



# Liebert® PSI5 Lithium-Ion

## Installer/User Guide

500 VA to 3000 VA Short Depth 120 V

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### **Technical Support Site**

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

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

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# 1 Important Safety Information

**IMPORTANT!** This manual contains important safety instructions that must be followed during the installation and maintenance of the UPS and batteries. Read this manual thoroughly and the safety and regulatory information, available at <https://www.vertiv.com/ComplianceRegulatoryInfo>, before attempting to install, connect to supply, or operate this UPS.



**CAUTION:** To reduce the risk of fire, connect only to a circuit provided with 20 A maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70 and the Canadian Electrical Code, Part I, C22.1.

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## 2 Product Description

The Liebert® PSI5 is a line-interactive UPS designed for IT applications such as network closets and small data centers. Available in 1U, 2U and 3U Rack/Tower form factors. It provides reliable power protection for servers, critical nodes, network workstations, large network peripherals, network routers, bridges, hubs and other electronic equipment. The optional Liebert Network Communication Card makes advanced monitoring and control available.

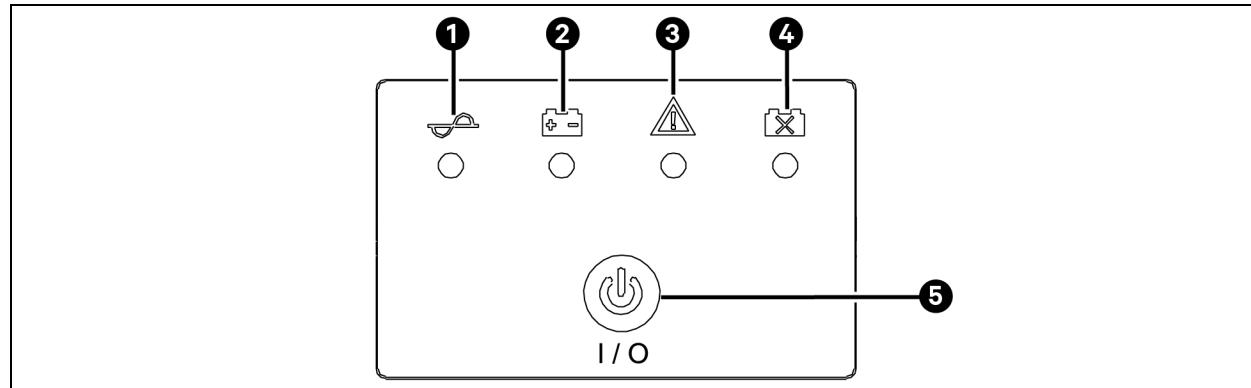
### 2.1 Available Model

Table 2.1 Available Model

Model Number	Nominal Power Rating (120V Input)	Battery Type	Form Factor	EBC
PSI5-500SRT1ULI	500VA/450 W	Li (Lithium-Ion)	1U Rack/Tower	NA
PSI5-800SRT2ULI	800VA/720W	Li (Lithium-Ion)	2U Rack/Tower	NA
PSI5-1100SRT2ULI	1100VA/990W	Li (Lithium-Ion)	2U Rack/Tower	NA
PSI5-1500SRT2UXLI	1500VA/1350W	Li (Lithium-Ion)	2U Rack/Tower	VEBCLI-38VSRT1U
PSI5-3000SRT120LI	2880VA/ 2700W	Li (Lithium-Ion)	3U Rack/Tower	NA

