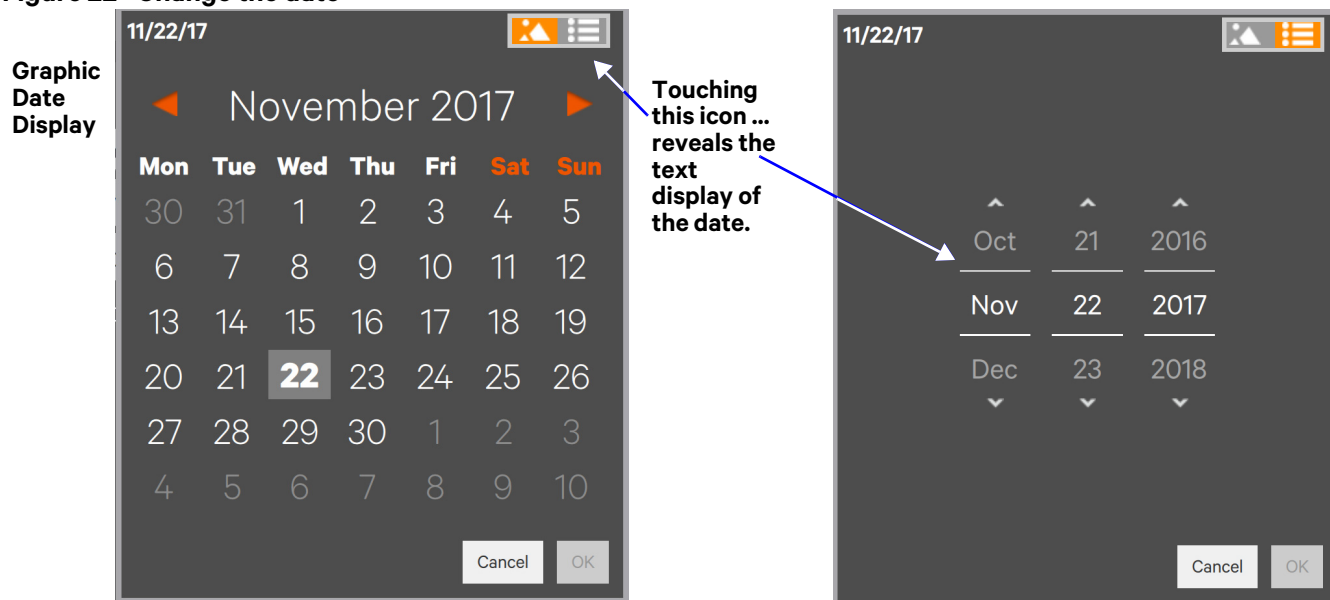
1. Log in with either Administrator or Service access, if passwords are required.
2. Navigate to *STATUS>Display Options>Date & Time* or to *SETUP>Display Options>Date & Time*.
3. Touch either the *Date* box or the grid beside it. Either will display a calendar for the month.
4. Scroll to the correct month and touch the correct day.
5. Make any other changes on the DATE & TIME page.
6. Touch the *Save* button to make the changes or touch *Cancel* to exit without saving the changes.



NOTE

Touching the Graphic/Display icon permits changing the date by scrolling through months, days and years.

Figure 22 Change the date



Changing the Time

The time is set when the Touchscreen Control Panel is configured. The default format is h:mm AP (hour:minute AM/PM) with one numeral for hours less than 10 (for example, 1:09 for nine minutes after 1 a.m. and 13:09 for nine minutes after 1 p.m.). Changing how the time is displayed requires using the Formats page found on the Context Menu of either the STATUS or the SETUP menu (refer to **2.5 - Changing Date, Time and Measurement Formats**).

To change the time:

1. Log in with either Administrator or Service access.
2. Navigate to *STATUS>Display Options>Date & Time* or to *SETUP>Display Options>Date & Time*.
3. Touch the *Local Time* box or the clock icon beside it. Either will display a digital version of the time.
4. Touch the hours, minutes or seconds to be changed or touch the associated Up or Down arrow.



NOTE

Touching a numeral or the Up arrow and releasing it will increase the numeral by one. Touching the Down arrow and releasing it decreases the number by one.

Holding a numeral or arrow will scroll continuously. Holding a numeral will scroll Up, increasing the numeral. Holding an arrow will scroll in the direction the arrow points.

5. When the correct time is shown, touch OK to save the change or touch *Cancel* to exit without saving.



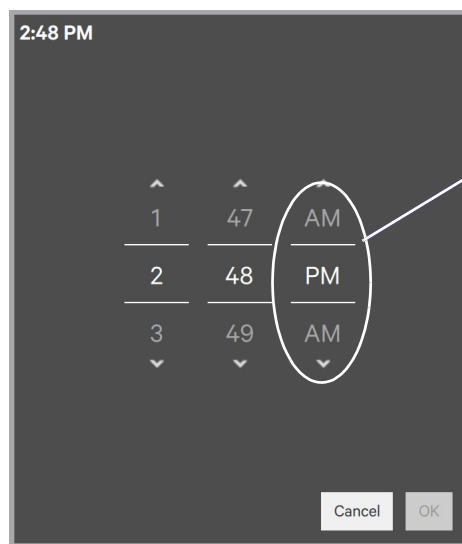
NOTE

An AM/PM choice will be shown if that format is active. The AM/PM choice will not be shown for the 24-hour clock format.

6. Make any other changes on the DATE & TIME page.
7. Touch OK to save the changes or touch *Cancel* to exit without saving.

Figure 23 Change the time

Touching a numeral or an arrow and releasing it will increase or decrease the associated numeral by one. Holding a numeral or an arrow will



The AM/PM choice will not be shown if the 24-hour clock format is active.

2.5 Changing Date, Time and Measurement Formats

The Touchscreen Control Panel has these default settings:

- Date: M/d/yyyy
- Time: h/mm (either AM/PM or am/pm)
- Measurement System: Metric

These formats may be changed by any user, including an Observer, by going to *Status>Display Options>Formats*; choose the format or measurement system and touch Save.

2.5.1 Change the Date Format

To change the way the date is displayed, touch inside the box containing the date format and choose the format from the choices shown in **Figure 24**.

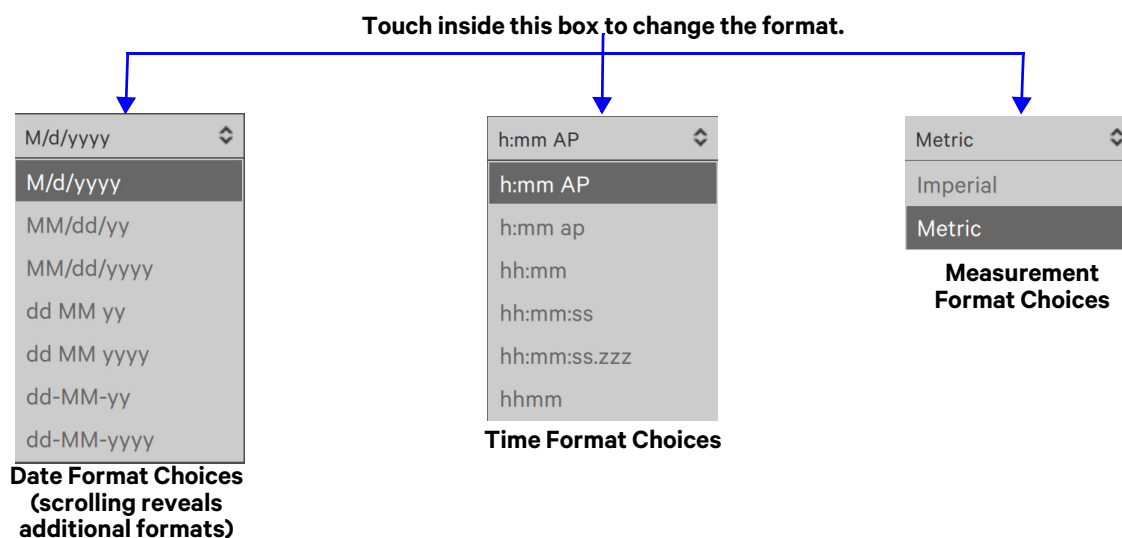
2.5.2 Change the Time Format

To change the way the time is displayed, touch inside the box containing the time format and choose the format from the choices shown in **Figure 24**.

2.5.3 Change the Measurement System

To change the way measured values, such as heat, kW and voltage, are displayed, touch inside the box containing the Measurement System and choose either *Imperial* or *Metric* as shown in **Figure 24**.

Figure 24 Date/Time format and Measurement System choices



2.6 Create or Modify Custom Labels

The CUSTOM LABELS page permits renaming settings, serial ports and network interfaces. New names may be entered for these to suit local preferences and to ease troubleshooting and refine data. (The default name of COM1 may be adequate, but renaming it with the connected device may ease determining the cause of an alarm).

Custom labels may be created or modified by any user, including Observers. The labels are universal and will be displayed for all users.

To create or modify a custom label:

1. Go to **STATUS>Display Options>Custom Labels**.
2. Choose the label group to change.



NOTE

Changing a particular Setting may require scrolling (see **Figure 25** and **Table 2**).



Enter Key

3. Touch inside the Custom Label box beside the setting to be labeled.
4. Use the on-screen keyboard to enter the label name.
5. Touch the *Enter* key.
6. Touch *Save* to make the change or touch *Cancel* to exit without saving.

Figure 25 CUSTOM LABELS page

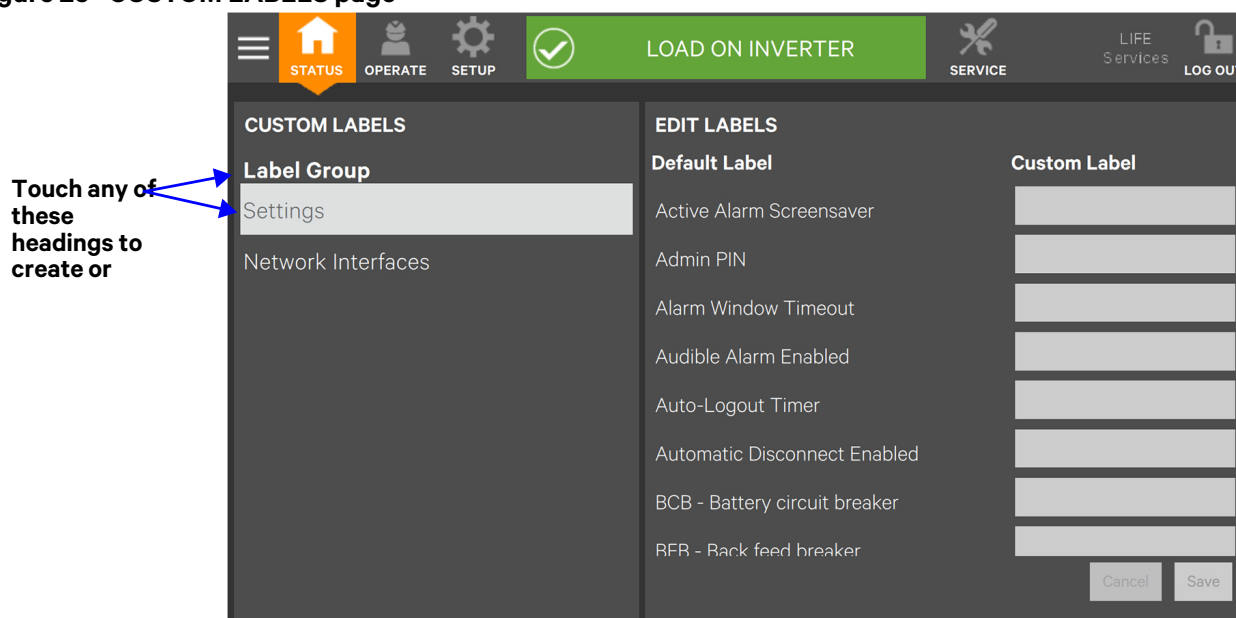


Table 2 Additional custom label choices for Settings

BackFeed Disconnect	BIB - Bypass input breaker	BIB1Installed
BFDInstalled	BFDOpen	BIB1Open
BIB2Installed	BIB2Open	BIB3Installed
BIB3Open	BIB4Installed	BIB4Open
BIB5Installed	BIB5Open	BIB6Installed
BIB6Open	BIB7Installed	BIB7Open
BIB8Installed	BIB8Open	BIB9Installed
BIB9Open	Backlight Off Timer	Battery Type
Bypass	Bypass Kva Rating	BypassInputFailure
CB1 - Rectifier input breaker	CB2 - Inverter output breaker	CB3-Internal bypass breaker
Cell Number	Check TS Calibration	Country
DNS Server	Date	Date Format
Disconnect Temperature Limit	Display Brightness	Display Touch Beep
Energy Savings Configuration	Equalize Charge Duration	Equalize Charge Voltage

Table 2 Additional custom label choices for Settings (continued)

Event Log Clear Time	Font Name	Font Size
Getting Started Visible	IOB-Inverter output breaker	Inactivity Timer
Kva Per Module	Kva Rating	LBB - Load bank breaker
LBBInstalled	LBBOpen	Language
LifeEnabled	Local Contact	Local Life Contact
Local Life Service Name	Local Service Name	Local Time
Location Id	MBB - Maintenance bypass breaker	MBBInstalled
MBBOpen	MBD - Module battery disconnect	MIB-Maintenance isolation breaker
MIBInstalled	MIBOpen	MOB - Module output breaker
MOBInstalled	MOBOpen	MainsFailure
Manufacturer	Measurement System	Minimum Cell Voltage
Model	Model Number	Model Type
Module Number	Monitoring Contact	NTP Domain Name
NTP IP Address	Next Service Date	Nominal Cell Voltage
Nominal Frequency	Nominal Voltage	Operator PIN
Q12 - Input transformer isolator	Q21 - Bypass transformer isolator	Q22 - Bypass isolator
Q33 - Static switch disconnect switch	QBP - Maintenance bypass isolator	QEN - Output isolator
QOP - Output isolation switch	QS1 - Input isolator	QS2 - Bypass isolator
QS3 - Maintenance bypass isolator	QS4 - Output isolator	QS90 - Battery isolation switch
RBB - Remote BackFeed breaker	RBBInstalled	RBBOpen
RFB - Rectifier feed breaker	RFBInstalled	RFBOpen
RIB - Rectifier input breaker	Runtime Remaining	SBB-System bypass breaker
SW1-Static switch disconnect switch	Screen Resolution	Serial Number
Service PIN	Single Input	Status Indicator Brightness
System Identification	Tag Number	Test Cycle
Test Day of Week	Test Duration Time	Test Duration Type
Test Time of Day	Test To Remaining Capacity	Theme
Time Format	Time Zone	UIB - UPS input breaker
UOB - UPS system output breaker	UTC Time	Unit Name
Unit Version	Warning Temperature Limit	Warning Type
WebSite Contact	—	—

Figure 26 Custom Labels for Network Interfaces

EDIT LABELS

Default Label

Custom Label

can0

can1

eth0

eth1

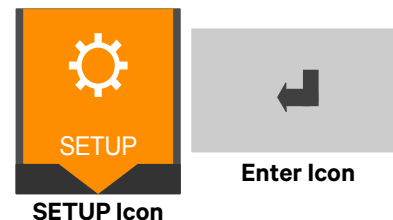
Network Interfaces - Custom Labels

3.0 OPERATION

3.1 Log In to the Touchscreen Control Panel

The Touchscreen Control Panel is On whenever the UPS has control power. It may be inactive and appear dark, depending on its settings. If the panel is inactive, touch the LCD to activate it.

The Touchscreen Control Panel's controls are available to anyone who has physical access to the Liebert® EXL™ S1. However, control panel access may be restricted by adding PIN's for Operator and Administrator access. The Service level requires a PIN by default.



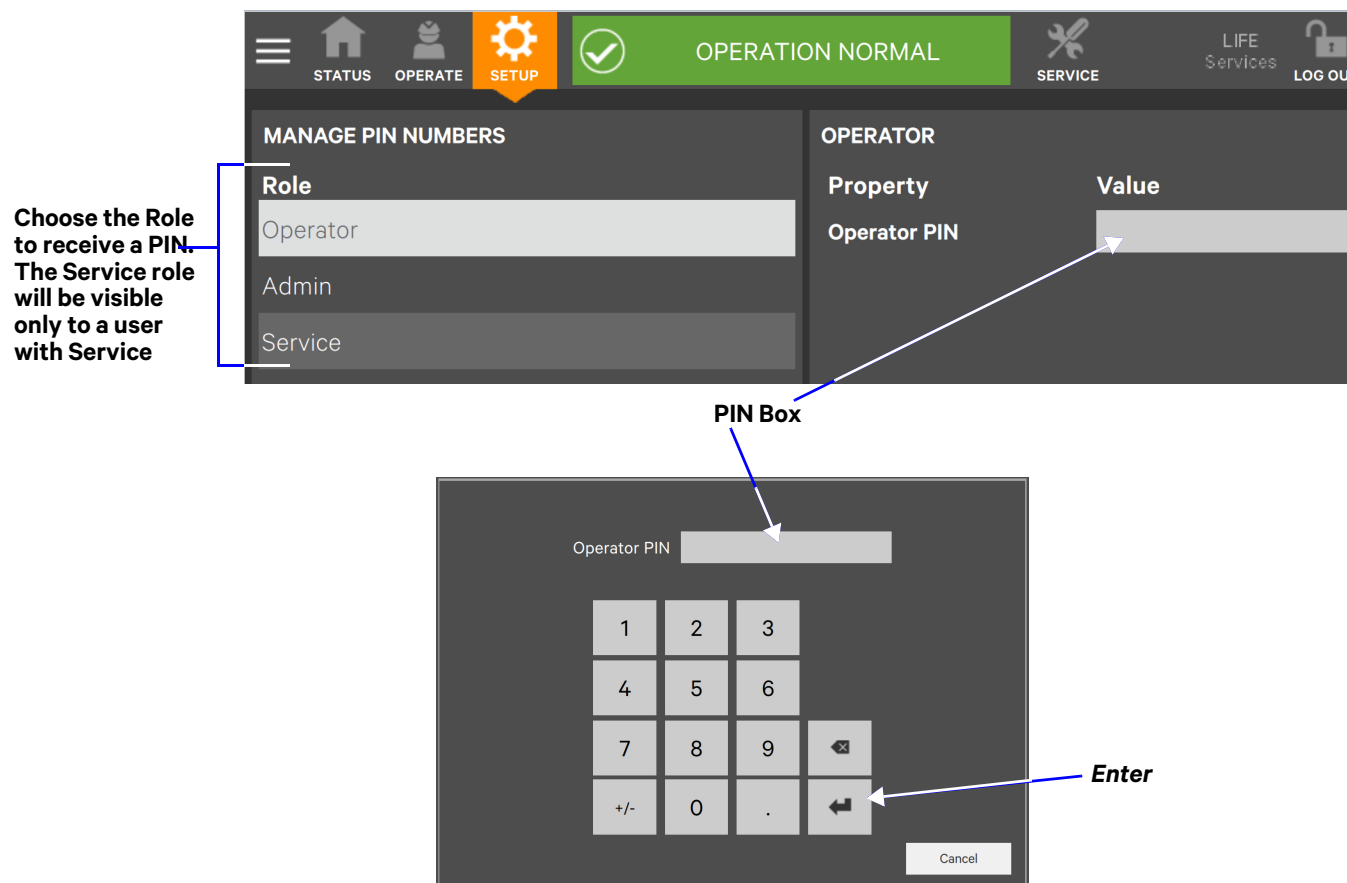
NOTE

Vertiv recommends recording any PIN's set and storing the numbers where they are accessible if they are forgotten. A user with authority to change a PIN will be able to see PIN's of those with equal or lesser access.

To set a PIN:

1. Touch the SETUP icon at the top of the screen.
2. Touch the Role whose PIN will be set or changed.
3. Enter a PIN using the on-screen keypad, shown below (the PIN may be up to 9 digits).
4. Press the Enter icon.
5. Press the Save button.