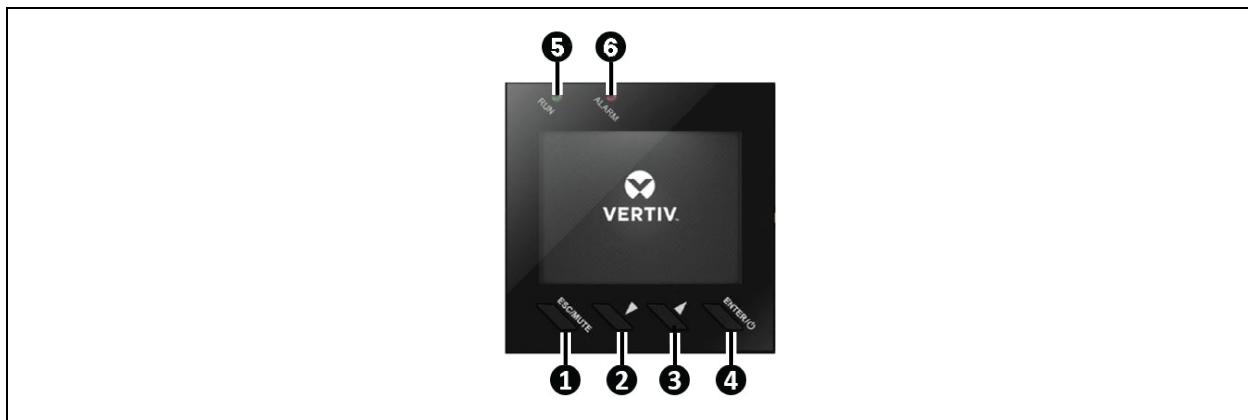
### 2.2 Front Panel

Figure 2.1 Front Panel of PSI5-500SRT1ULI Model



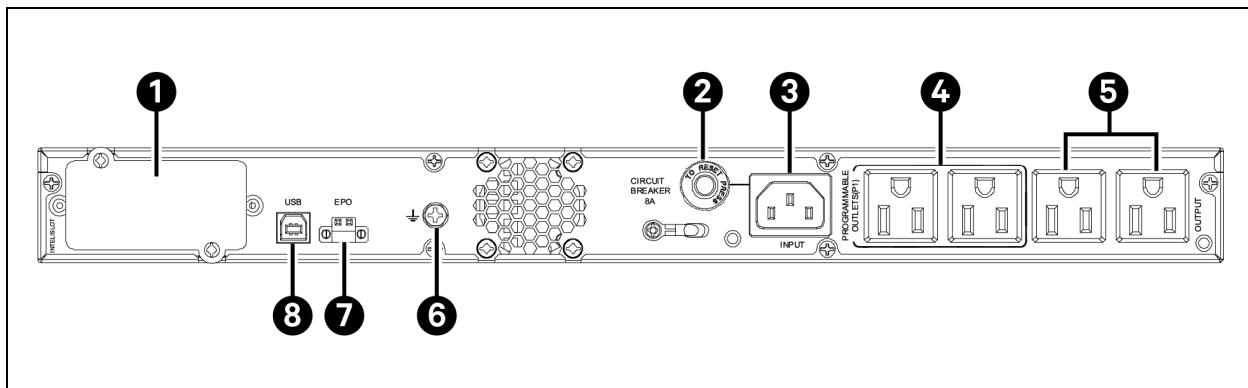
Item	Description	Item	Description
1	Line indicator (LED Green)	4	Battery status (LED Red)
2	On battery indicator (LED Yellow)	5	ON/Off Button
3	Alarm indicator (LED Red)		

NOTE: For detailed descriptions of the LCD display see [Controls](#) on page 19.