Figure 27 Set a PIN



To log in with a PIN to the Touchscreen Control Panel:

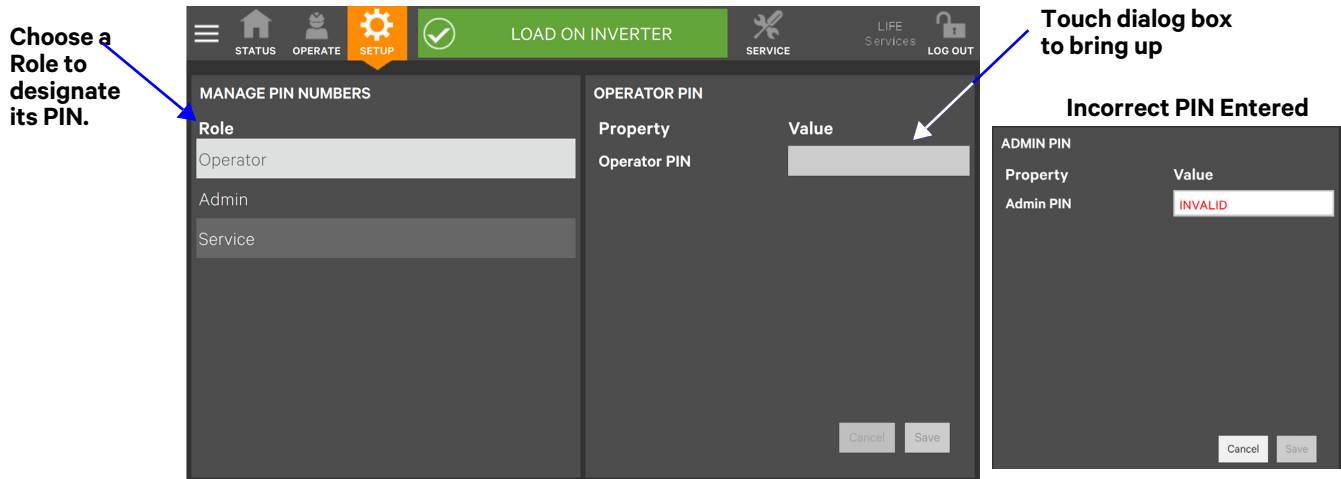
1. Touch the **LOG OUT** icon at the top right of the screen.
The lock will close and will be named **LOG IN**.
2. Touch the **LOG IN** icon.
3. Enter a PIN at the screen below.
4. Touch **Enter**.



NOTE

Entering an impermissible PIN will generate a screen saying the number is invalid.

Figure 28 Log in screen



3.2 Operator Controls

The Operator Function Menu confers control of UPS functions:

- Silence (Alarm)
- Inverter On
- Inverter Off
- Reset Fault
- Energy Saving Mode Activation
- Battery Operations

Each command is available under the OPERATE menu, which is accessible by all in the default control panel setup. If PIN's are required, the OPERATE menu may be used by logging in with Operator, Administrator or Service access.

NOTICE

Risk of improper operation. Can cause load drop, resulting in equipment damage.

The Inverter On, Inverter Off, Reset Fault and Energy Saving Mode Activation commands will be available whenever the UPS is operating. Before executing any command, verify that the UPS status and the connected load status are suitable for the command to be performed.

3.2.1 LIFE™ Services

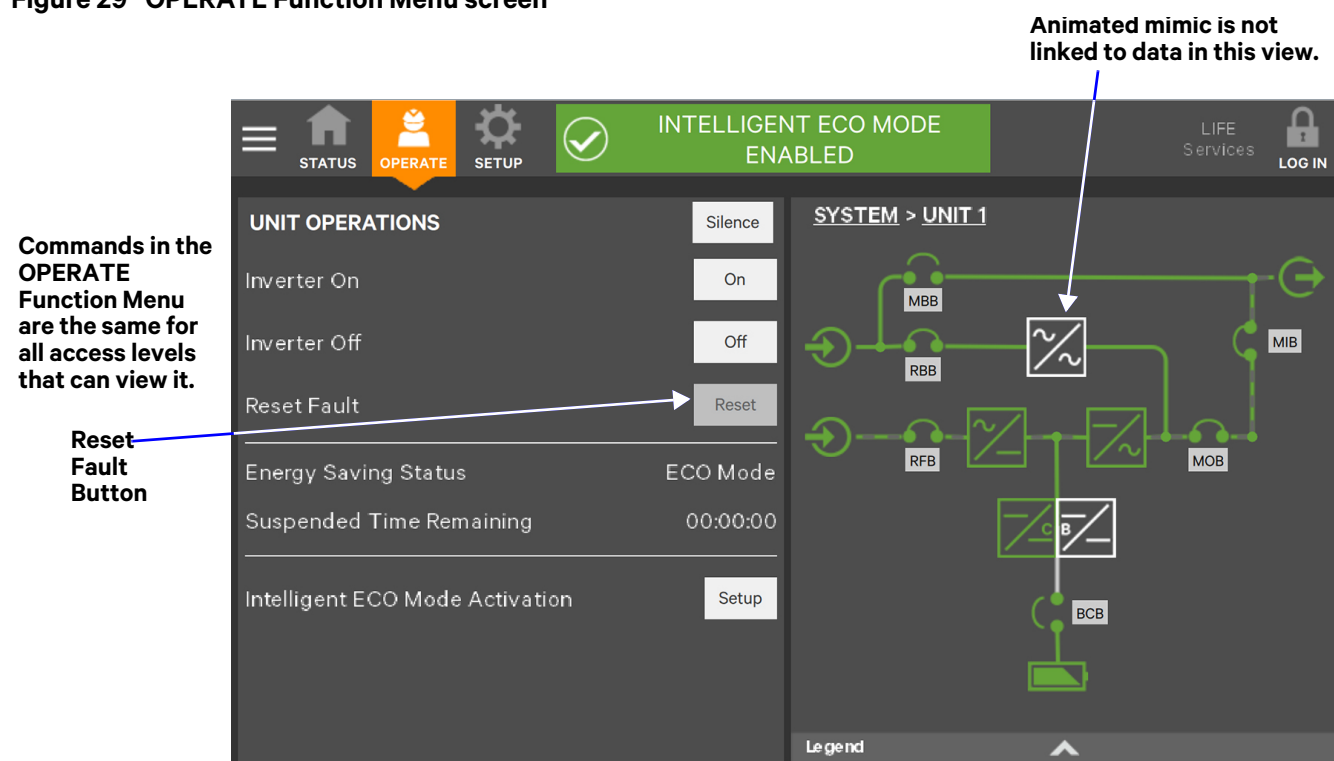
The OPERATE Context Menu also permits configure LIFE Services. Enabling LIFE Services requires a contract with Vertiv and on-site activation by Vertiv Services. The LIFE Support group is reachable by the telephone number on the dialog that opens at **STATUS>LIFE Services>Support** or by touching the LIFE Services icon (see **3.5 - LIFE™ Services—Context Menu and LIFE Services Function Menu**).

3.3 OPERATE Menu Commands

All Operator commands are available from the OPERATE Function Menu whenever the UPS has control power. If a PIN is required, it may be accessed by logging in with Operator, Administrator or Service access. The UPS need not be supplying power to the load for the menu to be available.

The Touchscreen Control Panel shows the screen in **Figure 29** when the OPERATE Function Menu is active. The animated mimic moves to the right side of the screen; it is not linked to data in this view, so touching a component will not cause it to display data. The animated mimic will display the power path in this view.

Figure 29 OPERATE Function Menu screen



3.3.1 OPERATE Menu—Silence an Alarm

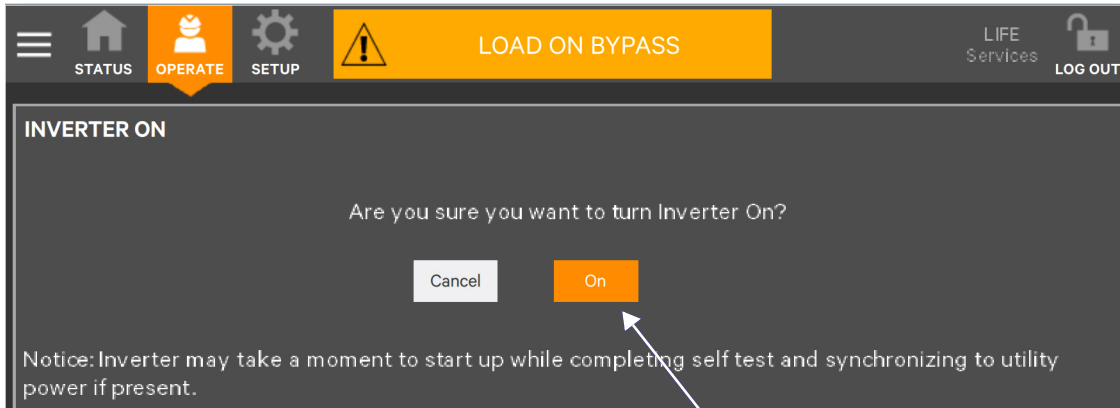
To silence an alarm, touch the *Silence* button at the top of the panel. The time the alarm will remain silenced depend on the UPS model, type of alarm and system configuration.

This command is also available at *STATUS>Alarms*. That screen permits silencing one or more alarms, acknowledging an alarm and viewing either all alarms or just active alarms.

3.3.2 OPERATE Menu—Inverter On

The Inverter On menu item is available whenever the UPS has control power. Before executing the command, verify that the UPS is prepared for the inverter to start. Performing this function requires Operator or higher access, if PIN's are required.

Figure 30 Inverter On command, single UPS configuration



Press the On button to start the inverter.

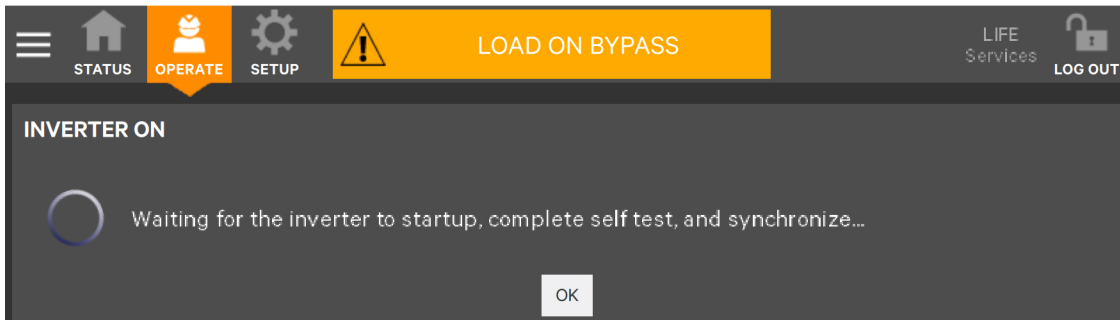
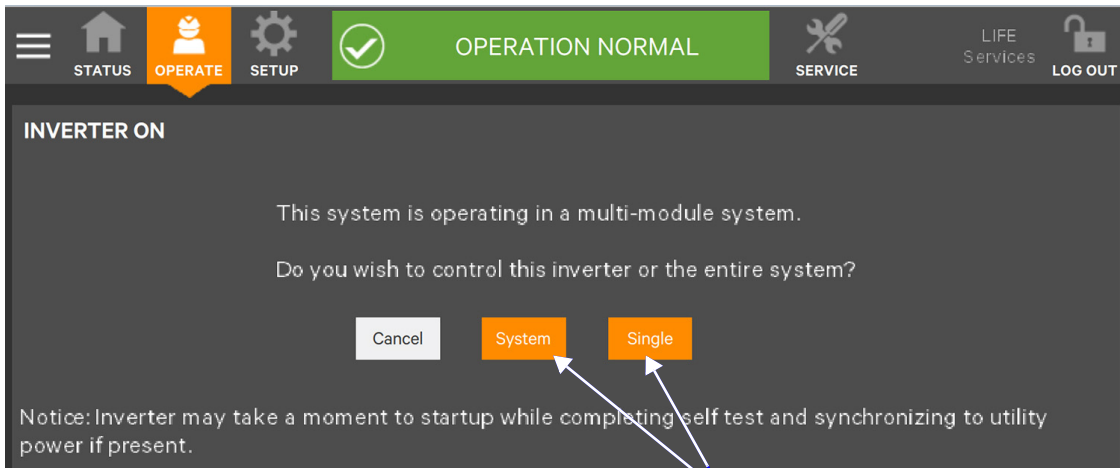


Figure 31 Inverter On command, parallel UPS configuration



Press either the System or Single button to start the desired number of

3.3.3 OPERATE Menu—Inverter Off

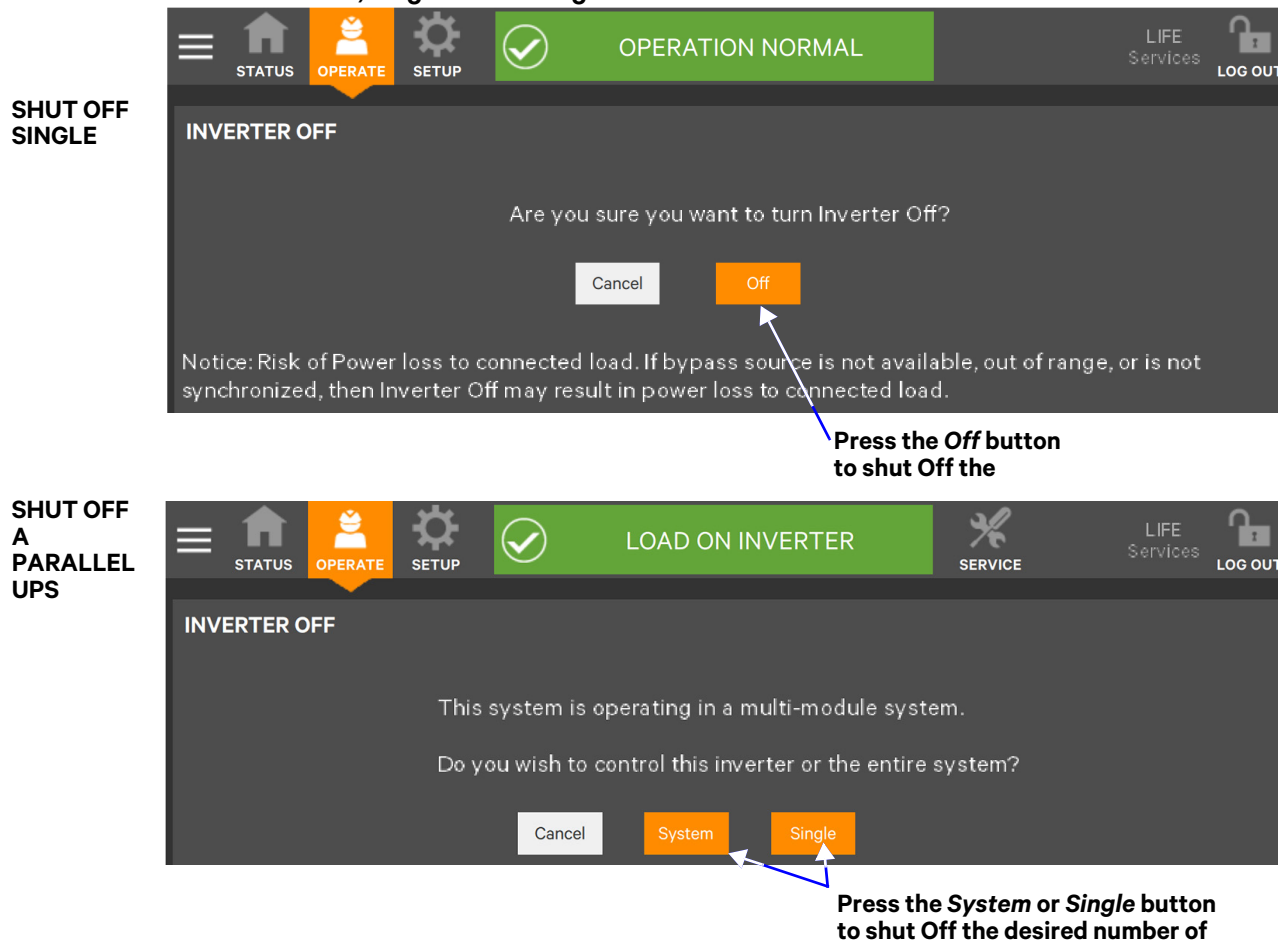
The *Inverter Off* menu item is available whenever the UPS has control power. Performing this function requires Operator or higher access if PIN's are required.

NOTICE

Risk of improper operation. Can cause load drop, resulting in equipment damage.

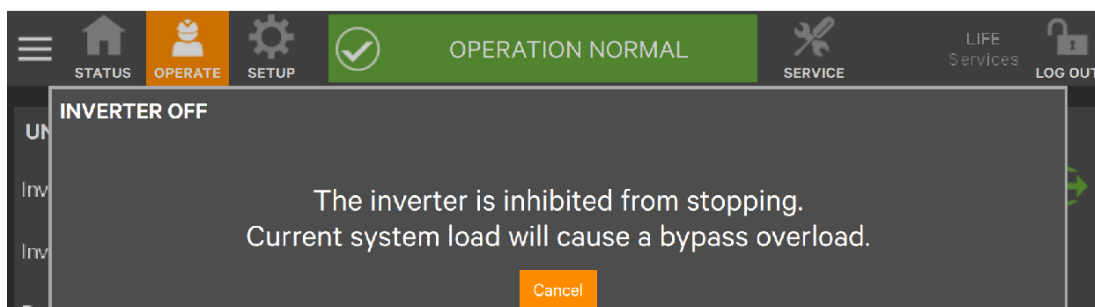
The Inverter On, Inverter Off, Reset Fault and Energy Saving Mode Activation commands will be available whenever the UPS is operating. Before executing any command, verify that the UPS status and the connected load status are suitable for the command to be performed (see **Figure 32**).

Figure 32 Inverter Off command, single UPS configuration



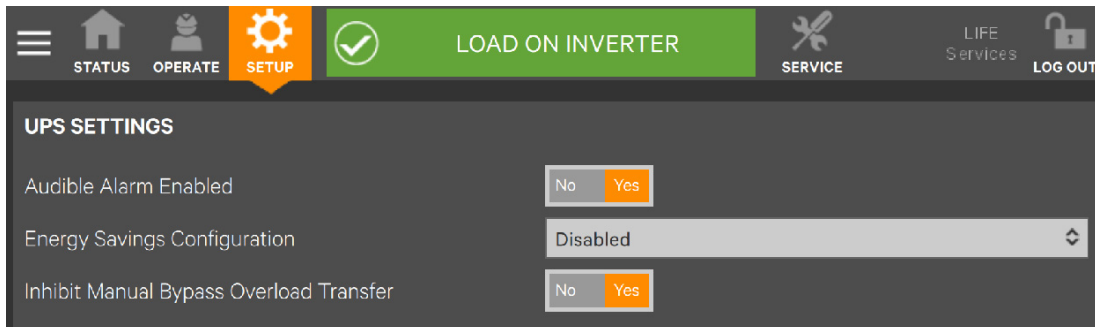
The touchscreen will warn of a bypass overload if the inverter is turned Off when the bypass cannot support the load (see **Figure 33**). If the bypass will support the load, the inverter may be turned Off and the UPS switched to Bypass Mode.

Figure 33 Inverter Off command inhibited



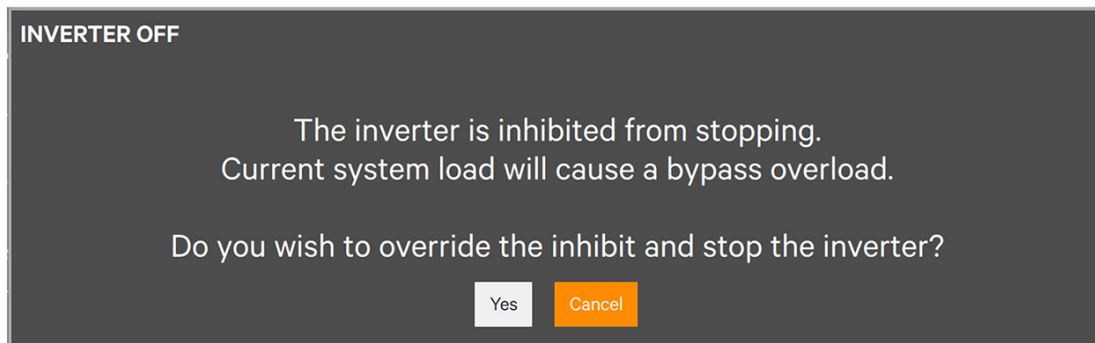
The *Inverter Off* command override can be disabled by going to Setup > UPS Settings and changing the *Inhibit Manual Bypass Overload Transfer* box from Yes to No (see **Figure 34**).