**Figure 2.2 Controls and Display**

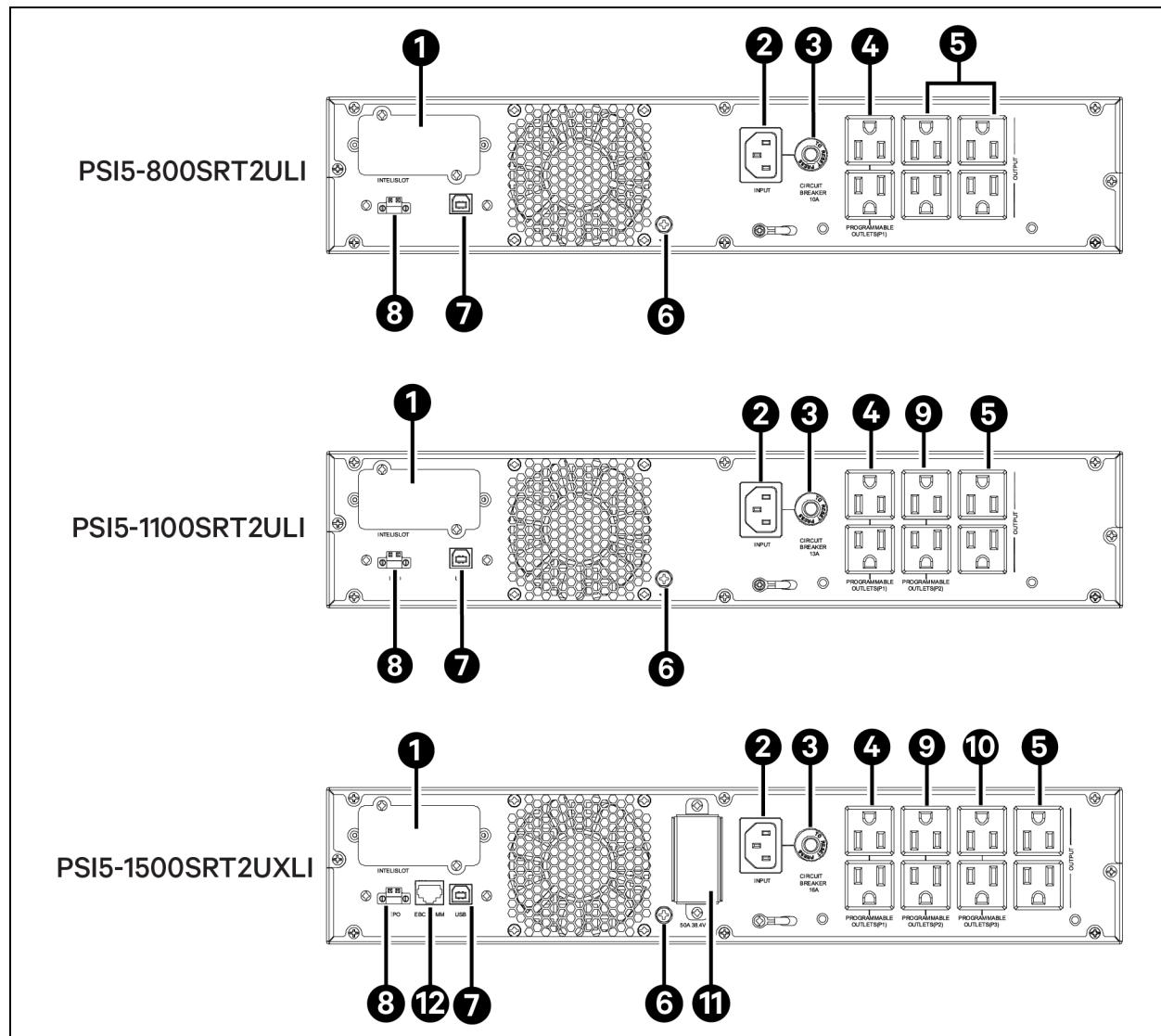
Item	Description	Item	Description
1	ESC/MUTE button	4	ENTER/OK button
2	DOWN/LEFT button	5	RUN indicator (green)
3	UP/RIGHT button	6	ALARM indicator (red)