Figure 34 Disable *Inhibit Manual Bypass Overload Transfer* command



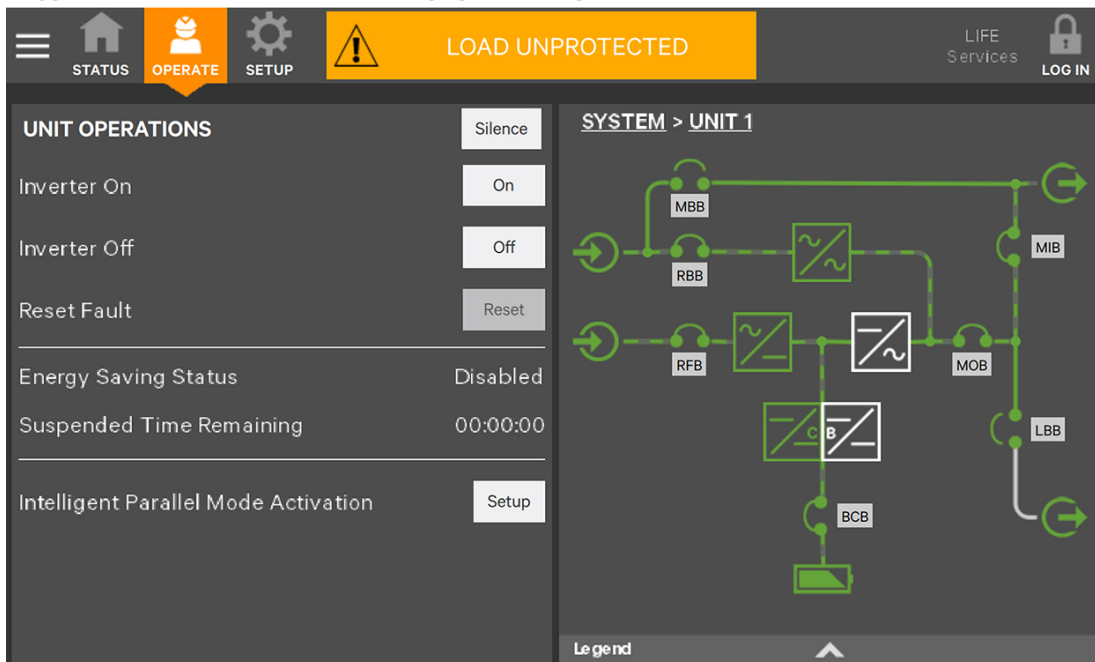
Disabling the *Inverter Off Inhibit* command will permit stopping the inverter even when the bypass is unable to supply adequate power to the connected load. If this command is disabled, the touchscreen will display the screen shown in **Figure 34**

Figure 35 *Inhibit Manual Bypass Overload Transfer* command disabled



Stopping the inverter when the bypass will be overloaded would leave the load unprotected from a utility input power failure as shown in **Figure 36**.

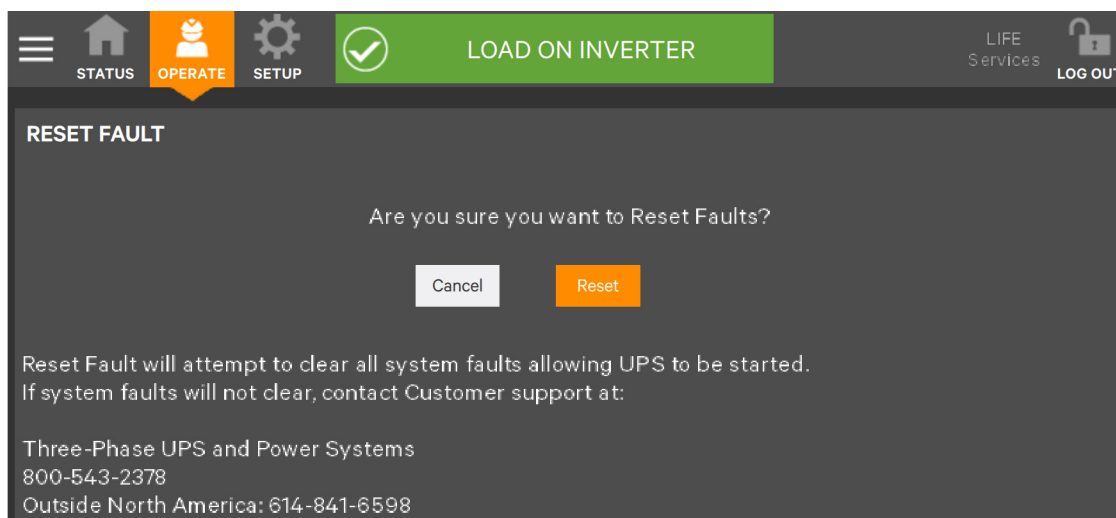
Figure 36 Bypass overloaded, connected equipment unprotected



3.3.4 OPERATE Menu—Reset Fault

Faults may be reset with the *Reset* button (see **Figure 29** for the button's location). Performing this function requires Operator or higher access, if PIN's are required.

Figure 37 Reset fault command



3.3.5 OPERATE Menu—Suspended Time Remaining

The Suspended Time Remaining is not configurable. The reading shows the time required for the UPS to return to Energy Saving Mode after input power has degraded, causing the UPS to exit Energy Saving Mode. It becomes active when Energy Saving Mode has alternated between active and inactive too frequently and the system has suspended Energy Saving Mode activation for a period. The UPS will enter Energy Saving Mode when the feature is enabled and input power meets qualifications. If input power degrades, the UPS will exit Energy Saving Mode.

The Suspended Time Remaining increases when the activation and deactivation of Energy Saving Mode becomes more frequent.

3.3.6 OPERATE Menu—Energy Saving Mode Activation



NOTE

Refer to the UPS manual before activating Energy Saving Mode. If a PIN is required, an Operator can only enable or disable Energy Saving Mode. The modes available vary according to the UPS type and system configuration. The types available must be set up by someone with either Administrator or Service access.

Any of three energy saving modes—Eco Mode, Dynamic Online, Intelligent Parallel Mode—may be activated or deactivated through the OPERATE menu screen. Energy saving must be enabled through the SETUP Context Menu.

Eco Mode

Eco Mode permits the UPS to reduce power consumption by powering the load through bypass power when utility-supplied power is within acceptable ranges. The inverter will remain in a state that would permit it to resume supplying power if the utility power goes outside acceptable ranges.

Dynamic OnLine Mode—Option

Dynamic OnLine Mode is an optional, dedicated operating mode that ensures high efficiency, compensates the load power factor and provides Class 1 output voltage regulation under the

most stringent conditions. In Dynamic Online mode, the rectifier is Off but the inverter is On. The inverter functions as an active filter in parallel with the static bypass switch to provide the reactive power needed to compensate the load power factor and harmonic distortion. This provides up to 98.5% efficiency in typical conditions.

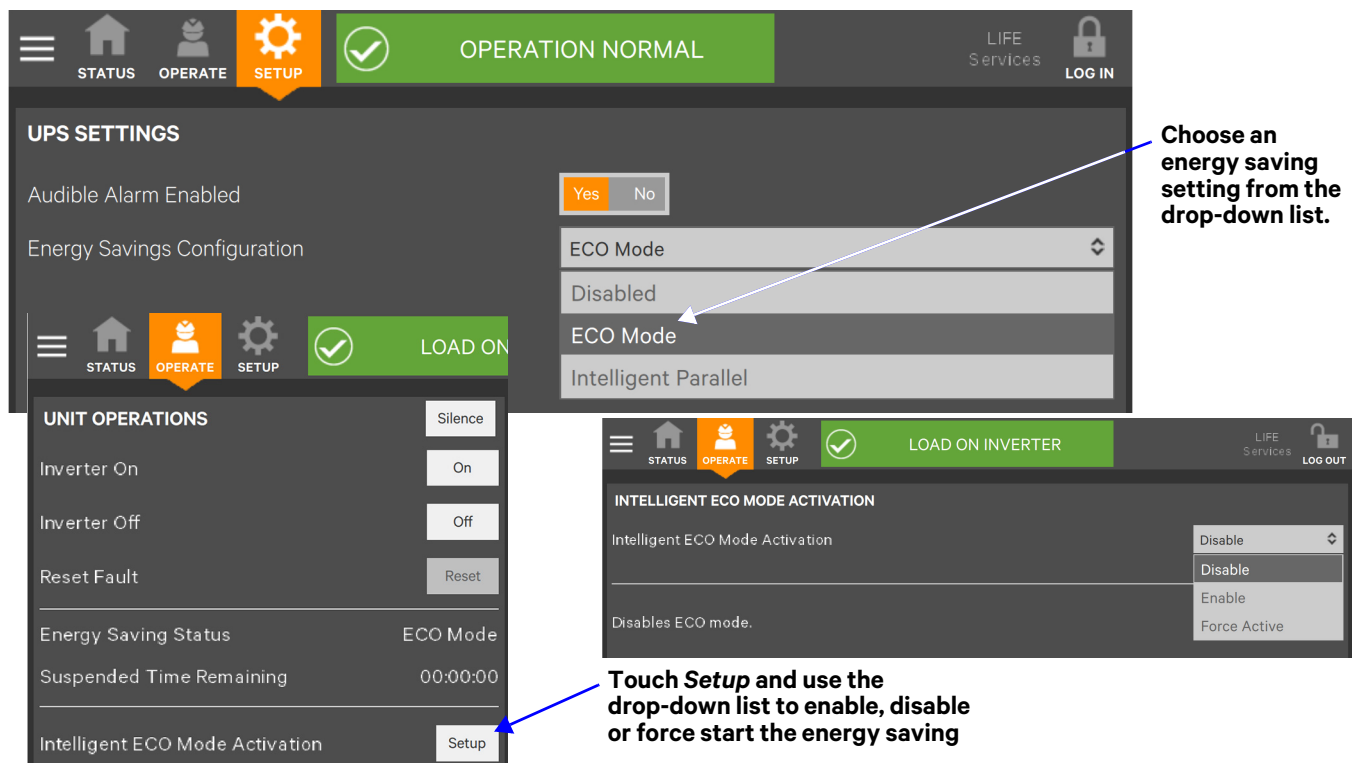
Intelligent Parallel Mode

Intelligent Parallel puts units in a parallel system in Sleep Mode until required to support the load or until the unit is rotated into operation. Intelligent Parallel rotates units into and out of service, equalizing run time, so that each unit's service life will be the same.

To activate or deactivate Energy Saving Mode:

1. Touch the SETUP Function Menu.
2. Touch the Context Menu and select *UPS Settings*.
3. Choose *ECO Mode*, *Dynamic Online*, *Intelligent Parallel* or *Disabled* from the drop-down menu. (Dynamic Online Mode is an optional, dedicated operating mode.)
 - Choosing *Disabled* will remove the choices from the OPERATE menu.
4. Touch Save. The Save button is inactive until the activation state is changed.
5. Set up the energy saving mode chosen by touching the OPERATE Function Menu, then touching *Setup*.
6. Choose from the drop-down menu to enable, disable or force start the selected energy saving mode.
 - Choosing *Disabled* will deactivate Energy Saving Mode.
7. Touch Save.

Figure 38 Activating Energy Savings Mode

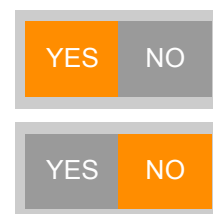


3.4 Audible Alarm Enabled or Disabled

The Touchscreen Control Panel permits enabling an audible alarm to alert personnel to problems with the power supply to the connected load. Enabling or disabling the audible alarm requires Administrator or Service access.

To enable or disable the audible alarm:

1. Log in with Administrator or Service access.
2. Touch the SETUP Function Menu, touch the Context Menu and select *UPS Settings*.
3. Enable or disable the Audible Alarm by touching the lighter associated box.



3.5 LIFE™ Services—Context Menu and LIFE Services Function Menu

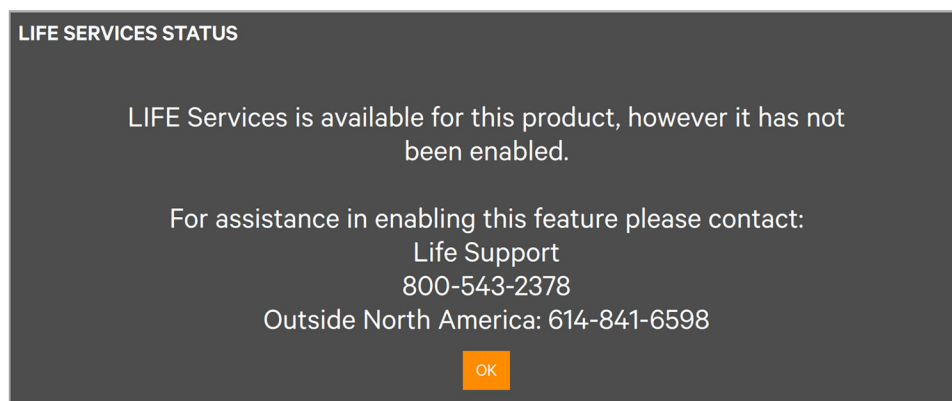
The Context Menu on the OPERATE Function Menu permits initializing LIFE Services. **Enabling LIFE™ Services requires a maintenance contract, and the service must be enabled and configured by Vertiv Services.**

LIFE Services provides increased up-time and operational efficiency through continuous monitoring, expert analysis and proactive response. Detailed parametric data is continuously captured with advanced technology embedded in select critical systems. The data is transmitted to an authorized remote service center staffed with system engineers. Should an operating anomaly or alarm condition arise, the engineer analyzes the information and initiates an appropriate response to have the critical system quickly, safely, and accurately restored to its proper operating condition.

To initialize LIFE Services:

1. Log in with Operator, Administrator or Service access.
2. Touch the LIFE Services Function Menu.
3. Telephone the number on the screen and follow the instructions given.

Figure 39 LIFE Services contact



To configure LIFE Services:

1. Log in with Operator, Administrator or Service access.
2. Touch the OPERATE Context Menu and select *LIFE Services*.
3. Select the appropriate menu item: *Status*, *Support* or *Actions*.
 - *Status* shows whether LIFE Services is enabled and gives details about calls and connections.
 - *Support* shows telephone numbers to contact LIFE Support.
 - *Actions* permits configuring LIFE Services.

Figure 40 LIFE Services—Menus

STATUS

Status	Enabled
Operating Mode	Normal
Current Date/Time	7/26/2017 9:36 AM
Next Scheduled Call	
Delay Counter	0
Connection Status	Sending Measures
Call Type	Buffer Full Call

ACTIONS

Set Service/Maintenance Mode	Set
Initiate Manual Call	Start
Reset Delayed Call	Reset

SUPPORT

Life Support

800-542-2378
Outside North America: 614-841-6598

4.0 VIEWING UPS STATUS

The Touchscreen Control Panel interface reports UPS status in multiple ways. The graphic views and text views will show the same information, but will display it differently.

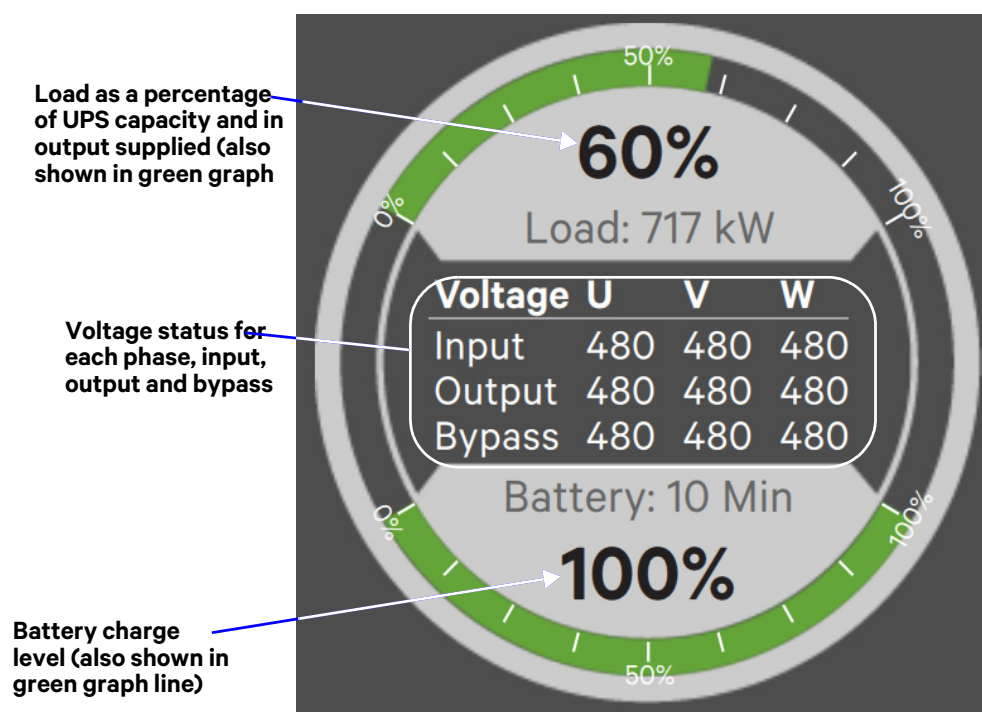
Alarms and certain events will trigger audible alarms and the LED on the bezel, the light bar and the status header will change color. (Audible alarms will not sound unless enabled.) The scrolling information bar at the top of the interface summarizes information about the UPS status. The Status Gauge on the UNIT STATUS pane gives additional details about the UPS status.

4.1 Viewing UPS Data with the Status Gauge

The Status Gauge offers a quick summary of the UPS's status in a single-unit configuration. In a parallel system, the gauge shows the status of the unit the touchscreen is installed on. The information shown depends on the type of UPS and its configuration as well as the choices made in the gauge's setup. The Status Gauge's data options can be chosen by someone with Administrator or Service access.

The additional data will not replace the information shown in the center of the Status Gauge. Touching the center of the Status Gauge multiple times will cycle through the data.

Figure 41 Default Status Gauge view



To change the values shown on the Status Gauge:

1. If a PIN is required, log in with either Administrator or Service access.
2. Touch the SETUP Function Menu icon.
3. Touch the Context Menu icon.
4. Touch *Configure Status Gauge*. This opens the DIAL CONTROL SETUP panel, which holds settings for the readings in the center of the gauge and for the upper and lower metering.

To change the data shown in the center of the gauge:

- a. Expand the Center Readings menu by touching the arrow beside it.
- b. Highlight or put a check mark (☑) in the check box beside each value to be displayed (see **Figures 42** and **43**).



NOTE

All possible values may be checked. Touching the center of the gauge multiple times will cycle through the values.

To change the data shown in the gauge's upper or lower section:

- a. Expand the Upper Meter or Lower Meter menu by touching the arrow beside it.
- b. Use the drop-down menu to choose whether the Upper Meter or Lower Meter shows data for the Battery or Load. (Either the upper or lower part of the Status Gauge may be used to show Load or Battery readings.)
- c. Use the sliders to change the Warning Threshold or Critical Threshold (see **Figures 42** and **43**).
5. Touch the Save button to keep the changes or touch *Cancel* to exit without saving the changes.



NOTE

The DIAL CONTROL SETUP pane may also be accessed by touching the Status Gauge and holding it for about 2 seconds. This requires Administrator or Service access.