## 2.3 Rear Panel

**Figure 2.3 Rear Panel—PSI5-500SRT1ULI**

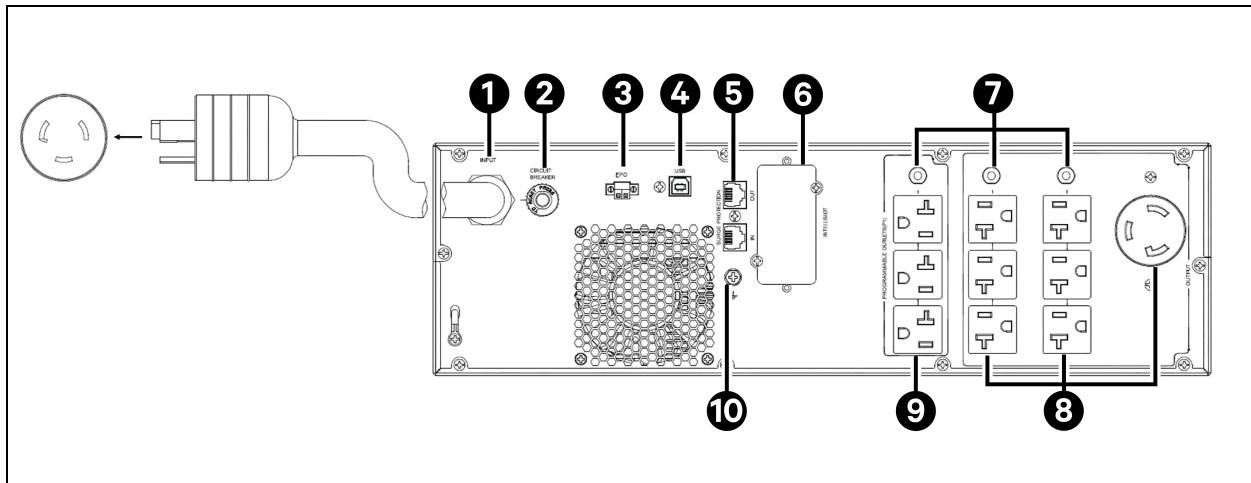
Item	Description	Item	Description
1	Vertiv™ Liebert® IntelliSlot™ port	5	Non-programmable receptacles
2	Input circuit breaker	6	Grounding screw
3	AC Input	7	Emergency power off (EPO) connector
4	Programmable receptacles	8	USB Port

Figure 2.4 Rear Panel—PSI5-800SRT2ULI, PSI5-1100SRT2ULI, and PSI5-1500SRT2UXLI



Item	Description	Item	Description
1	Vertiv™ Liebert® IntelliSlot™ port	7	USB port
2	AC input	8	Emergency power off (EPO) connector
3	Input circuit breaker	9	Programmable receptacles P2
4	Programmable receptacles P1	10	Programmable receptacles P3
5	Non-programmable receptacles	11	External battery power connector (1500VA model only)
6	Grounding screw	12	External battery communication connector (1500VA model only)

Figure 2.5 Rear Panel—PSI5-3000SRT120LI



Item	Description	Item	Description
1	AC input	6	Vertiv™ Liebert® IntelliSlot™ port
2	Input circuit breaker	7	Output circuit breakers
3	Emergency power off (EPO) connector	8	Non-programmable receptacles
4	USB communication port	9	Programmable receptacles
5	Network/fax/modem surge protection input/output	10	Ground screw

## 2.4 UPS States and Operating Modes

Figure 2.6 below shows the UPS operating principle. Table 2.2 below describes the functions of the major components in the UPS.

**NOTE:** Figure 2.6 below, is one example of basic operation for models: **PSI5-500SRT1ULI**, **PSI5-800SRT2ULI**, **PSI5-1100SRT2ULI** and **PSI5-1500SRT2UXLI**.