Figure 42 Access Status Gauge settings

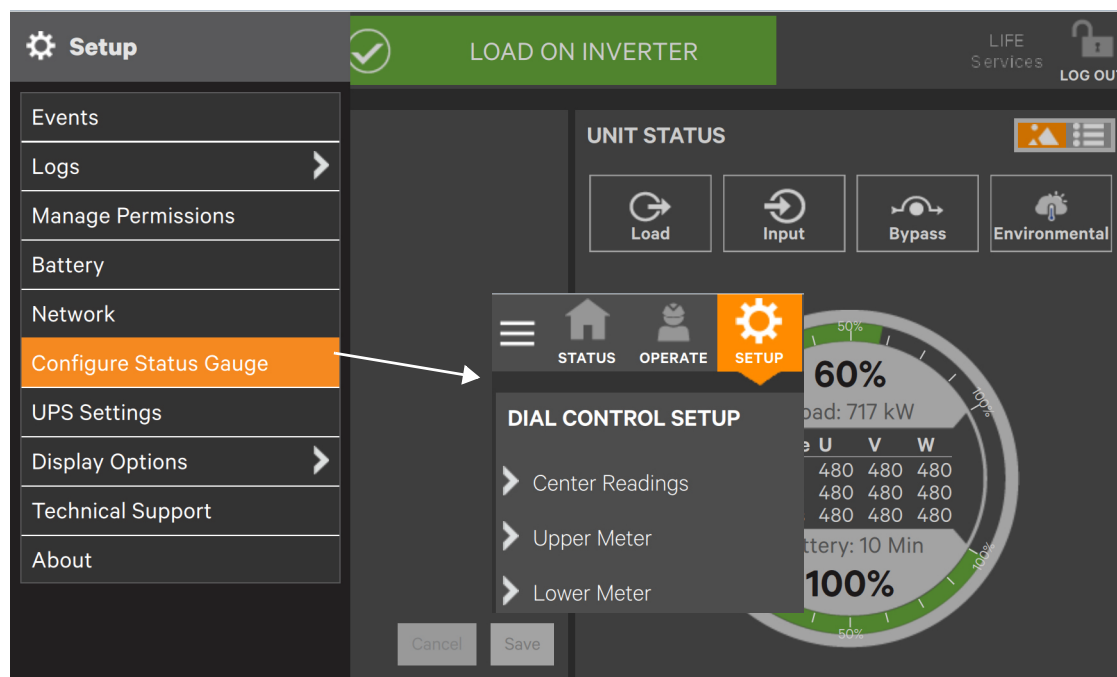
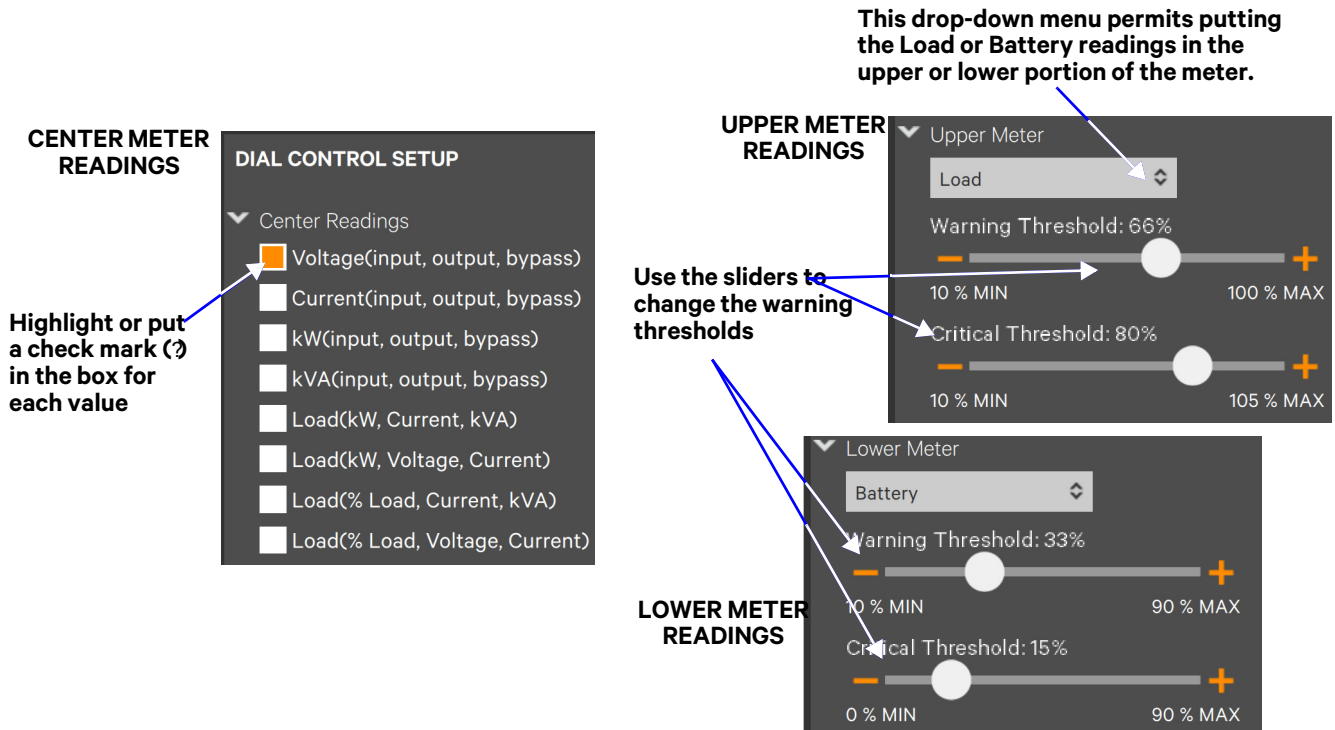


Figure 43 Status Gauge settings options



4.2 Viewing UPS Data with the Status Panel

More-detailed information about the UPS's status is available through the UNIT STATUS pane. Touching a component in the animated mimic display brings up data about that component on another pane. Touching a parameter icon on the UNIT STATUS pane brings up further details about that parameter.

The same data can be viewed by switching to the text view. The length of the lists and order of the details may require scrolling to see the desired data.



NOTE

A parameter must be visible on the UNIT STATUS screen for details to be viewed. For instance, if the UNIT STATUS pane does not show the Environmental icon, details about Environmental cannot be viewed.

Figure 44 UNIT STATUS—Load details

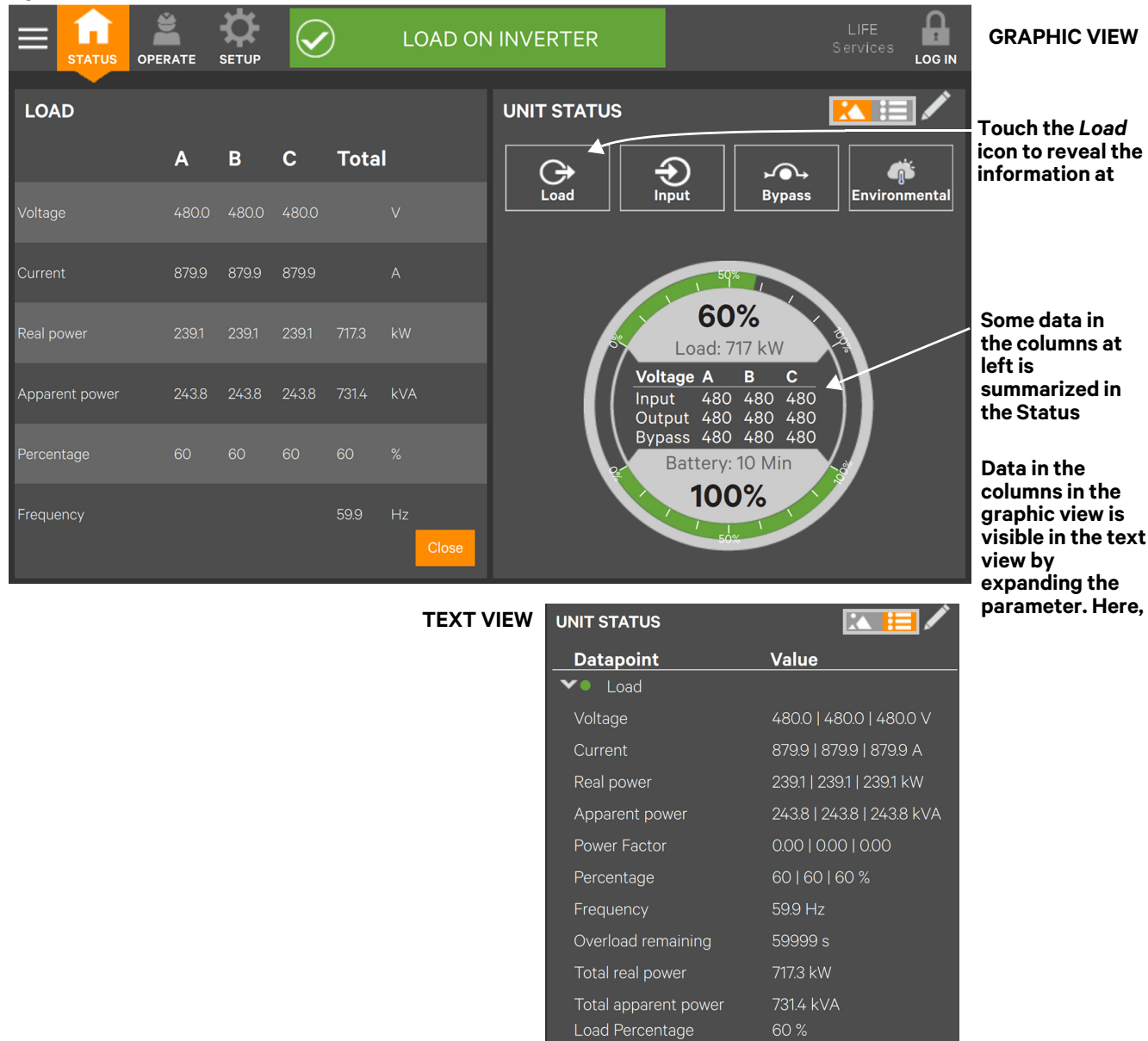


Table 3 Load menus

Voltage (L-L)	Current	Real (Active) Power, kW	Apparent Power, kVA	Power Factor
Voltage (A-B)	Current A	Real (Active) Power A	Apparent Power A	Power Factor A
Voltage (B-C)	Current B	Real (Active) Power B	Apparent Power B	Power Factor B
Voltage (C-A)	Current C	Real (Active) Power C	Apparent Power C	Power Factor C
—	—	Real (Active) Power Total	Apparent Power Total	—
Load Percentage	Frequency, Hz	Overload Remaining	Synchronization Angle, °	
Load Percentage A	—	—	Synchronization Angle Total	
Load Percentage B	—	—	—	
Load Percentage C	—	—	—	
Load Percentage Total	Frequency Total	Overload Remaining	—	

Figure 45 UNIT STATUS—Input details

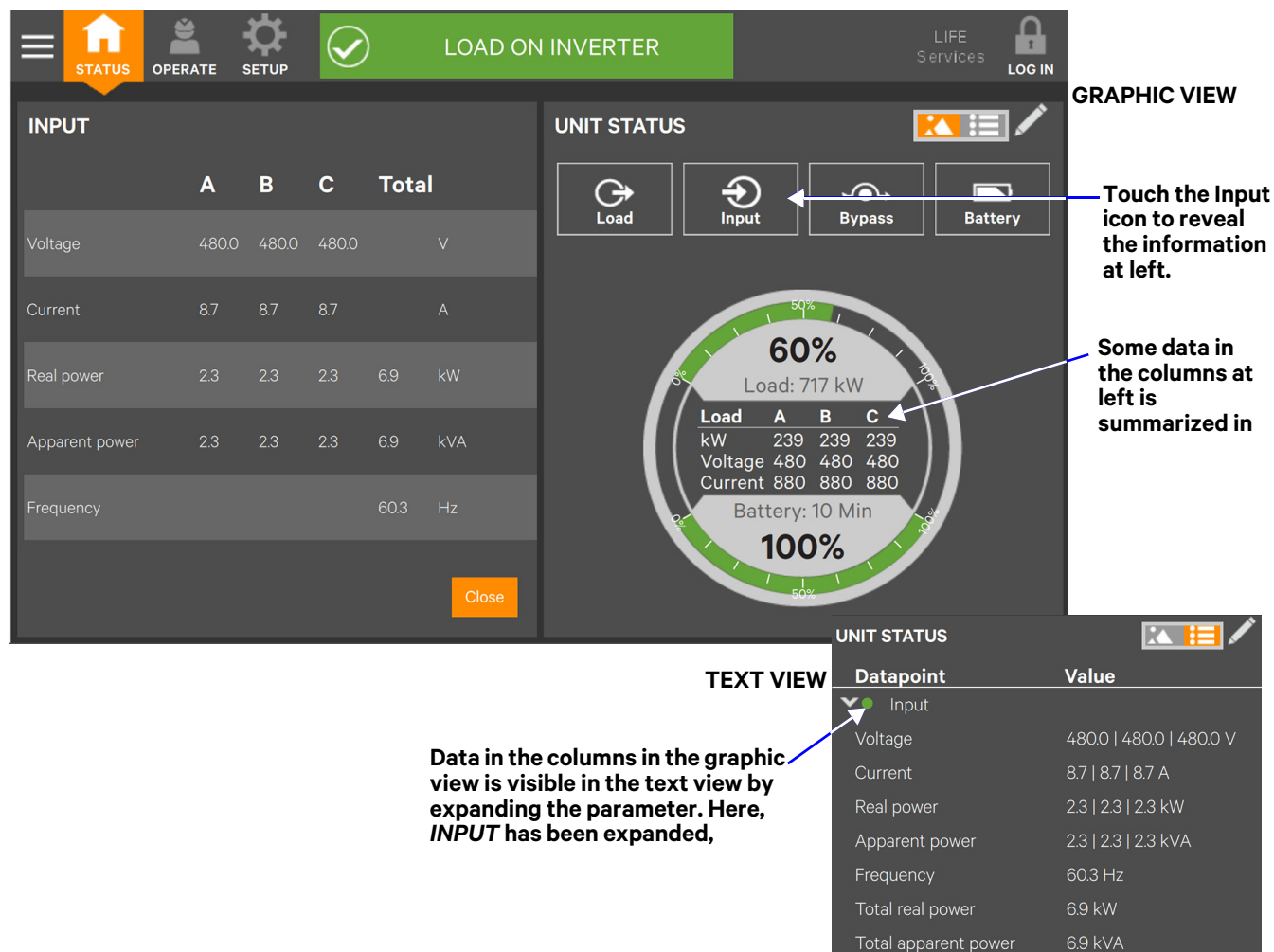


Table 4 Input menus

Voltage (L-L)	Current	Real Power	Apparent Power	Frequency
Voltage (A-B)	Current A	Real Power A	Apparent Power A	Frequency
Voltage (B-C)	Current B	Real Power B	Apparent Power B	
Voltage (C-A)	Current C	Real Power C	Apparent Power C	
—	—	Real Power Total	Apparent Power Total	

Figure 46 UNIT STATUS—Bypass details

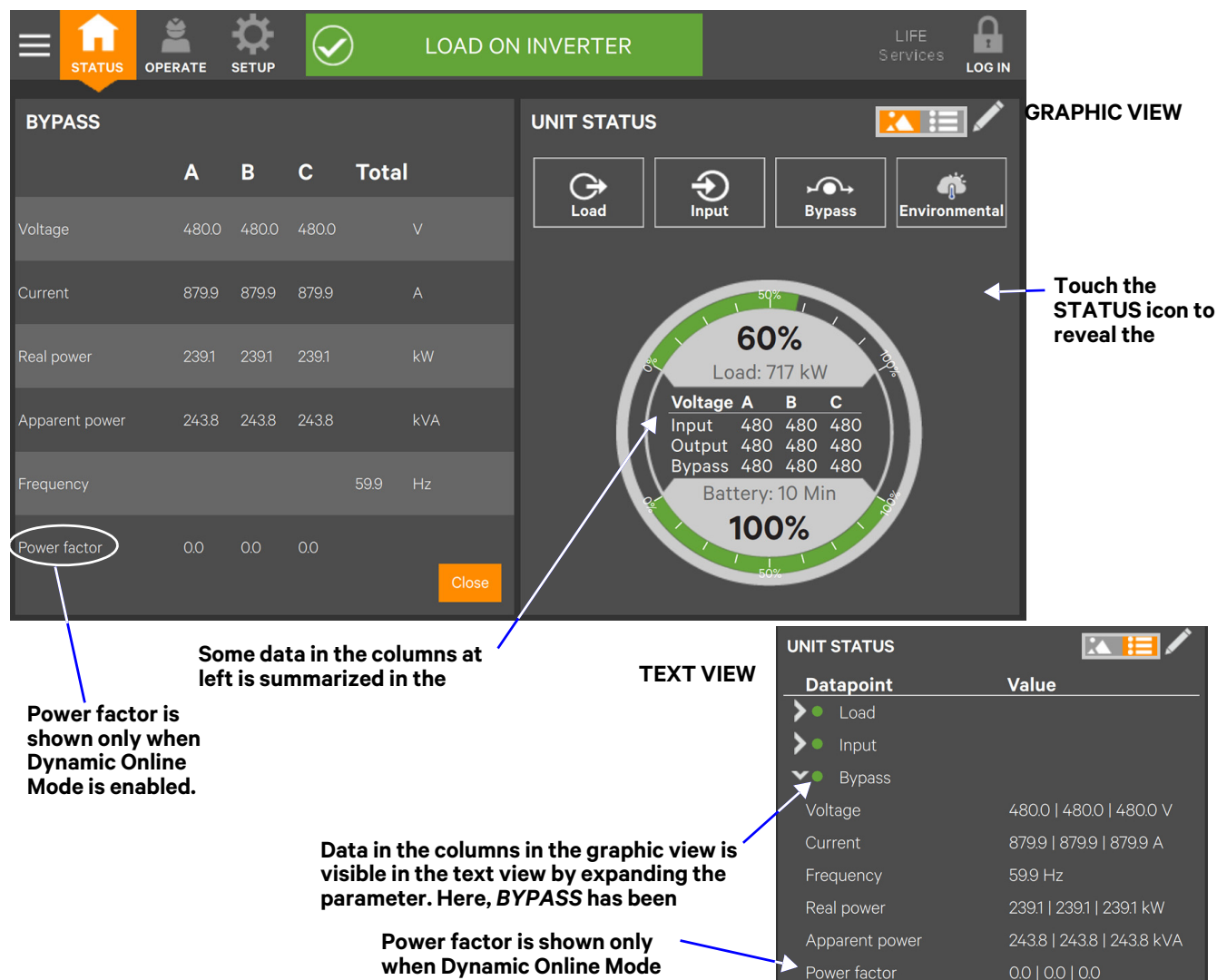


Table 5 Bypass menus

Voltage (L-L)	Current	Frequency
Voltage (A-B)	Current A	Frequency Total
Voltage (B-C)	Current B	Frequency Total
Voltage (C-A)	Current C	Frequency Total
Real Power	Apparent Power	Power Factor *
Real Power A	Apparent Power A	PF A
Real Power B	Apparent Power B	PF B
Real Power C	Apparent Power C	PF C
Real Power	Apparent Power	PF

* Power factor is shown only when Dynamic Online Mode is enabled.

Figure 47 UNIT STATUS—Battery details

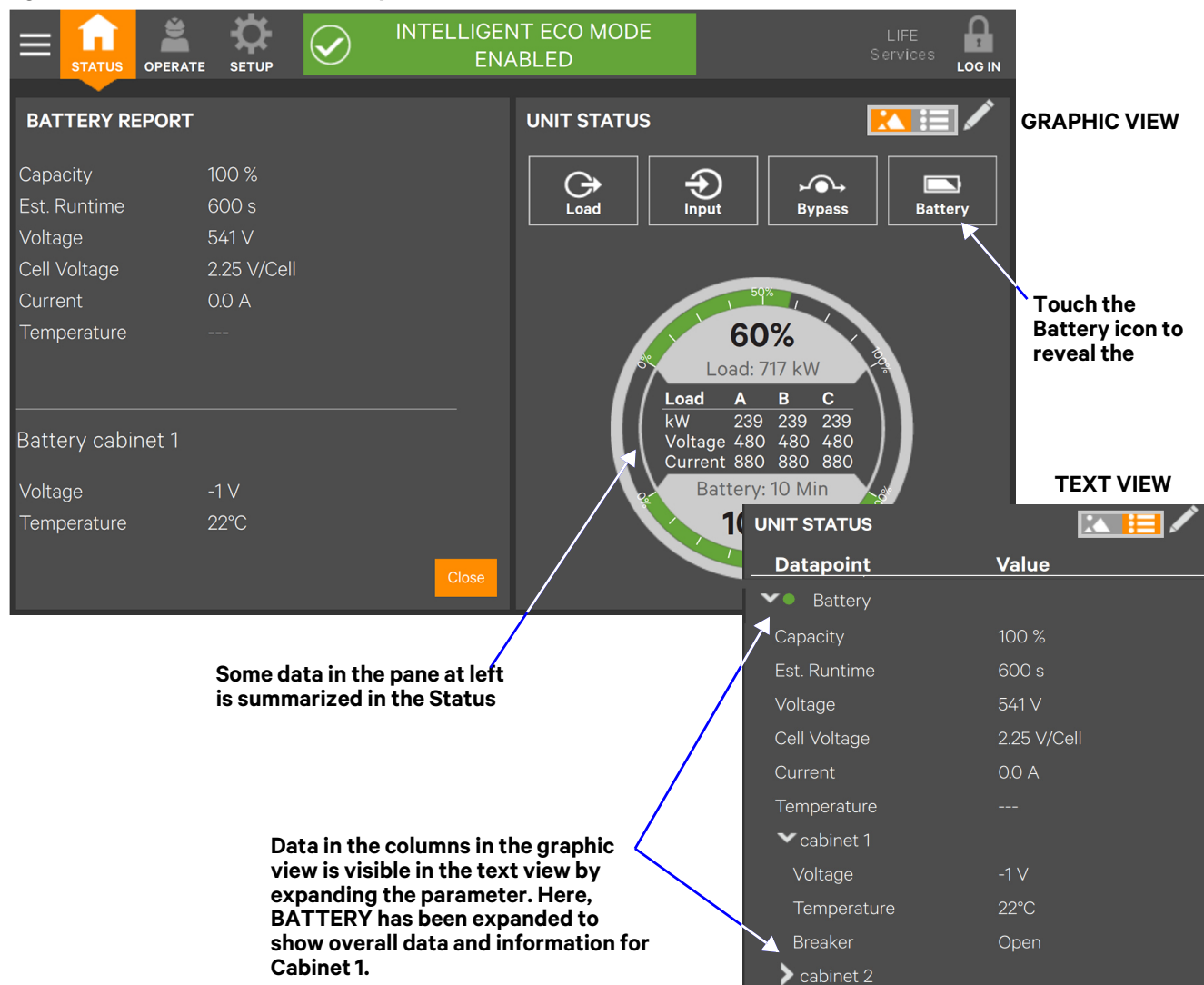
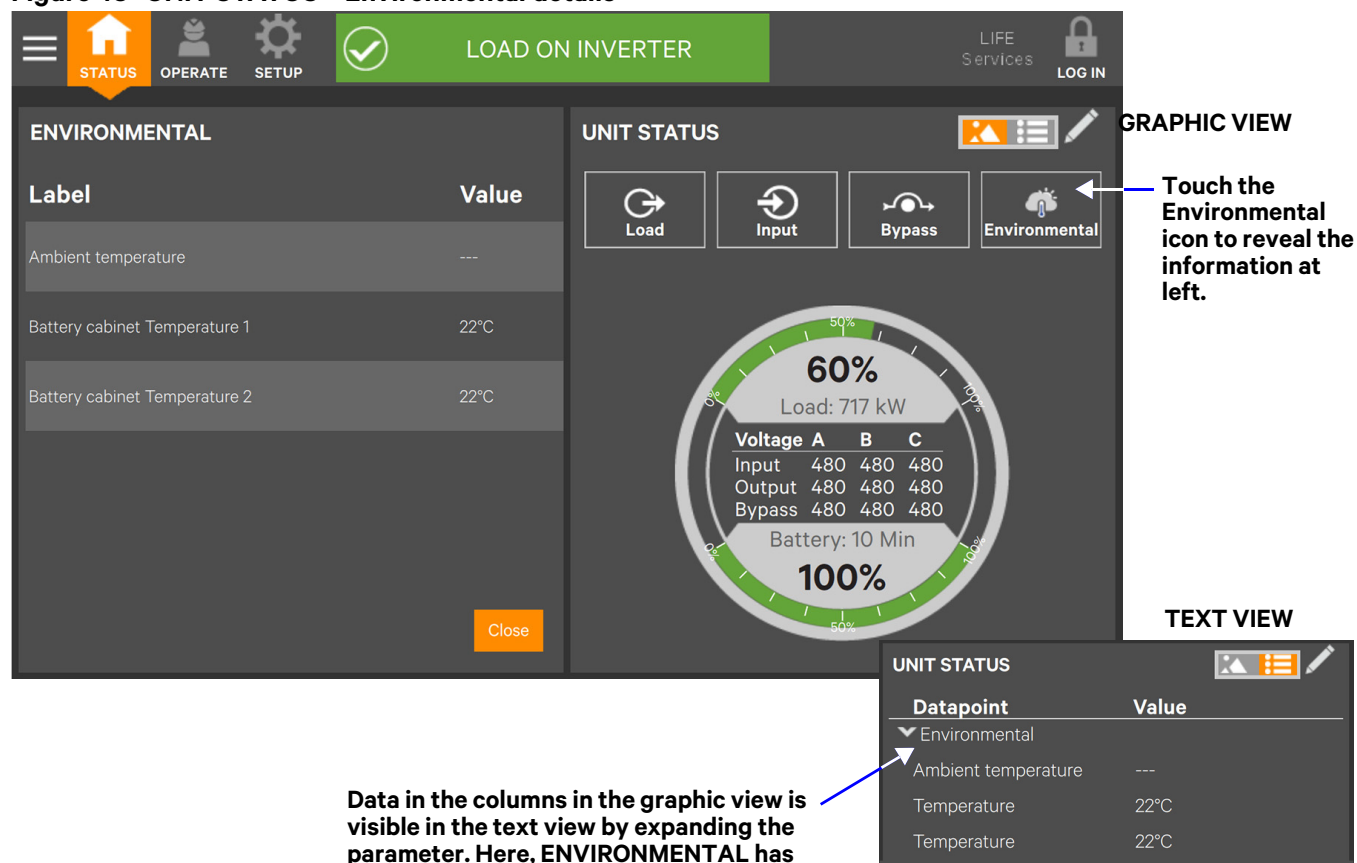


Figure 48 UNIT STATUS—Environmental details



4.3 Logs—Events and Log-In Times

The Context Menu, when opened from the STATUS pane, permits viewing a log of alarms and events that have occurred on the UPS. The log includes the date and time of occurrence, type (alarm or event), an Event ID, component affected and a description of the alarm or event. The information is available to all users, including Observers, those without a log-in passcode.

Events can be sorted by any of the associated information or filtered by severity (Status, Alarm and Fault) or by component affected (bypass, monitoring or module); see **4.3.1 - Logs—Filtering and Sorting Events**.

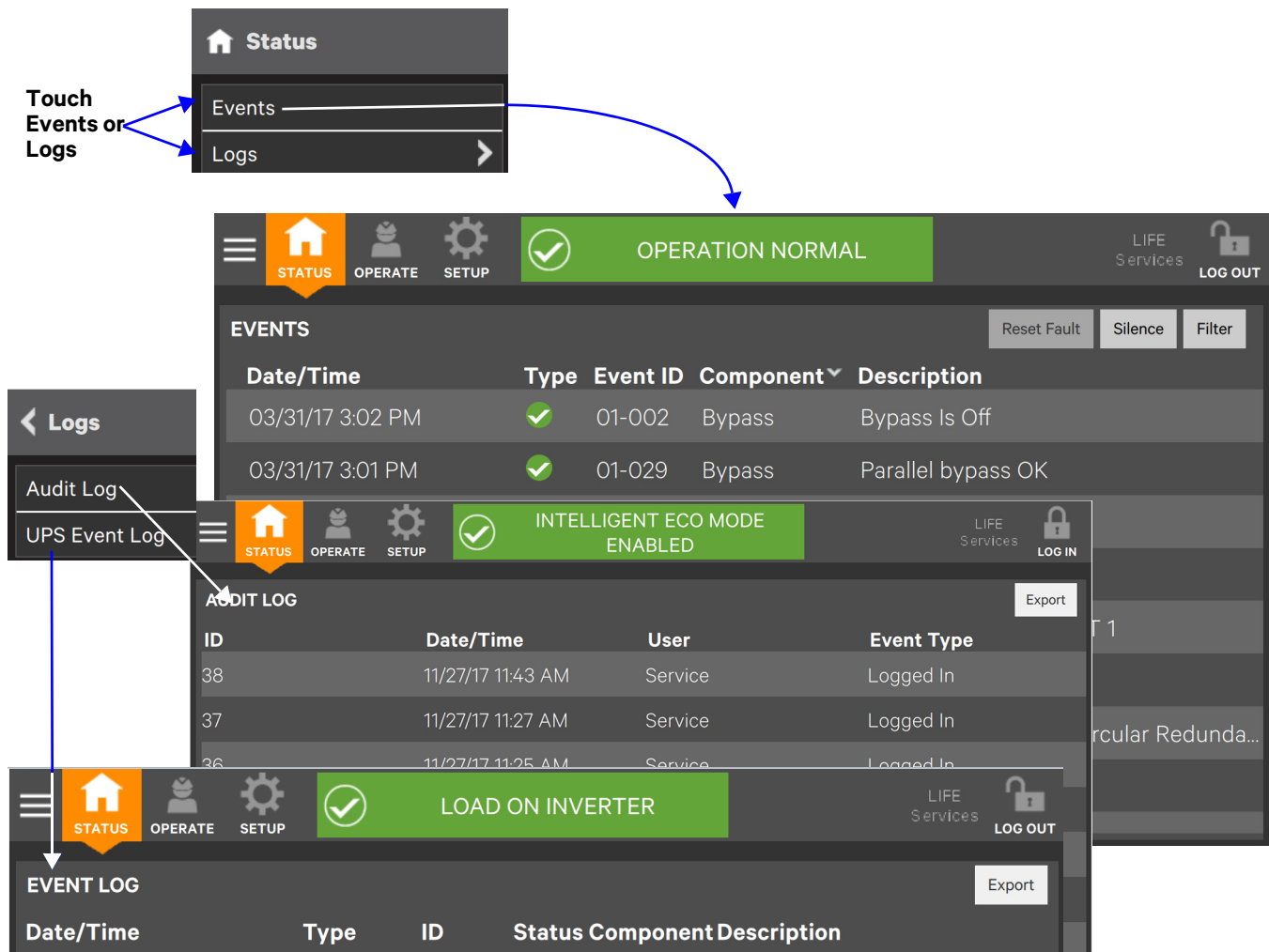
The Context Menu, when opened from the STATUS pane also permits seeing when various users logged in and logged out—available by touching *Audit Log*.

To view the alarms or events:

1. Navigate to the STATUS pane.
2. Touch the Context Menu icon.
3. Touch the log to view: *Events* or *Logs*, which includes the *Audit Log* and *UPS Event Log*; see **Figure 49**.
Touching *Events* opens the list of events and alarms; touching *Logs* permits viewing the *Audit Log* or the *UPS Event Log*.



Figure 49 View alarms, events, log-out times

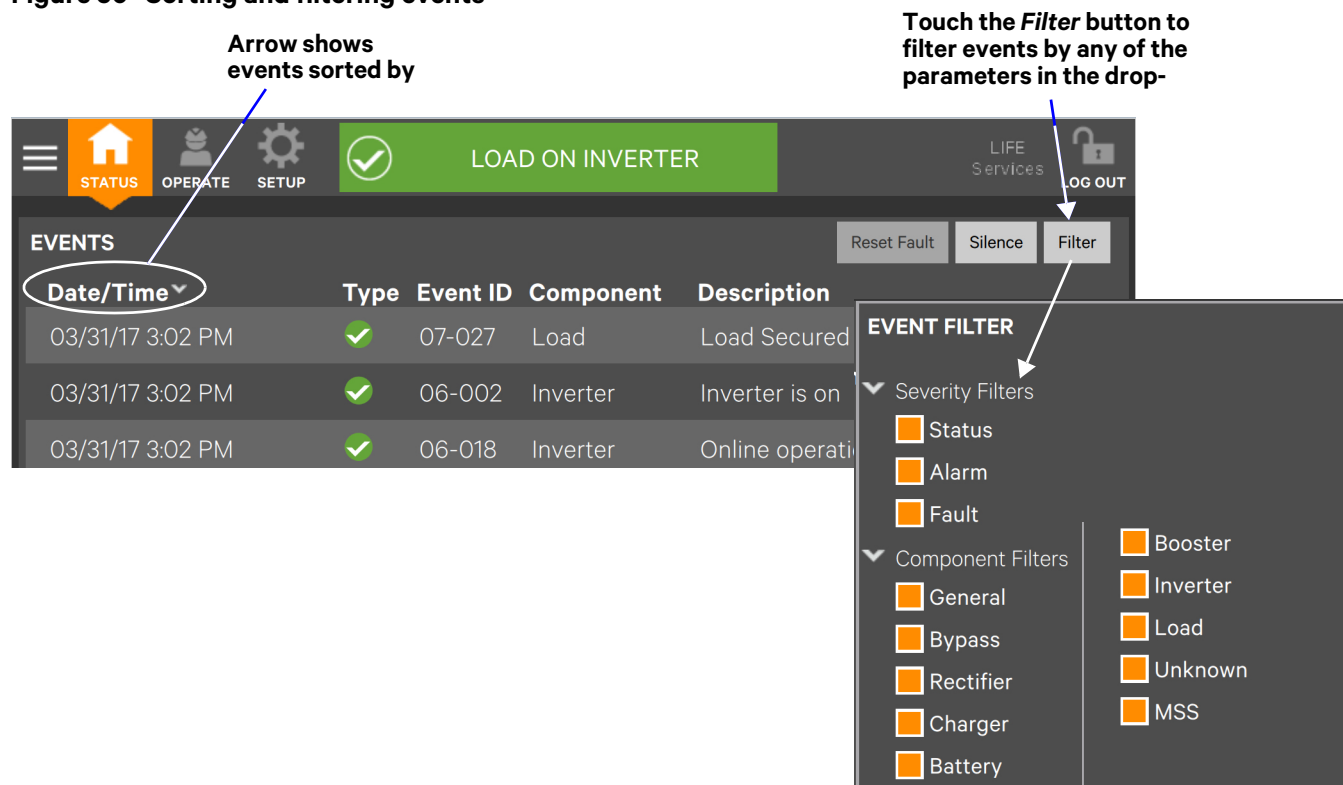


4.3.1 Logs—Filtering and Sorting Events

The Events Log permits sorting Events and Filtering Events to ease understanding how the UPS is operating.

To sort events, touch on or just to the right of any of the headings—Type, Event ID, Component or Description. A small arrow will appear beside the heading, indicating that the Events have been sorted (see **Figure 50**).

Figure 50 Sorting and filtering events



Sorting a list follows this logic:

- If sorting by Component, the list then sorts by Severity, then by Date/Time
- If sorting by Date/Time, the list then sorts by Component, then by Severity
- If sorting by Type, the list then sorts by Component, then by Date/Time
- If sorting by Description, the list then sorts by Date/Time
- If sorting by Event ID, the list then sorts by Date/Time.

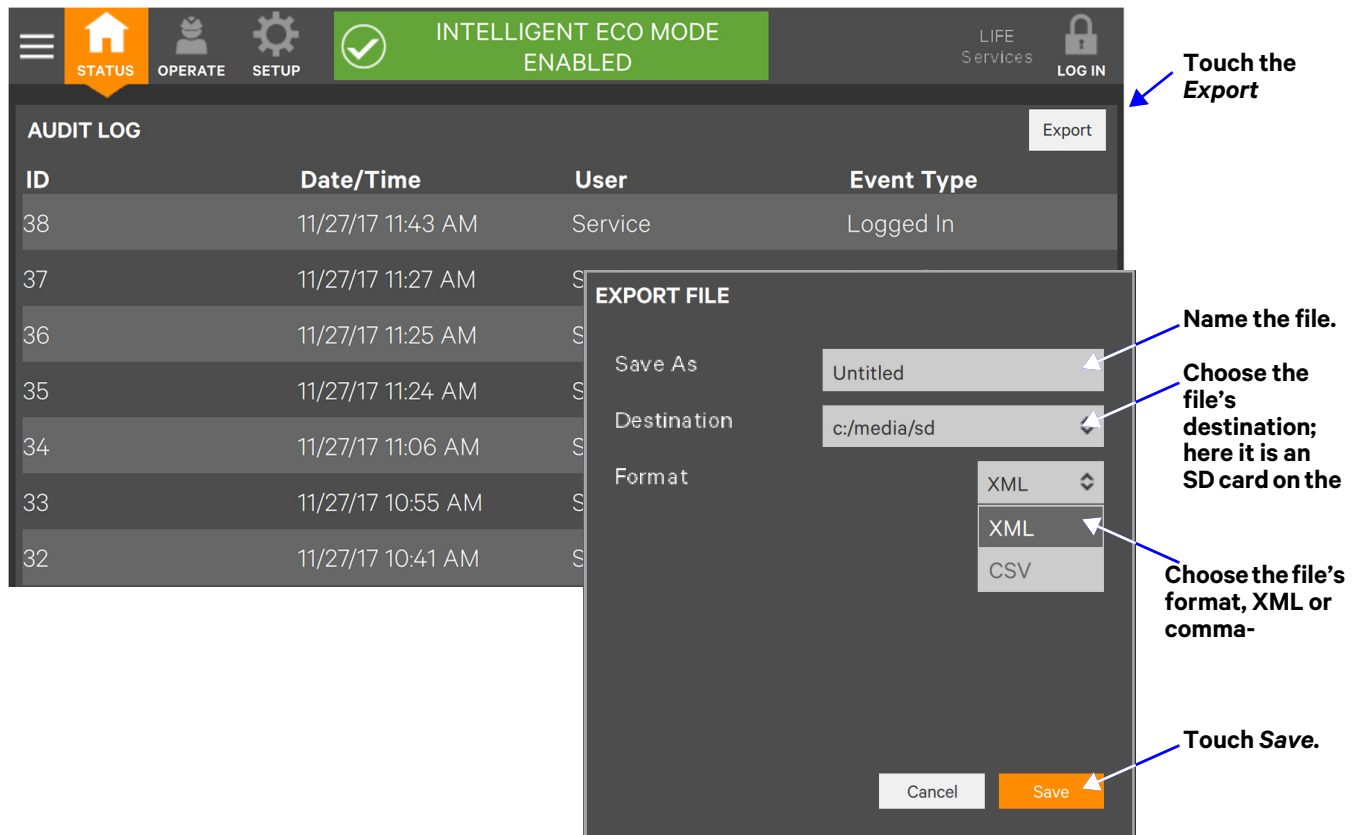
4.4 Logs—Exporting Event and Audit Logs

The Touchscreen Control Panel records and retains information about alarms, events and user log-in and log out. Users of any access level can export these logs as either XML or CSV files for analysis or record keeping. XML files may be opened with most text editing programs; CSV files may be opened with a spreadsheet program, such as Microsoft® Excel™.

To export an Event Log or Audit Log:

1. Navigate to *STATUS>Logs*, then choose the log to be exported, either the *Event Log* or *Audit Log*.
2. Touch the *Export* button at the top right of the screen.
3. In the EXPORT FILE screen that opens:
 - a. Name the file in the *Save As* box (an on-screen keyboard will appear).
 - b. Choose the destination (this may be a memory stick inserted into the Touchscreen Control Panel).
 - c. Choose CSV or XML in the *Format* box.
 - d. Touch *Save*.

Figure 51 Exporting logs



5.0 VIEWING UPS COMPONENT STATUS

The animated mimic screen permits viewing details about the main components installed in the UPS and configured in the Touchscreen Control Panel. The data list opens on the opposite side of the screen and, for most parameters, expands to show all details for the component selected. The information is available to anyone, including Observers, who have no PIN number, if PIN's are required.

Component information may also be viewed by going to STATUS Menu and touching COMPONENTS. Touching the component name in the COMPONENTS pane brings details of the selected component in the right pane (see **Figure 52**).

Figure 52 Component status—STATUS Menu

Main Input is selected, so the COMPONENT DETAILS pane shows data about the Main

STATUS

OPERATE

SETUP

INTELLIGENT ECO MODE
ENABLED

LIFE
Services

LOG IN

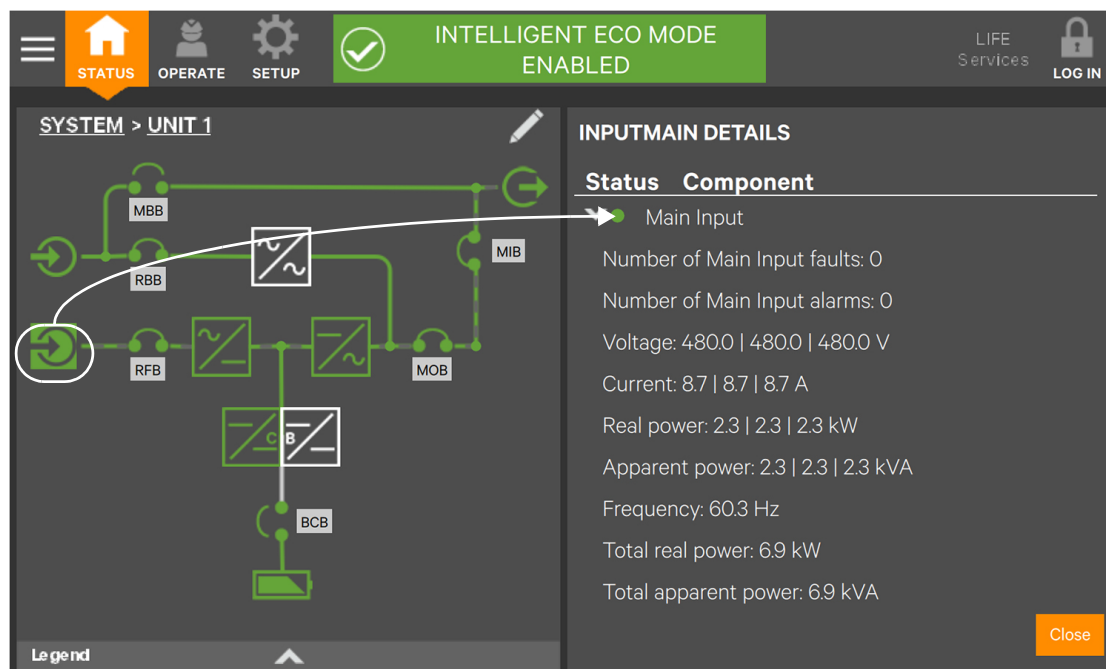
COMPONENTS

Status	Name
	Main Input
	Bypass Input
	Bypass
	Rectifier
	Inverter
	Charger / Booster
	Battery
	Load

COMPONENT DETAILS

Property	Value
Number of Main Input faults	0
Number of Main Input alarms	0
Main input voltage	480.0 480.0 480.0 V
Main input current	8.7 8.7 8.7 A
Main input real power	2.3 2.3 2.3 kW
Main input apparent power	2.3 2.3 2.3 kVA
Main input frequency	60.3 Hz
Total input real power	6.9 kW
Total input apparent power	6.9 kVA

Figure 53 UNIT STATUS—Main Input details



Touching any major component on the animated mimic brings up similar details about that component of the Liebert® EXL™ S1. Scrolling is required to see all faults on some screens.