Figure 2.6 UPS Operating Principle

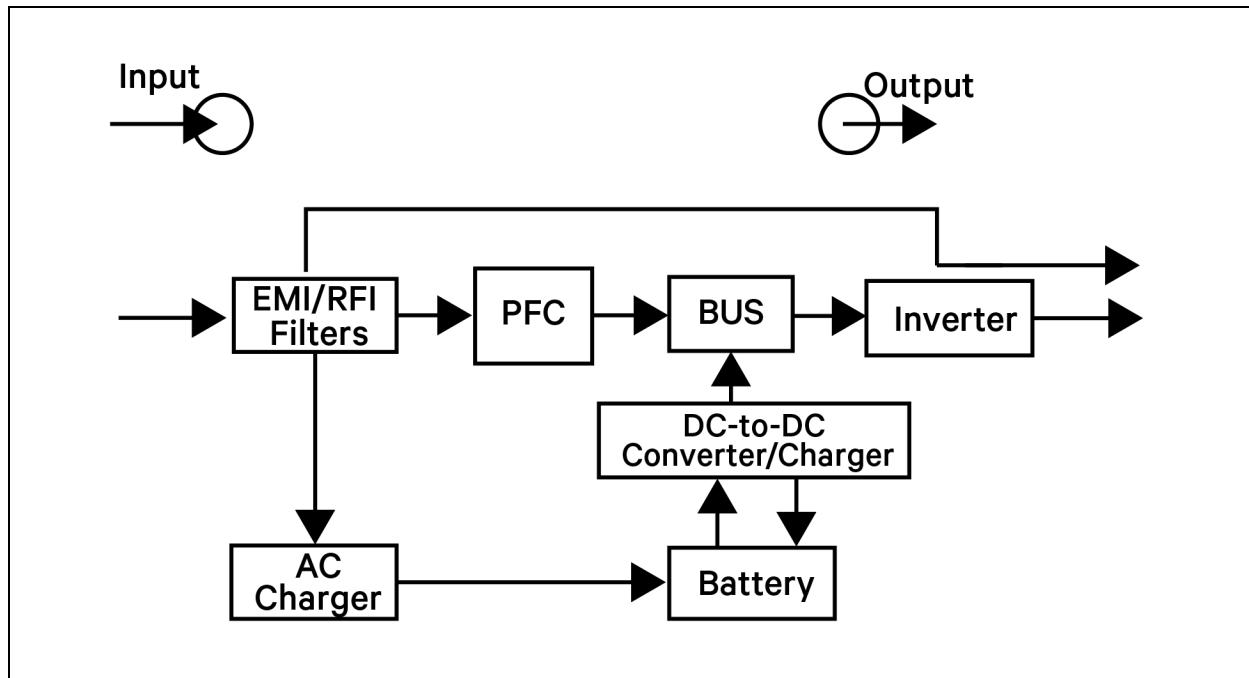


Table 2.2 Major Components

Item	Component	Operation/Function
EMI/RFI Filters	Transient Voltage Surge Suppression (TVSS) and EMI/RFI Filters	Provide surge protection. Filter electromagnetic interference (EMI) and radio frequency interference (RFI). Minimize surges or interference present in the utility power and protect devices connected on the same branch as the UPS.
AC charger	AC to DC Battery Charger	When the UPS is connected to an external power distribution system, the equipment circuit protection device must be in compliance with national and/or local legal regulations.
Batteries	Swapable Batteries	Lithium batteries see the <b>Table 7.1</b> on page 45 for more details.
DC to DC Charger/Converter	Battery charger and DC to DC booster	Raises the DC voltage from the battery to the optimum operating voltage for the inverter. This allows the inverter to operate continuously at its optimum efficiency and voltage, thus increasing reliability. Charge the batteries from DC BUS is not available for PSI5-500SRT1ULI.

**Table 2.2 Major Components (continued)**

Item	Component	Operation/Function
PFC	Rectifier/Power Factor Correction (PFC) Circuit	In all the operation, converts utility AC power to regulated DC power for use by the DC to DC charger and in out of defined range of input power, converts utility AC power to regulated DC power for use by the inverter and while ensuring that the wave shape of the input current used by the UPS is near ideal. Extracting this sine-wave input current ensures efficient use of utility power and reduces reflected harmonic distortion making cleaner power available to devices that are not protected by the UPS.
Inverter	DC to AC Inverter	In normal operation inverter is off and input power directly connected to output power and in unlikely event operation, inverts the DC output of the PFC circuit into precise, regulated sine-wave AC power. When utility power fails, the inverter receives DC power from the DC to DC converter. Except normal operation mode, the UPS inverter remains on-line, generating clean, precise, regulated AC output power.
BUS	DC Voltage BUS	DC voltage input by PFC, battery booster and output is DC battery charger and DC to AC inverter.