Figure 54 UNIT STATUS details

▼ ● Bypass
 Number of Bypass faults: 0
 Number of Bypass alarms: 0

Bypass Details

▼ ● Bypass Input
 Number of Bypass Input faults: 0
 Number of Bypass Input alarms: 0
 Voltage: 480.0 | 480.0 | 480.0 V
 Current: 879.9 | 879.9 | 879.9 A
 Real power: 239.1 | 239.1 | 239.1 kW
 Apparent power: 243.8 | 243.8 | 243.8 kVA
 Frequency: 59.9 Hz
 Power factor: 0.00 | 0.00 | 0.00

**Bypass Input Details
 (Power factor shown only if
 Dynamic Online is enabled)**

▼ ● Charger / Booster
 Number of Charger / Booster faults: 0
 Number of Charger / Booster alarms: 0
 Output Voltage: 779.8 V
 Battery voltage: 541 V
 Battery current: 0.0 A
 Temperature A1: ---
 Temperature A2: ---
 Temperature B1: ---

Charger/Booster Details

▼ ● Rectifier
 Number of Rectifier faults: 0
 Number of Rectifier alarms: 0
 Output voltage: 779.8 V
 Pre-Charge status: Precharge finished
 Temperature A1: 47 | 47 | 47 °C
 Temperature A2: 47 | 47 | 47 °C

▼ ● Load
 Number of Load faults: 0
 Number of Load alarms: 0
 Percentage: 60 | 60 | 60 %
 Voltage: 480.0 | 480.0 | 480.0 V
 Current: 879.9 | 879.9 | 879.9 A
 Real power: 239.1 | 239.1 | 239.1 kW
 Apparent power: 243.8 | 243.8 | 243.8 kVA
 Power Factor
 Frequency: 59.9 Hz
 Overload remaining: 59999 s
 Load Percentage: 60 %
 Total real power: 717.3 kW
 Total apparent power: 731.4 kVA
 Ambient temperature: ---
 Synchronization Angle: 0.0 °

Load Details

▼ ● Inverter
 Number of Inverter faults: 0
 Number of Inverter alarms: 0
 Synchronization source: Bypass
 Temperature A1: 48 | 48 | 48 °C
 Temperature A2: 48 | 48 | 48 °C
 Temperature B1: 48 | 48 | 48 °C
 Temperature B2: 48 | 48 | 48 °C
 Suspend Time: 0 s

Inverter Details

▼ ● Battery
 Number of Battery faults: 0
 Number of Battery alarms: 0
 Voltage: 541 V
 Cell Voltage: 2.25 V/Cell
 Current: 0.0 A
 Temperature: ---
 Est. Runtime: 600 s
 Capacity: 100 %
 Last bat test date:
 Last bat test result: <Unknown>
 Bat test allowed: Disabled
 Bat test interval: 24 h
 Bat test inhibit time: 24 h
 Next bat test in: 0 min
 Auto bat test duration: 60.0
 Man bat test duration: 120.0
 Test minimal voltage: 1.75
 Bat test status: <Unknown>

Battery Details

▼ ● Main Input
 Number of Main Input faults: 0
 Number of Main Input alarms: 0
 Voltage: 480.0 | 480.0 | 480.0 V
 Current: 8.7 | 8.7 | 8.7 A
 Real power: 2.3 | 2.3 | 2.3 kW
 Apparent power: 2.3 | 2.3 | 2.3 kVA
 Frequency: 60.3 Hz
 Total real power: 6.9 kW
 Total apparent power: 6.9 kVA

Main Input/LBB Details

6.0 STATUS BAR COMPOSITION

The status bar indicates UPS status by:

- scrolling messages to inform viewers; see **Tables 9** through **11**.
- changing color; green for normal, yellow for warning and red for alarm
- showing an icon inside the bar; shown at right



Normal



Warning



Critical

6.1 Status Bar Messages

Up to three messages may scroll through the status bar to the right of the status icon. Each message will have a duration of four seconds, except they change immediately if the system's status changes.

Table 6 Normal messages—Green status bar *

Message 1	Message 2	Message 3	Definition
LOAD OFF	X MODE ACTIVE	—	The system is in normal operating mode; the load is not supplied by this unit, and has the specified energy saving modes active.
LOAD OFF	X MODE ENABLED	—	The system is in normal operating mode; the load is not supplied by this unit, and has the specified energy saving modes enabled.
LOAD OFF	X MODE INHIBITED	—	The system is in normal operating mode; the load is not supplied by this unit, and has the specified energy saving modes inhibited.
LOAD ON BATTERY	BATTERY TEST IN PROGRESS	—	The system is in normal operating mode, supplied by the inverter via the battery, and a battery test is running.
LOAD ON BATTERY	X MINUTES REMAINING	—	The system is operating in warning mode, supplied by the inverter via the battery. There are X minutes of calculated run time remaining. The precedes the battery low voltage warning.
LOAD ON BYPASS	X MODE ACTIVE	—	The system is in normal operating mode, supplied by the bypass, and has the specified energy saving modes active.
LOAD ON INVERTER	FREQUENCY CONVERTER MODE ACTIVE	OUTPUT FREQUENCY X HZ	The system is in normal operating mode, supplied by the inverter, and operating as a frequency converter.
LOAD ON INVERTER	OPERATION NORMAL	—	The system is in normal operating mode, supplied by the inverter, and has no special configurations.
LOAD ON INVERTER	SERVICE MODE ACTIVE	—	The system is in normal operating condition on the inverter with the service mode activated.
LOAD ON INVERTER	TEST MODE ACTIVE	—	The system is in normal operating mode for the current test mode that is activated.
LOAD ON INVERTER	X MODE ACTIVE	—	The system is in normal operating mode, supplied by the inverter, and has the specified energy saving modes active.
LOAD ON INVERTER	X MODE ENABLED	—	The system is in normal operating mode, supplied by the inverter, and has the specified energy saving modes configured and enabled.

* If the on-generator input contact is active, each message will be have a fourth message: *SGS INPUT CONTACT ACTIVE*

Table 6 Normal messages—Green status bar *

Message 1	Message 2	Message 3	Definition
LOAD ON INVERTER	X MODE INHIBITED	—	The system is in normal operating mode, supplied by the inverter, and has the specified energy saving modes inhibited.
LOAD ON OTHER MODULE	—	—	The system is in normal operating mode, but the load is supplied by another UPS module.

* If the *on-generator* input contact is active, each message will be have a fourth message: *SGS INPUT CONTACT ACTIVE*

Table 7 Warning messages—Yellow status bar *

Message 1	Message 2	Message 3	Definition
LOAD ON INVERTER	OUTPUT OVERLOAD	—	The system is operating in warning mode, supplied by the inverter, and the system is in overload. The system will go off inverter at some point.
LOAD ON INVERTER	OVER TEMPERATURE	—	The system is operating in warning mode, supplied by the inverter, and at least one part of the system is incurring an overtemperature alarm. This means if the temperature does not recover, the system will go off inverter at some point.
LOAD ON INVERTER	ALARM ACTIVE – WARNING	VIEW EVENT LOG FOR DETAILS	The system is operating in warning mode, supplied by the inverter, and has an active alarm.
LOAD ON INVERTER	X MODE INHIBITED	—	The system is operating in warning mode, supplied by the inverter. The specified mode is inhibited.
LOAD ON BYPASS	LOAD MANUALLY TRANSFERRED TO BYPASS	LOAD UNPROTECTED	The system is operating in warning mode, supplied by the bypass. The user transferred the load to the bypass so the system cannot protect itself from source variations.
LOAD ON BYPASS	X MODE ENABLED	—	The system is operating in warning mode, supplied by the bypass. The specified mode is enabled.
LOAD ON BYPASS	X MODE INHIBITED	—	The system is operating in warning mode, supplied by the bypass. The specified mode is inhibited.
LOAD ON BATTERY	X MINUTES REMAINING	—	The system is operating in warning mode, supplied by the inverter via the battery. There are X minutes of calculated run time remaining. This precedes the battery low voltage warnings.
LOAD ON BYPASS	ALARM ACTIVE – WARNING	VIEW EVENT LOG FOR DETAILS	The system is operating in warning mode, supplied by the bypass, and has an active alarm.
LOAD ON INVERTER	X MODE ENABLED	ALARM ACTIVE – WARNING	The system is operating in warning mode, supplied by the inverter, the specified energy saving modes is configured and enabled, and has an active alarm.
LOAD ON INVERTER	X MODE ACTIVE	ALARM ACTIVE – WARNING	The system is operating in warning mode, supplied by the inverter, the specified energy saving modes is active, and has an active alarm.
LOAD ON BYPASS	X MODE ACTIVE	ALARM ACTIVE – WARNING	The system is operating in warning mode, supplied by the bypass, the specified energy saving modes is active, and has an active alarm.
LOAD OFF	X MODE ACTIVE	ALARM ACTIVE – WARNING	The system is operating in warning mode, load off, the specified energy saving modes is active, and has an active alarm.
LOAD ON INVERTER	TEST MODE ACTIVE	ALARM ACTIVE – WARNING	The system is operating in warning mode, supplied by the inverter, running in a system test mode, and has an active alarm.
LOAD ON INVERTER	SERVICE MODE ACTIVE	ALARM ACTIVE – WARNING	The system is operating in warning mode, supplied by the inverter, running in a service mode, and has an active alarm.
LOAD ON BYPASS	TEST MODE ACTIVE	ALARM ACTIVE – WARNING	The system is operating in warning mode, supplied by the bypass, running in a system test mode, and has an active alarm.
LOAD ON BYPASS	SERVICE MODE ACTIVE	ALARM ACTIVE – WARNING	The system is operating in warning mode, supplied by the bypass, running in a service mode, and has an active alarm.
LOAD ON BATTERY	TEST MODE ACTIVE	ALARM ACTIVE – WARNING	The system is operating in warning mode, supplied by the battery, running in a system test mode, and has an active alarm.

* If the on-generator input contact is active, each message will have a fourth message: SGS INPUT CONTACT ACTIVE

Table 7 Warning messages—Yellow status bar * (continued)

Message 1	Message 2	Message 3	Definition
LOAD ON BATTERY	SERVICE MODE ACTIVE	ALARM ACTIVE – WARNING	The system is operating in warning mode, supplied by the battery, running in a service mode, and has an active alarm.
LOAD ON INVERTER	FREQUENCY CONVERTER MODE ACTIVE	ALARM ACTIVE – WARNING	The system is operating in warning mode, supplied by the inverter, operating as a frequency converter, and has an active alarm.
LOAD ON MAINT BYPASS	ALARM ACTIVE - WARNING	VIEW EVENT LOG FOR DETAILS	The system is operating in warning mode, supplied by the maintenance bypass, and has an active alarm.
LOAD ON OTHER MODULE	ALARM ACTIVE – WARNING	VIEW EVENT LOG FOR DETAILS	The module is operating in warning mode. The load is supplied by other UPS modules, and has an active warning.
LOAD OFF	ALARM ACTIVE – WARNING	VIEW EVENT LOG FOR DETAILS	The module is operating in warning mode. The load is not supplied, and has an active warning.

* If the on-generator input contact is active, each message will be have a fourth message: *SGS INPUT CONTACT ACTIVE*

Table 8 Critical messages—Red status bar *

Message 1	Message 2	Message 3	Definition
LOAD ON INVERTER	OUTPUT OVERLOAD	TRANSFER TO BYPASS PENDING	The system is in critical operating mode, supplied by the inverter, and the load is about to be transferred to the bypass due to overload timeouts.
LOAD ON INVERTER	FAULT ACTIVE - CRITICAL	VIEW EVENT LOG FOR DETAILS	The system is in critical operating mode, supplied by the inverter. There is a critical fault raised in the system that the user needs to check.
LOAD ON BYPASS	LOAD AUTOMATICALLY TRANSFERRED TO BYPASS	VIEW EVENT LOG FOR DETAILS	The system is in critical operating mode, supplied by the bypass. The system moved the load to the bypass due to a critical fault in the system.
LOAD ON BYPASS	FAULT ACTIVE - CRITICAL	VIEW EVENT LOG FOR DETAILS	The system is in critical operating mode, supplied by the bypass. The system is running on bypass not due to auto-transfer, and a critical fault is active in the system.
LOAD ON BATTERY	X MINUTES REMAINING	LOAD SHUTDOWN IMMINENT	The system is in critical operating mode, supplied by the inverter via the battery. The battery is extremely low and the load will turn Off or transfer to bypass soon.
LOAD OFF	FAULT ACTIVE - CRITICAL	VIEW EVENT LOG FOR DETAILS	The system is in critical operating mode, the load is not supplied by this unit and a critical fault is active.
LOAD OFF	—	—	The system is in critical operating mode, the load is not supplied and no active fault is present.
LOAD ON BATTERY	FAULT ACTIVE - CRITICAL	VIEW EVENT LOG FOR DETAILS	The system is in critical operating mode, the system is running on inverter via the battery, shutdown is not imminent and a critical fault is active in the system.
LOAD ON INVERTER	X MODE ENABLED	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, the system is running on inverter, with the specified energy saving mode configured and enabled, and a critical fault is active in the system.

* If the on-generator input contact is active, each message will be have a fourth message: *SGS INPUT CONTACT ACTIVE*

Table 8 Critical messages—Red status bar * (continued)

Message 1	Message 2	Message 3	Definition
LOAD ON INVERTER	X MODE INHIBITED	—	The system is in critical operating mode, the system is running on inverter, with the specified energy saving mode inhibited, and a critical fault is active in the system.
LOAD ON INVERTER	X MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, supplied by the inverter. The system is running on inverter, with the specified energy saving mode active, and a critical fault is active in the system.
LOAD ON BYPASS	X MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, the system is running on bypass, with the specified energy saving mode active, and a critical fault is active in the system.
LOAD ON BYPASS	X MODE ENABLED	—	The system is in critical operating mode, the system is running on inverter, with the specified energy saving mode configured and enabled, and a critical fault is active in the system.
LOAD ON BYPASS	X MODE INHIBITED	—	The system is in critical operating mode, the system is running on inverter, with the specified energy saving mode inhibited, and a critical fault is active in the system.
LOAD OFF	X MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode. The system is NOT running, with the specified energy saving mode active, and a critical fault is active in the system.
LOAD OFF	TEST MODE ACTIVE	—	The system is Off with TEST MODE active.
LOAD OFF	SERVICE MODE ACTIVE	—	The system is Off with SERVICE MODE active.
LOAD OFF	X MODE ENABLED	—	The system is Off, with the specified energy saving mode configured and enabled.
LOAD OFF	X MODE INHIBITED	—	The system is Off, with the specified energy saving mode inhibited.
LOAD ON INVERTER	TEST MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, supplied by the inverter, running in a system test mode, and has an active fault.
LOAD ON INVERTER	SERVICE MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, supplied by the inverter, running in a system service mode, and has an active fault.
LOAD ON BYPASS	TEST MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, supplied by the bypass, running in a system test mode, and has an active fault.
LOAD ON BYPASS	SERVICE MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, supplied by the bypass, running in a system service mode, and has an active fault.
LOAD ON BATTERY	TEST MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, supplied by the inverter via the battery, running in a system test mode, and has an active fault.
LOAD ON BATTERY	SERVICE MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, supplied by the inverter via the battery, running in a system service mode, and has an active fault.
LOAD OFF	TEST MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, with LOAD OFF, running in a system test mode, and has an active fault.

* If the on-generator input contact is active, each message will be have a fourth message: SGS INPUT CONTACT ACTIVE

Table 8 Critical messages—Red status bar * (continued)

Message 1	Message 2	Message 3	Definition
LOAD OFF	SERVICE MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, with LOAD OFF, running in a system service mode, and has an active fault.
LOAD ON INVERTER	FREQUENCY CONVERTER MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, supplied by the inverter, operating as a frequency converter, and has an active fault.
LOAD OFF	FREQUENCY CONVERTER MODE ACTIVE	FAULT ACTIVE - CRITICAL	The system is in critical operating mode, operating as a frequency converter, has an active fault and the load is not supplied.
LOAD ON MAINT BYPASS	FAULT ACTIVE - CRITICAL	VIEW EVENT LOG FOR DETAILS	The system is in critical operating mode, supplied by the maintenance bypass. There is a critical fault raised in the system that the user needs to check.
LOAD ON OTHER MODULE	FAULT ACTIVE - CRITICAL	VIEW EVENT LOG FOR DETAILS	The module is in critical operating mode. The load is supplied by other UPS modules. There is a critical fault in the system that the user needs to check.

* If the on-generator input contact is active, each message will be have a fourth message: *SGS INPUT CONTACT ACTIVE*

7.0 LIEBERT® EXL™ S1 EVENTS, ALARMS AND FAULTS

Table 9 Liebert® EXL™ S1 Status Events

Component	Type	Text Display	ID	Description
Battery	Status	Battery warning	04-000	A warning is pending.
Battery	Status	Battery fault	04-001	A fault is pending.
Battery	Status	Battery idle	04-002	The battery is idle; energy is flowing neither in nor out.
Battery	Status	Battery is discharging	04-004	The battery is discharging.
Battery	Status	Automatic Battery Test Started	04-032	An automatic battery test has been started.
Battery	Status	Battery Test Requested	04-033	(Not supported) see BAW1 bit 4
Battery	Status	Battery Test Failed	04-035	A battery test has failed. Permanent state: a manual reset is required.
Battery	Status	Battery Test Idle	04-048	The battery test function is not being performed.
Battery	Status	Battery Test Start Pending	04-052	In a parallel system with a common battery, the <i>Start</i> command is present on some but not all the units.
Battery	Status	Battery Test Stop Pending	04-053	In a parallel system with a common battery, the <i>Stop</i> command is present on some but not all the units.
Battery	Status	Battery Non-Blocking Fault	04-054	Set when a non-blocking fault is active in the stage.
Battery	Status	Battery Not Connected	04-065	Set when V_BATT1 < 100V (fix threshold). Control always active independently to battery breaker status.
Battery	Status	Battery is charging	14-003	The battery is being charged.
Battery	Status	Battery Test Running	14-034	Battery test is running.
Battery	Status	Battery Test Not Allowed	14-036	Conditions preclude performing a battery test.
Battery	Status	Battery Test Finished OK	14-037	Battery test finished; active for 5 seconds, then switches to Battery Test Idle.
Battery	Status	Battery Test Canceled	14-038	(Not supported)
Battery	Status	Battery Test Interrupted	14-050	(Not supported)
Battery	Status	Battery Test Stopped by User	14-051	User has stopped the battery test; active for 5 seconds, then switches to Battery Test Idle. Valid only for a manual battery test.
Bypass	Status	Bypass is not present	01-000	—
Bypass	Status	Bypass Is On	01-001	—

Table 9 Liebert® EXL™ S1 Status Events (continued)

Component	Type	Text Display	ID	Description
Bypass	Status	Bypass Is Off	01-002	—
Bypass	Status	Bypass is stopped due to a fault	01-003	—
Bypass	Status	Bypass not prepared	01-004	Static switch board is not installed or the bypass voltage is over the threshold (P 106.i04).
Bypass	Status	Bypass fault	01-005	Set when a blocking fault is active in the stage.
Bypass	Status	Bypass warning	01-007	Set when at least one warning is active.
Bypass	Status	Bypass available with delay	01-008	Set when the bypass and inverter are not synchronized.
Bypass	Status	Parallel bypass OK	01-029	All bypass inputs are OK.
Bypass	Status	Parallel bypass one fault	01-030	One bypass input fault exists.
Bypass	Status	Parallel bypass at least one OK	01-031	At least one bypass input is OK.
Bypass	Status	Parallel bypass fault	01-032	All bypass inputs are in fault.
Bypass	Status	Undelayed Bypass Ref. Failure	01-040	Bypass reference failure notification without any delay.
Bypass	Status	Bypass is Centralized	01-041	The internal bypass is disabled; the UPS is using the centralized / common (MSS) bypass.
Bypass	Status	Bypass Non-Blocking Fault	01-042	Set when a non-blocking fault is active in the stage.
Bypass	Status	Bypass Global On Request	01-078	Bypass Static Switch On command request on the shared bus
Bypass	Status	Bypass Global On	01-079	Bypass Static Switch on global status read from the shared bus.
Bypass	Status	Bypass Global Off	01-080	Bypass Static Switch Off Global status read from the shared bus.
Bypass	Status	Bypass mains is out of tolerance	11-006	Bypass failure notification without any delay.
Bypass	Alarm	Bypass Input Switch Open	21-012	Bypass input switch is open.
Charger/Booster	Status	Charger in Standby - (not charging)	03-000	—
Charger/Booster	Status	Charger is on	03-001	—
Charger/Booster	Status	Charger is off	03-002	—
Charger/Booster	Status	Charger Forced On	03-003	—
Charger/Booster	Status	Charger Stopped due to a Fault	03-038	—
Charger/Booster	Status	Charger in Current Limitation	03-039	Displayed as long as the voltage reference is lower than the nominal.

Table 9 Liebert® EXL™ S1 Status Events (continued)

Component	Type	Text Display	ID	Description
Charger/Booster	Status	Charging Status OFF	03-040	—
Charger/Booster	Status	Charging Status INIT	03-041	—
Charger/Booster	Status	Charging Status FLOAT 1	03-042	—
Charger/Booster	Status	Charging Status FLOAT 2	03-043	—
Charger/Booster	Status	Charging Status POST	03-044	—
Charger/Booster	Status	Charging Status PAUSE	03-045	—
Charger/Booster	Status	Charging Status MANUAL	03-046	—
Charger/Booster	Status	Charging Status FAULT	03-047	—
Charger/Booster	Status	Buck-Booster Fault	03-048	At least one fault is active.
Charger/Booster	Status	Buck-Booster Warning	03-049	Set when at least one warning is active.
Charger/Booster	Status	Booster Off	03-050	—
Charger/Booster	Status	Booster Turning On	03-051	—
Charger/Booster	Status	Booster On	03-052	—
Charger/Booster	Status	Booster Stopped Due To Fault	03-053	—
Charger/Booster	Status	Booster Runs From Battery	03-054	Status set after a fixed delay equivalent to P1110.
Charger/Booster	Status	Buck-Booster Non-Blocking Fault	03-055	At least one non-blocking fault is active.
Charger/Booster	Status	DC Bus Too Low To Charge	03-061	—
General	Status	Warning pending	00-000	Set when at least one stage in the core is in warning.
General	Status	Fault pending	00-001	Set when at least one stage in the core is in fault.
General	Status	General Fault	00-002	Set when a fault is active in general stage.
General	Status	Parallel Unit	00-003	Set when P129 = 1.
General	Status	External Synch enabled	00-005	Set when P700 = 1.
General	Status	Inverter/Rectifier OFF Command Issued	00-006	Set when command <i>UPS Off</i> is received; resets when command is not present.
General	Status	Inverter on rectifier	00-009	Inverter is supplied by the rectifier.

Table 9 Liebert® EXL™ S1 Status Events (continued)

Component	Type	Text Display	ID	Description
General	Status	Inverter on battery	00-010	Inverter is supplied by the battery.
General	Status	Parameter reset active	00-011	Set after a parameter reset. Resets as soon as the parameter is written.
General	Status	Intelligent Parallel Not Allowed	00-014	Inverter status is not compatible with circular redundancy.
General	Status	Core Running	00-016	Core running.
General	Status	Operating Request for VFI	00-102	—
General	Status	SKRU: Inverter start inhibited	00-131	Inverter board will check the status of the input/output contact Function #16 to inhibit the inverter start.
General	Status	General Warning	00-146	Set when a warning is active in the general stage.
General	Status	General Non-Blocking Fault	00-147	Set when a non-blocking fault is active in general stage.
General	Status	Non-Blocking Fault pending	00-148	Set when at least one stage in the CORE is in a non-blocking fault.
General	Status	General Fault	00-171	Set when a fault is active in general stage.
General	Status	General Warning	00-172	Set when a warning is active in general stage.
General	Status	General Non-Blocking Fault	00-173	Set when a non-blocking fault is active in general stage.
General	Status	General Core Summary Warning	00-174	Set when a customer blocking fault flag is present (not yet defined).
General	Status	General Core Summary Fault	00-175	Set when at least one customer warning is active. (Not yet defined)
General	Status	General Core Non-Blocking Fault	00-176	Set when a customer non-blocking fault in stage is set (not yet defined).
General	Status	Manual Mode Command Pending	00-200	Set when Trinerger Manual command is pending but global status not confirmed.
General	Status	Synchronize Rectifier Mains Failure	00-219	Request to synchronize the rectifier in case mains failure affects only one core or unit.
General	Status	One or More Fans Not Working	00-221	Set when one fan out of the entire set of monitored fans is not working.
General	Status	BCB: Trip command issued	00-226	Enabled by Output Function 47 BCB trip. Battery Circuit Breaker (BCB) opening command has been issued.
General	Status	Operating Request for Intelligent ECO	00-273	—
General	Status	Core Sleeping	10-015	Core is sleeping.
General	Status	Intelligent ECO Enabled	10-204	—
General	Status	Intelligent Parallel Enabled	10-205	—

Table 9 Liebert® EXL™ S1 Status Events (continued)

Component	Type	Text Display	ID	Description
General	Status	Fan Test in Progress	10-220	Set when fan test is in progress. Valid for either Automatic or Manual.
General	Status	SGS input contact is active	00-295	—
General	Status	Dynamic Online / VI	10-296	—
Inverter	Status	Inverter is Off	06-000	—
Inverter	Status	Inverter is turning On	06-001	—
Inverter	Status	Inverter is On	06-002	—
Inverter	Status	Inverter is stopped due to a fault	06-003	—
Inverter	Status	Inverter fault	06-004	Set when a blocking fault is present on the inverter stage.
Inverter	Status	Synchronization Source: Bypass	06-005	—
Inverter	Status	Synchronization Source: Output	06-006	—
Inverter	Status	Synchronization Source: Self Clock	06-007	—
Inverter	Status	Synchronization Source: External	06-008	—
Inverter	Status	Inverter warning	06-010	Set when at least 1 warning is active
Inverter	Status	Inverter out of Synchronization	06-011	Set when the inverter is not synchronized with local bypass
Inverter	Status	Inverter out of Synchronization	06-016	Set when the inverter is not synchronized with external synchronization signal.
Inverter	Status	Online operation / VFI	06-018	—
Inverter	Status	VI	06-019	—
Inverter	Status	Intelligent ECO / VFD	06-020	—
Inverter	Status	Intelligent Parallel / CR	06-079	—
Inverter	Status	Intelligent Parallel / CR	06-079	—
Inverter	Status	Intelligent Parallel / CR	06-079	—
Inverter	Status	Operation: ECO mode	06-086	Active if inverter is turning On, the load is on Bypass and P580=1 (DIM enabled).
Inverter	Status	Inverter in Standby	06-087	—
Inverter	Status	Inverter Ready and Sync	06-088	—

Table 9 Liebert® EXL™ S1 Status Events (continued)

Component	Type	Text Display	ID	Description
Inverter	Status	Inverter Not Ready	06-089	—
Inverter	Status	Current Limit Last more then 3ms	06-090	Current limit lasts > 3 ms.
Inverter	Status	Inverter Non-Blocking Fault	06-091	Set when a non-blocking fault is active in the stage.
Inverter	Status	Inverter Fault	06-110	Set when CUSTOMER blocking fault flag is present.
Inverter	Status	Inverter warning	06-111	Set when at least one customer warning is active.
Inverter	Status	Inverter Non-Blocking Fault	06-112	Set when a customer non-blocking fault in stage is set.
Inverter	Status	Inverter pending on command	16-029	—
Load	Status	Load supplied by bypass	07-001	Set when load is supplied by Automatic Bypass and Inverter is OFF
Load	Status	Load Supplied By Maint. Bypass	07-002	Set when load is supplied by Manual Bypass
Load	Status	Load is currently not supplied	07-003	Set when module is not supplying load
Load	Status	Load on low priority line	07-004	Set when the load is supplied by the inverter and P568=1 or when the load is supplied by the bypass and P580=0.
Load	Status	Load on phase U-A > 85%	07-005	—
Load	Status	Load on phase V-B > 85%	07-006	—
Load	Status	Load on phase W-C > 85%	07-007	—
Load	Status	Load warning	07-008	Set when at least one warning is active.
Load	Status	Load supplied by battery	07-026	Set when the load is secured by the inverter and energy is provided by the battery.
Load	Status	Load Secured by Inverter	07-027	Set when the load is secured by the inverter. This includes the inverter in VFI or DIM (Eco) Mode.
Load	Status	Load Fault	07-028	Set when a blocking fault is present in the actual stage (not yet implemented)
Load	Status	Load Non-Blocking Fault	07-029	Set when a non-blocking fault is present in the actual stage (not yet implemented).
MUN	Status	MUN has a warning	08-000	Set when at least one MUN stage is in warning. (MUN is Managed Ups Network, a controller component.)
MUN	Status	MUN has a fault	08-001	Set when at least one non-blocking fault is present on MUN. (MUN is Managed Ups Network, a controller component.)
MUN	Status	UPS Model detection in progress	08-003	MUN is searching for Model Information.
MUN	Status	MUN initialisation done	08-004	MUN is setup with autodetection.

Table 9 Liebert® EXL™ S1 Status Events (continued)

Component	Type	Text Display	ID	Description
MUN	Status	MUN reboot required	08-005	MUN detects difference in environment variable
MUN	Status	System Started	08-011	Set at mund Application startup; never reset. (mund is the application name for Managed Ups Network,)
MUN	Status	Acknowledge Button Pressed	08-025	Acknowledge button has been pressed
MUN	Status	UPS Time not valid	08-026	Set when date is < 1 Jan 2009.
MUN	Status	Life call in progress	08-033	Call in progress.
MUN	Status	Life call rescheduled	08-034	Call rescheduled.
MUN	Status	Life modem not detected	08-035	Set when MUN does not receive replies from modem
MUN	Status	Parameter read failed	08-054	Parameter can not be read from DSP. • Set when Parameter Reading returns with an exception • Reset when Parameter Reading returns with an OK.
MUN	Status	Parameter set failed	08-055	Parameter can not be written to DSP. • Set when Parameter Writing returns with an exception. • Reset when Parameter Writing returns with an OK.
MUN	Status	Life Service Mode	08-060	Life is in Service mode, so emergency calls are not sent to station (used when an SE is operating on the device in field).
MUN	Status	Ntp is Disconnected from Touchscreen	08-061	to be filled in
MUN	Status	Life interface Init in Progress	08-079	Set at mund application startup; reset after one second
MUN	Status	Life Events Sampling started	08-095	Ignore events history and restart sampling from current time.
MUN	Status	MUN/DSP are not Sync with SYNW	08-097	—
MUN	Status	Life Measures Sampling Started	08-098	Ignore measures history and restart sampling from current time.
MUN	Status	System Time Moved Ahead	08-110	Set when device time is moved ahead after time adjustment from Life Station.
MUN	Status	System Time Moved Back	08-111	Set when device time is moved back after time adjustment from Life Station.
Rectifier	Status	Rectifier is Off	02-000	—
Rectifier	Status	Rectifier is turning On	02-001	—
Rectifier	Status	Rectifier is On	02-002	—
Rectifier	Status	Rectifier fault	02-004	Set either blocking or non blocking

Table 9 Liebert® EXL™ S1 Status Events (continued)

Component	Type	Text Display	ID	Description
Rectifier	Status	Rectifier Warning	02-009	Set when at least 1 warning is active
Rectifier	Status	No precharge in progress	02-010	No pre-charge active. Active while mains is out of tolerance
Rectifier	Status	Precharge in progress	02-011	Hold off delay and resistor pre-charge
Rectifier	Status	Walk-in in progress	02-012	Rectifier current limit ramp.
Rectifier	Status	Precharge finished	02-013	Pre-charge finished. Active while mains is OK
Rectifier	Status	Rectifier Power Limitation Active	02-048	Set when the input current is limited by standard or customer limit.
Rectifier	Status	Rectifier Current Limit	02-049	Set when input current reaches the limit defined by P 1740.11 and lasts more 3 ms but less 10 ms.
Rectifier	Status	Rectifier Non-Blocking Fault	02-050	Set when a non-blocking fault in rectifier stage is set.
Rectifier	Status	Rectifier fault	02-070	Set when CUSTOMER blocking fault flag is present. (Not yet defined)
Rectifier	Status	Rectifier Warning	02-071	Set when at least one customer warning is active (not yet defined).
Rectifier	Status	Rectifier Non-Blocking Fault	02-072	Set when a customer non-blocking fault in stage is set (not yet defined).
Rectifier	Status	Rectifier Stopped - Fault	02-092	—
Rectifier	Status	Rectifier Inhibited	02-093	Set when the rectifier pulse is inhibited due to DC overvoltage.
Rectifier	Status	Rectifier mains is out of tolerance	12-005	Mains failure notification without any delay.

Table 10 All Liebert® EXL™ S1 Alarms

Component	Type	Text Display	ID	Description
Battery	Alarm	Battery under voltage	24-012	The battery voltage is under the shutdown voltage by 5 points of P1513 <i>Shutdown Voltage Table</i> . This warning causes the inverter to stop. This warning will be displayed as long as the battery voltage is lower than the Inverter Restart Threshold.
Battery	Alarm	High battery temperature	24-015	Remote Battery Monitoring battery temperature user alarm (Temp. P1533.1 < T < P1533.2).
Battery	Alarm	Battery temperature out of range	24-016	RBM battery temperature is out of range $-10^{\circ}\text{C} < T < P\ 1533.1$ or $1533.2 < T < 40^{\circ}$.
Battery	Alarm	Temperature Probe Broken	24-017	RBM temperature probe is not responding (Temp. $T < 10^{\circ}\text{C}$ or $T > 50^{\circ}\text{C}$ or RBM Sensor Status [bit 3-2] = 11.
Battery	Alarm	Battery Switch Wiring Fault	24-056	Core only: Set when the RBM option is installed with Form C wiring and related cubicle breaker wiring fails.

Table 10 All Liebert® EXL™ S1 Alarms (continued)

Component	Type	Text Display	ID	Description
Battery	Alarm	Cubicle Battery Switch Open	24-063	Core and Monolithic. - CORE: set when an RBM option is installed. - Monolithic: set when IO Function 18 is enabled.
Battery	Alarm	Battery Is Not Connected	24-064	Battery is not connected - warning.
Battery	Alarm	Imminent End Of Autonomy - Volt	24-066	Set if P1590 = 2 or 3. The battery voltage is lower than the threshold defined by 5 points of P1513 <i>Shutdown Voltage Table</i> + P 1591 <i>Delta shutdown imminent</i> .
Battery	Alarm	Imminent End Of Autonomy - Time	24-067	Set if P1590 = 1 or 3. The autonomy is below the defined threshold P1117 <i>Battery stored energy time limit</i> .
Battery	Alarm	BCB Breaker Open	24-068	Enabled by Input Function 21 BCB. Battery Circuit Breaker (BCB) is open.
Battery	Alarm	Battery Breaker Open	24-072	One or more BIB boards report an open breaker.
Bypass	Alarm	Bypass Input Switch Open	21-012	Bypass input switch is open.
Bypass	Alarm	Bypass mains failure	21-013	Warning set after delay defined by P 110
Bypass	Alarm	Bypass in Overload Condition	21-014	—
Bypass	Alarm	Bypass disabled	21-016	<i>Bypass ON</i> command disabled (SW bypass inhibition to avoid DC capacitor overcurrent. Detected on DIC Inv. when DC link higher than $([\text{SQRT}2 * \text{Phase voltage RMS}] - 30\text{V})$, delay 0.4 seconds).
Bypass	Alarm	Bypass overtemperature	21-017	Set when inverter temp. $P 151.01 < T < P 151.02$.
Bypass	Alarm	Bypass mode not auto	21-018	Set when the Bypass Control CAN ID 04002300h is not AUTO. Normally set in <i>Power Circuit Test</i> page.
Bypass	Alarm	Parallel Bypass Failure	21-038	Set when the input <i>Bypass OK</i> is set.
Bypass	Alarm	Bypass Wrong Phase Rotation	21-083	Bypass input wrong phase rotation.
Charger/Booster	Alarm	Battery Not Connected	23-012	Set when $-100\text{V} < V_BATT1 < 100\text{V}$ (fix threshold). Control always active independently of battery breaker status.
Charger/Booster	Alarm	Reversed polarity	23-014	Set when $V_BATT1 < -100\text{V}$ (fix threshold). Control always active independently to Battery breaker status. Inhibits starting the battery charger.
Charger/Booster	Alarm	Buck-Booster DC Voltage Low	23-056	Booster inhibit when DC voltage $< P1135.i03$ (to be verified).
Charger/Booster	Alarm	Buck-Booster Overtemperature	23-057	Set when the temperature is greater than the P 1151 value (see Overload specification)
Charger/Booster	Alarm	Buck-Booster B Overtemperature	23-067	Set when the temperature is greater than the P 1151 value (see Overload specification)

Table 10 All Liebert® EXL™ S1 Alarms (continued)

Component	Type	Text Display	ID	Description
Charger/Booster	Alarm	DC Overvoltage	23-080	Set when the DC bus voltage crosses the maximum threshold of P1753.30 for P1753.31 time.
General	Alarm	System Power UP	00-023	—
General	Alarm	Commissioning / Test Mode	20-018	—
General	Alarm	System Maint. Bypass Switch Closed	20-019	—
General	Alarm	Synchronization system fault	20-022	—
General	Alarm	System shutdown	20-024	—
General	Alarm	The ID Card is missing	20-025	—
General	Alarm	Calibration is started	20-026	—
General	Alarm	Input Air High Temperature	20-027	—
General	Alarm	System Output Switch Open	20-031	—
General	Alarm	System Bypass Switch Closed	20-032	—
General	Alarm	Detected Cores Mismatch	20-127	—
General	Alarm	Communication Loss BIB	20-132	—
General	Alarm	AC Ground Fault	20-133	—
General	Alarm	Communication Loss MI Ph. U-A	20-153	—
General	Alarm	Communication Loss MI Ph. V-B	20-154	—
General	Alarm	Communication Loss MI Ph. W-C	20-155	—
General	Alarm	Communication Loss MI BB	20-156	—
General	Alarm	Motherboard Overtemperature	20-165	—
General	Alarm	PIB Overtemperature	20-166	—
General	Alarm	Cable Conduit Overtemperature	20-167	—
General	Alarm	MIB Overtemperature	20-168	—
General	Alarm	Duplicated Parallel Unit Id	20-169	—
General	Alarm	Parallel Unit Number Mismatch	20-170	—

Table 10 All Liebert® EXL™ S1 Alarms (continued)

Component	Type	Text Display	ID	Description
General	Alarm	Communication Loss MI-B Ph. U-A	20-206	—
General	Alarm	Communication Loss MI-B Ph. V-B	20-207	—
General	Alarm	Communication Loss MI-B Ph. W-C	20-208	—
General	Alarm	Communication Loss MI-B BB	20-209	—
General	Alarm	Fan Failure Phase U-A	20-210	—
General	Alarm	Fan Failure Phase V-B	20-211	—
General	Alarm	Fan Failure Phase W-C	20-212	—
General	Alarm	Fan Failure Buck-Booster	20-213	—
General	Alarm	Battery Switch Open - Do Not Close	20-214	—
General	Alarm	CPU Time Slice	20-215	—
General	Alarm	Fan Failure Static Switch	20-222	—
General	Alarm	Fan Failure Board Slot	20-223	—
General	Alarm	I/O Transformer Overtemperature	20-224	—
General	Alarm	DC Overvoltage	20-227	—
General	Alarm	Communication Loss PIB-S1	20-243	—
General	Alarm	Communication Loss PIB-S1	20-244	—
General	Alarm	Communication Loss PIB-S1- I2C	20-245	—
General	Alarm	Communication loss STS MICRO S1	20-299	—
General	Alarm	Maintenance Isolation Breaker Open	20-291	—
General	Alarm	Load Bank Breaker Closed	20-021	—
General	Alarm	Rectifier Feed Breaker Open	20-292	—
General	Alarm	Backfeed Disconnect Switch Open	20-293	—
Inverter	Alarm	Inverter DC Undervoltage	26-025	Inverter inhibit when DC voltage < P135.i04.
Inverter	Alarm	Inverter overload	26-026	RMS overload condition.