## 2.4.1 Standby Mode

The UPS input is plugged into a stable, nominal source. The UPS is turned off other than the battery charger.

## 2.4.2 On/Normal Mode

The UPS input is plugged into a stable, nominal source, and the UPS is turned off other than the battery charger.

## 2.4.3 On/Automatic Voltage Regulation (AVR)/Boost Mode

The UPS input is plugged in, but the voltage source is somewhat low (brown out). The UPS automatically corrects the low voltage and allows the outlets to be on with the normal, expected voltage. The internal batteries are charging.

## 2.4.4 On/Automatic Voltage Regulation (AVR)/Buck Mode

The UPS input is plugged in, but the voltage source is abnormally high. The UPS automatically corrects the high voltage and allows the outlets to be on with the normal, expected voltage. The internal batteries are charging.

## 2.4.5 On/Battery Mode

The UPS input is not plugged in, or the voltage or frequency source has become extremely low or high and unusable. The UPS automatically switches to the internal battery to provide normal, usable voltage to the outlets.

## 2.4.6 Fault Mode

An error or fault condition has occurred. The outlets are turned off.

## 2.4.7 Battery Self Test Mode

The UPS will perform a battery self test during the following instances:

- At startup turning the UPS on.
- Automatically every 8 weeks as a self check.
- When selecting Start/Stop battery manual test under the Control submenu.  
During the battery self test the load remains protected.

## 3 Installation

### 3.1 What's Included

Table 3.1 UPS Kit Components

PSI5-500SRT1ULI	PSI5-800SRT2ULI, PSI5-1100SRT2ULI, PSI5-1500SRT2UXLI	PSI5-3000SRT120LI
UPS accessory box includes: <ul style="list-style-type: none"> <li>Quick installation guide</li> <li>Safety and regulatory statement</li> <li>2 x UPS 2 post rack ears</li> <li>10 x Rack ear or tower stand screws (M4 x 8 mm)</li> <li>4 x Rack mount screws (M6 x 12 mm)</li> <li>USB type A to B cable</li> <li>2 x Tower stand</li> <li>4 x Cage nuts</li> <li>Power cord</li> </ul>	UPS accessory box includes: <ul style="list-style-type: none"> <li>Quick installation guide</li> <li>Safety and regulatory statement</li> <li>2 x UPS rack ears</li> <li>8 x Rack ear screws (M4 x 8 mm)</li> <li>USB type A to B cable</li> <li>4 x Tower feet</li> <li>4 x Tower feet screws (M4 x 8 mm)</li> <li>2 Post rails</li> <li>8 x Rail screws (M6 x 12 mm)</li> <li>8 x Cage nuts</li> <li>Power cord</li> </ul>	UPS accessory box includes: <ul style="list-style-type: none"> <li>Quick installation guide</li> <li>Safety and regulatory statement</li> <li>2 x UPS rack ears</li> <li>8 x Rack ear screws (M4 x 8 mm)</li> <li>USB type A to B cable</li> <li>4 x Tower feet</li> <li>8 x Tower feet screws (M4 x 8 mm)</li> <li>4 x Tower feet extenders</li> </ul>
2 Post rail slide kit box includes: <ul style="list-style-type: none"> <li>2 Post rails</li> <li>12 x Rail kit screws (12-24 x ¾")</li> <li>8 x Washers (M6)</li> </ul>		

### 3.2 Unpacking and Inspection

Unpack the UPS and conduct the following checks:

- Inspect the UPS for shipping damage. If any shipping damage is found, report it to the carrier and your local dealer or your Vertiv representative immediately.
- Check the accessories included in packaging list. If there is any discrepancy, contact your local dealer or your Vertiv representative immediately.

### 3.3 Pre-installation Preparation

#### 3.3.1 Installation Environment

Unpack the UPS and conduct the following checks:

- Install the UPS indoors in a controlled environment, where it cannot be accidentally turned off. The installation environment should meet the criteria as listed in [Specifications](#) on page 45.
- Confirm the UPS is installed in an area with unrestricted air flow around the unit, away from water, flammable liquids, gases, corrosives, and conductive contaminants. Avoid direct sunlight.
- The utility power outlet should be nearby and easily accessible.