Table 10 All Liebert® EXL™ S1 Alarms (continued)

Component	Type	Text Display	ID	Description
Inverter	Alarm	The inverter is off	26-027	—
Inverter	Alarm	Inverter pending off command	26-028	—
Inverter	Alarm	Inverter overload	26-031	Set when the overload timeout has reached 100%. This triggers the request to transfer to bypass with default configuration.
Inverter	Alarm	Overtemperature Phase U-A	26-101	Set when Phase U temperature is greater than the value specified by P 151.
Inverter	Alarm	Overtemperature Phase V-B	26-102	Set when Phase V temperature is greater than the value specified by P 151.
Inverter	Alarm	Overtemperature Phase W-C	26-103	Set when Phase W temperature is greater than the value specified by P 151.
Inverter	Alarm	Overtemperature B Phase U-A	26-119	Set when Phase U temperature is greater than the value specified by P 151.
Inverter	Alarm	Overtemperature B Phase V-B	26-120	Set when Phase V temperature is greater than the value specified by P 151.
Inverter	Alarm	Overtemperature B Phase W-C	26-121	Set when Phase W temperature is greater than the value specified by P 151.
Inverter	Alarm	DC Overvoltage	26-137	Set when DC bus voltage crosses the maximum threshold P753.40 for P753.41 time.
Load	Alarm	Output Switch Open	27-009	The output breaker MOB is open.
Load	Alarm	Load is currently not supplied	27-010	Monolithic only: UPS is not supplying the load
Load	Alarm	Retransfer is inhibited	27-011	Load transfer to inverter inhibited due to overload (to be verified with overload specification).
MUN	Alarm	CAN Communication Loss	28-008	Set when CAN telegram are not received for 10 seconds. Reset when a general stage telegram is received.
MUN	Alarm	UPS Model cannot be identified	28-056	UPS model not detected.
Rectifier	Status	Rectifier is off	02-000	—
Rectifier	Alarm	Rectifier Input Switch Open	22-014	—
Rectifier	Alarm	Rectifier mains failure	22-015	Warning set after the delay defined by P1110.
Rectifier	Alarm	Wrong phase rotation	22-017	Input line phase rotation is incorrect.
Rectifier	Alarm	DC voltage low	22-018	DC link voltage under the threshold defined by P1135.2, causing PWM inhibition.
Rectifier	Alarm	Out of synchronization	22-020	During the rectifier running it causes the rectifier to stop temporarily.
Rectifier	Alarm	Peak Input Voltage	22-021	Mains voltage high peak detector trips when instantaneous voltage exceeded the limit defined by P 1140.i05.
Rectifier	Alarm	Overtemperature Phase U-A	22-061	Set when Phase U temperature is greater then P 1151 setting (Def = 80°C)

Table 10 All Liebert® EXL™ S1 Alarms (continued)

Component	Type	Text Display	ID	Description
Rectifier	Alarm	Overtemperature Phase V-B	22-062	Set when Phase V temperature is greater than P 1151 setting (Def = 80°C).
Rectifier	Alarm	Overtemperature Phase W-C	22-063	Set when Phase W temperature is greater than P 1151 setting (Def = 80°C).
Rectifier	Alarm	Overtemperature B Phase U-A	22-073	Set when Phase U temperature is greater than P 1151 setting (Def = 80°C).
Rectifier	Alarm	Overtemperature B Phase V-B	22-074	Set when Phase V temperature is greater than P 1151 setting (Def = 80°C).
Rectifier	Alarm	Overtemperature B Phase W-C	22-075	Set when Phase W temperature is greater than P 1151 setting (Def = 80°C).
Rectifier	Alarm	DC Overvoltage	22-102	Set when the rectifier detects DC bus voltage above threshold P1753.29.

Table 11 All EXL S1 Faults

Component	Type	Text Display	ID	Description
Battery	Fault	Battery Test Failure	34-023	—
Battery	Fault	Battery Overcurrent Fault	34-070	BCB Control algorithm has detected an overcurrent condition. BCB Open command issued.
Battery	Fault	Battery Ground Fault	34-071	Enabled by Input Function 22 BCB GND Fault. Battery ground fault detector is tripped.
Bypass	Fault	E.P.O.	31-020	—
Bypass	Fault	Bypass hardware failure	31-021	Output voltage is out of tolerance and the bypass input is within tolerance (SW detected fault monitoring output signals).
Bypass	Fault	Bypass hardware failure	31-022	Set when the bypass static switch board is not installed (i.e., bypass voltage < 170 V).
Bypass	Fault	Backfeed protection	31-023	Back feed fault has been detected. Enabled by P142.
Bypass	Fault	Overload	31-026	—
Bypass	Fault	Bypass Failure During Line Support	31-027	—
Bypass	Fault	Parallel Failure During Support	31-028	—
Bypass	Fault	Overtemperature	31-036	Bypass heat sink overtemperature.
Bypass	Fault	Back feed power supply failure	31-102	
Charger/Booster	Fault	Charger Temperature high	33-018	Set when temperature is greater than P 1152 value (see Overload specification)
Charger/Booster	Fault	Temperature Probe Broken	33-019	Buck booster temperature sensor fault SW detected; based on M.I. value outside sensor limit interval -15°C < T < +150°C for 60 seconds (P 1780.6).
Charger/Booster	Fault	Charger Temperature high	33-020	Booster/Charger filter overtemperature. (M.I. XP31 pin 1-6).
Charger/Booster	Fault	Charger Desaturation	33-021	Charger desaturation.
Charger/Booster	Fault	Charger Redundant Voltage error	33-022	If the absolute value of the difference between primary and secondary battery voltage acquisition is greater than a predefined threshold, a fault is issued and the Booster/charger is turned Off because the voltage measurement is corrupted.
Charger/Booster	Fault	Charger DC Bus	33-023	Set when DC voltage +/- is greater than the P753.i15 threshold.
Charger/Booster	Fault	E.P.O.	33-035	—
Charger/Booster	Fault	Charger Voltage Out of Limit	33-025	The charger is switched Off due to an overvoltage on the battery. The time until switch Off depends on the overvoltage value.
Charger/Booster	Fault	Buck-Booster Overcurrent	33-058	The current limitation control has tripped the booster.

Table 11 All EXL S1 Faults (continued)

Component	Type	Text Display	ID	Description
Charger/Booster	Fault	Booster Desaturation	33-059	Booster desaturation.
Charger/Booster	Fault	Booster and Charger Desaturation	33-060	Charger and booster desaturation.
Charger/Booster	Fault	Charger Temperature High	33-070	—
Charger/Booster	Fault	Charger Temperature High	33-071	—
Charger/Booster	Fault	Temp Probe Module B Broken	33-072	—
Charger/Booster	Fault	Charger Desaturation	33-073	—
Charger/Booster	Fault	Booster B Desaturation	33-074	—
Charger/Booster	Fault	Booster and Charger B Desaturation	33-075	—
Charger/Booster	Fault	Fuse Blown Pos Pole	33-076	Positive line buck booster fuse is blown.
Charger/Booster	Fault	Fuse Blown Neg Pole	33-077	Negative line buck booster fuse is blown.
Charger/Booster	Fault	Fuse Blown Module B Pos Pole	33-078	Positive B line buck booster fuse blown.
Charger/Booster	Fault	Fuse Blown Module B Neg Pole	33-079	Negative B line buck booster fuse is blown.
General	Fault	Incorrect power class	30-036	—
General	Fault	DSP Signal Hardware Failure	30-049	—
General	Fault	DSP Signal Hardware Failure	30-049	—
General	Fault	DSP Signal Hardware Failure	30-049	—
General	Fault	DSAVE active	30-053	—
General	Fault	Ambient Sensor Broken	30-059	—
General	Fault	Parallel cable missing	30-071	—
General	Fault	Parallel timeout	30-078	—
General	Fault	Parallel Identification Error	30-079	—
General	Fault	Parallel impossible	30-080	—
General	Fault	E.P.O.	30-145	—
General	Fault	DSP ADC Serial Comm Failure	30-163	—

Table 11 All EXL S1 Faults (continued)

Component	Type	Text Display	ID	Description
General	Fault	DSP Signal Software Failure	30-164	—
General	Fault	Fast Desaturation	30-178	—
General	Fault	High Ambient Temperature	30-202	—
General	Fault	Input Contact Wiring Error	30-203	—
General	Fault	SMPS DC Supply Failure	30-216	—
General	Fault	SMPS Single AC Supply Failure	30-217	—
General	Fault	SMPS Double AC Supply Failure	30-218	—
General	Fault	Auxiliary Power Supply output switch	30-301	—
Inverter	Fault	E.P.O.	36-034	—
Inverter	Fault	Overtemperature	36-035	Set when the Phase U temperature is greater than the value specified by P 152.
Inverter	Fault	Overtemperature	36-036	Set when the Phase V temperature is greater than the value specified by P 152.
Inverter	Fault	Overtemperature	36-038	Set when the Phase W temperature is greater than the value specified by P 152
Inverter	Fault	Overload	36-044	Set if the inverter stops for DC bus undervoltage four times in 5 minutes.
Inverter	Fault	Overload	36-045	Set when: 1. Current limit condition occurs at inverter start while the output voltage is ramping up. 2. Current limit condition lasts more than 200 ms 3. Current limit condition set again after 2nd Dynamic line Support
Inverter	Fault	Overload	36-046	Set when the RMS overload counter reaches the end.
Inverter	Fault	DC Overvoltage	36-047	Set when DC voltage +/- is greater than P753.i15 threshold
Inverter	Fault	Output out of tolerance	36-048	Set when • output voltage filtered is above V Nominal + (P106.1 + P107.1 + P118.0 + P105.0) OR • output voltage fast is above V Nominal + (P106.2 + P118.8 + P105.0)
Inverter	Fault	Output out of tolerance	36-049	Set when • output voltage filtered is below V Nominal - (P106.1 + P107.1) OR • output voltage fast is below V Nominal - (P106.2)
Inverter	Fault	Output out of tolerance	36-050	—

Table 11 All EXL S1 Faults (continued)

Component	Type	Text Display	ID	Description
Inverter	Fault	Output out of tolerance	36-051	—
Inverter	Fault	Output out of tolerance	36-052	—
Inverter	Fault	Output out of tolerance	36-053	—
Inverter	Fault	Output out of tolerance	36-054	—
Inverter	Fault	Inverter DC/AC desaturation	36-055	Desaturation Phase U (Group A)
Inverter	Fault	Inverter DC/AC desaturation	36-056	Desaturation Phase V (Group A)
Inverter	Fault	Inverter DC/AC desaturation	36-057	Desaturation Phase W (Group A)
Inverter	Fault	DC Bus undervoltage	36-059	if (Udc < P135.i04) AND • (rectifier mains within tolerance) AND • (rectifier input breaker closed) AND • (NO Test Mode) AND • (NO HW-Init) AND • (60-second delay expired) Udc is DC Bus Voltage.
Inverter	Fault	Fuse Blown Phase U-A	36-080	Set by M.I. Phase U XP21 pin 7 -8. Indicates output fuse Phase U open.
Inverter	Fault	Fuse Blown Phase V-B	36-081	Set by M.I. Phase V XP21 pin 7 -8. Indicates output fuse Phase V open.
Inverter	Fault	Fuse Blown Phase W-C	36-082	Set by M.I. Phase W XP21 pin 7 -8. Indicates output fuse Phase W open.
Inverter	Fault	Temp Probe Broken Phase U-A	36-104	Inverter temperature sensor fault SW detected; based on M.I. value outside sensor limit interval -15°C < T < +150°C for 60 seconds (P 780.23).
Inverter	Fault	Temp Probe Broken Phase V-B	36-105	Inverter temperature sensor fault SW detected; based on M.I. value outside sensor limit interval -15°C < T < +150°C for 60 seconds (P 780.23).
Inverter	Fault	Temp Probe Broken Phase W-C	36-106	Inverter temperature sensor fault SW detected; based on M.I. value outside sensor limit interval -15°C < T < +150°C for 60 seconds (P 780.23).
Inverter	Fault	Overtemperature Choke Ph. U-A	36-107	Inverter filter overtemperature. Any of Thermal Switch “ALA” (M.I. XP31 Pin 4-9) active.
Inverter	Fault	Overtemperature Choke Ph. V-B	36-108	Inverter filter overtemperature. Any of Thermal Switch “ALA” (M.I. XP31 Pin 4-9) active
Inverter	Fault	Overtemperature Choke Ph. W-C	36-109	Inverter filter over-temperature. Any of Thermal Switch “ALA” (M.I. XP31 Pin 4-9) active
Inverter	Fault	Fuse Blown B Phase U-A	36-122	Set by M.I. Phase U-B XP21 pin 7 -8. Indicates output fuse Phase U is open.
Inverter	Fault	Fuse Blown B Phase V-B	36-123	Set by M.I. Phase V-B XP21 pin 7 -8. Indicates output fuse Phase V is open.
Inverter	Fault	Fuse Blown B Phase W-C	36-124	Set by M.I. Phase W-B XP21 pin 7 -8. Indicates output fuse Phase W is open.

Table 11 All EXL S1 Faults (continued)

Component	Type	Text Display	ID	Description
Inverter	Fault	Overtemperature	36-125	Inverter B overtemperature fault Phase U-A
Inverter	Fault	Overtemperature	36-126	Inverter B overtemperature fault Phase V-B
Inverter	Fault	Overtemperature	36-127	Inverter B overtemperature fault Phase W-C
Inverter	Fault	Inverter DC/AC desaturation	36-128	Desaturation Phase U group B
Inverter	Fault	Inverter DC/AC desaturation	36-129	Desaturation Phase V group B
Inverter	Fault	Inverter DC/AC desaturation	36-130	Desaturation Phase W group B
Inverter	Fault	Temp Probe B Broken Phase U-A	36-131	Inverter temperature sensor fault SW detected; based on M.I. value outside sensor limit interval -15°C < T < +150°C for 60 seconds (P 780.23).
Inverter	Fault	Temp Probe B Broken Phase V-B	36-132	Inverter temperature sensor fault SW detected; based on M.I. value outside sensor limit interval -15°C < T < +150°C for 60 seconds (P 780.23).
Inverter	Fault	Temp Probe B Broken Phase W-C	36-133	Inverter temperature sensor fault SW detected; based on M.I. value outside sensor limit interval -15°C < T < +150°C for 60 seconds (P 780.23).
Inverter	Fault	Overtemperature Choke B Ph. U-A	36-134	Inverter filter overtemperature. Any of Thermal Switch "ALA" (M.I. XP31 Pin 4-9) active.
Inverter	Fault	Overtemperature Choke B Ph. V-B	36-135	Inverter filter overtemperature. Any of Thermal Switch "ALA" (M.I. XP31 Pin 4-9) active.
Inverter	Fault	Overtemperature Choke B Ph. W-C	36-136	Inverter filter overtemperature. Any of Thermal Switch "ALA" (M.I. XP31 Pin 4-9) active.
Rectifier	Fault	E.P.O.	32-024	Depending on application: A02 stops rectifier
Rectifier	Fault	Rectifier precharge failure	32-025	DC bus under threshold P135.101
Rectifier	Fault	Rectifier precharge failure	32-026	DC bus under threshold P135.102
Rectifier	Fault	Rectifier precharge failure	32-027	KM1 feedback not OK.
Rectifier	Fault	Rectifier Temperature fault	32-028	Rectifier Phase U temperature is greater then P 1152 setting (def = 95°C).
Rectifier	Fault	Rectifier Temperature fault	32-029	Rectifier Phase V temperature is greater then P 1152 setting (def = 95°C).
Rectifier	Fault	Rectifier Temperature fault	32-030	Rectifier Phase W temperature is greater then P 1152 setting (def = 95°C).
Rectifier	Fault	Rectifier DC Overvoltage	32-031	DC overvoltage.
Rectifier	Fault	Rectifier desaturation failure	32-032	Desaturation Phase U (group A)
Rectifier	Fault	Rectifier desaturation failure	32-033	Desaturation Phase V (group A)
Rectifier	Fault	Rectifier desaturation failure	32-034	Desaturation Phase W (group A)

Table 11 All EXL S1 Faults (continued)

Component	Type	Text Display	ID	Description
Rectifier	Fault	Rectifier synchronization failure	32-035	During startup, synchronization with the mains is not achieved in XXX sec.
Rectifier	Fault	Rectifier Overcurrent failure	32-036	Set when input current reaches the limit defined by P 1740.11 and last more 30 ms.
Rectifier	Fault	Fuse Blown Phase U-A	32-055	Set by M.I. Phase U XP21 pin 1-2. Indicates input fuse Phase U open.
Rectifier	Fault	Fuse Blown Phase V-B	32-056	Set by M.I. Phase V XP21 pin 1-2. Indicates input fuse Phase V open.
Rectifier	Fault	Fuse Blown Phase W-C	32-057	Set by M.I. Phase W XP21 pin 1-2. Indicates input fuse Phase W open.
Rectifier	Fault	Temp Probe Broken Phase U-A	32-064	Rectifier temperature sensor fault SW detected; based on M.I. value outside sensor limit interval $-15^{\circ}\text{C} < T < +150^{\circ}\text{C}$ for 60 seconds (P 1780.6).
Rectifier	Fault	Temp Probe Broken Phase V-B	32-065	Rectifier temperature sensor fault SW detected; based on M.I. value outside sensor limit interval $-15^{\circ}\text{C} < T < +150^{\circ}\text{C}$ for 60 seconds (P 1780.6).
Rectifier	Fault	Temp Probe Broken Phase W-C	32-066	Rectifier temperature sensor fault SW detected; based on M.I. value outside sensor limit interval $-15^{\circ}\text{C} < T < +150^{\circ}\text{C}$ for 60 seconds (P 1780.6).
Rectifier	Fault	Overtemperature Choke Ph. U-A	32-067	Rectifier filter overtemperature. Any of Thermal Switch "ALA" (M.I. XP31 Pin 1-6) active
Rectifier	Fault	Overtemperature Choke Ph. V-B	32-068	Inverter filter overtemperature. Any of Thermal Switch "ALA" (M.I. XP31 Pin 1-6) active
Rectifier	Fault	Overtemperature Choke Ph. W-C	32-069	Inverter filter overtemperature. Any of Thermal Switch "ALA" (M.I. XP31 Pin 1-6) is active.
Rectifier	Fault	Fuse Blown B Phase U-A	32-076	Set by M.I. Phase U-B XP21 Pin 1-2. Indicates input fuse Phase U is open.
Rectifier	Fault	Fuse Blown B Phase V-B	32-077	Set by M.I. Phase V-B XP21 Pin 1-2. Indicates input fuse Phase V is open.
Rectifier	Fault	Fuse Blown B Phase W-C	32-078	Set by M.I. Phase W-B XP21 Pin 1-2. Indicates input fuse Phase W is open.
Rectifier	Fault	Rectifier Temperature fault	32-079	Rectifier Phase U temperature is greater than P 1152 setting (def = 95°C).
Rectifier	Fault	Rectifier Temperature fault	32-080	Rectifier Phase V temperature is greater than P 1152 setting (def = 95°C).
Rectifier	Fault	Rectifier Temperature fault	32-081	Rectifier Phase W temperature is greater than P 1152 setting (def = 95°C).
Rectifier	Fault	Rectifier Desaturation Failure	32-082	Desaturation Phase U Group B.
Rectifier	Fault	Rectifier Desaturation Failure	32-083	Desaturation Phase V Group B.
Rectifier	Fault	Rectifier Desaturation Failure	32-084	Desaturation Phase W Group B.
Rectifier	Fault	Temp Probe B Broken Phase U-A	32-085	Rectifier temperature sensor fault SW has been detected; based on M.I. value outside sensor limit interval $-15^{\circ}\text{C} < T < +150^{\circ}\text{C}$ for 60 seconds (P 1780.6)

Table 11 All EXL S1 Faults (continued)

Component	Type	Text Display	ID	Description
Rectifier	Fault	Temp Probe B Broken Phase V-B	32-086	Rectifier temperature sensor fault SW detected; based on M.I. value outside sensor limit interval -15°C < T < +150°C for 60 seconds (P 1780.6)
Rectifier	Fault	Temp Probe B Broken Phase W-C	32-087	Rectifier temperature sensor fault SW detected; based on M.I. value outside sensor limit interval -15°C < T < +150°C for 60 seconds (P 1780.6)
Rectifier	Fault	Overtemperature Choke B Ph. U-A	32-088	Rectifier filter overtemperature. Any of the Thermal Switch “ALA” (M.I. XP31 pin 1-6) active
Rectifier	Fault	Overtemperature Choke B Ph. V-B	32-089	Inverter filter overtemperature. Any of the Thermal Switch “ALA” (M.I. XP31 pin 1-6) is active.
Rectifier	Fault	Overtemperature Choke B Ph. W-C	32-090	Inverter filter overtemperature. Any of the Thermal Switch “ALA” (M.I. XP31 pin 1-6) is active.

Notes