**NOTE: Operating the UPS in temperatures above 25 °C (77 °F) reduces battery life.**

### 3.3.2 Installation Clearances

Maintain at least 4 inches (100 mm) clearance in the front and rear. Do not obstruct the air inlets on the front panel and rear panel. Blocking the air inlets reduces ventilation and heat dissipation, shortening the service life of the UPS.

## 3.4 Installing the UPS

### 3.4.1 1U Model

The 1U UPS may be installed in a tower or rack configuration. Determine the configuration that meets your application needs, refer to **Figure 3.1** below for tower installation or **Figure 3.2** on the facing page for rack mount installation.

**Figure 3.1** Tower Installation

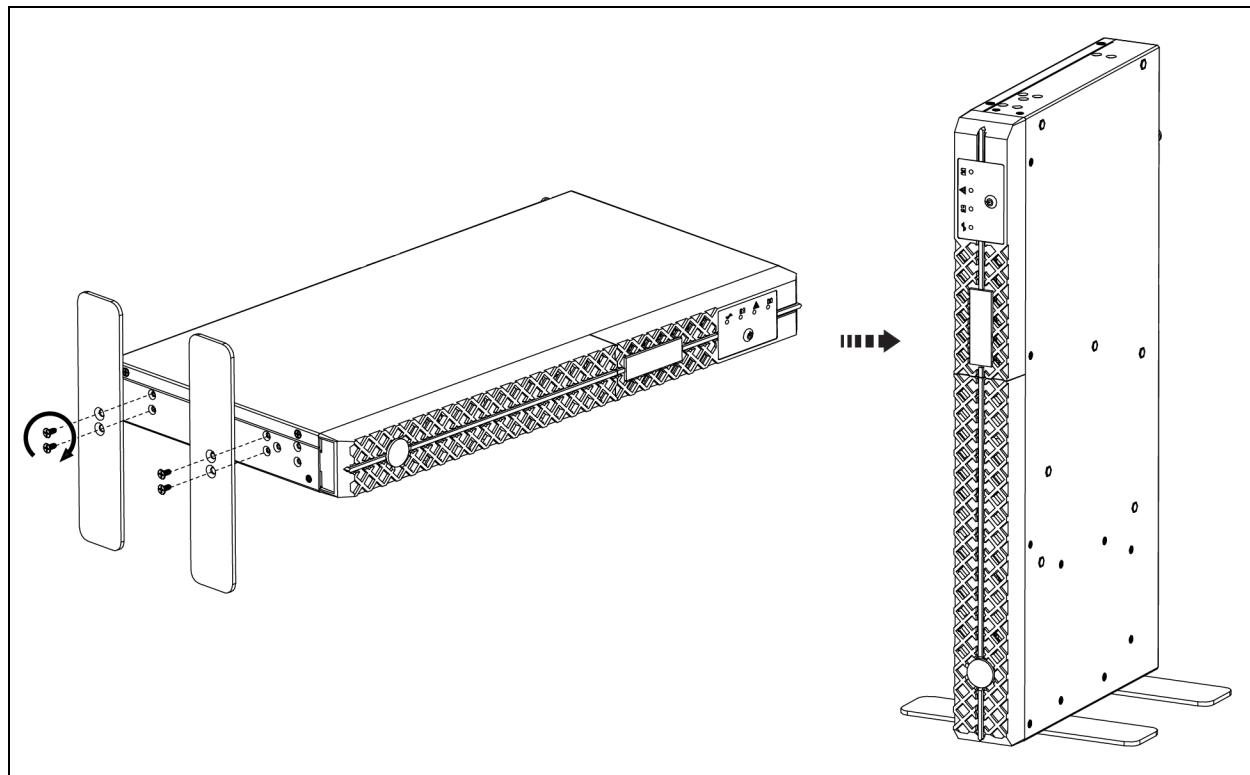
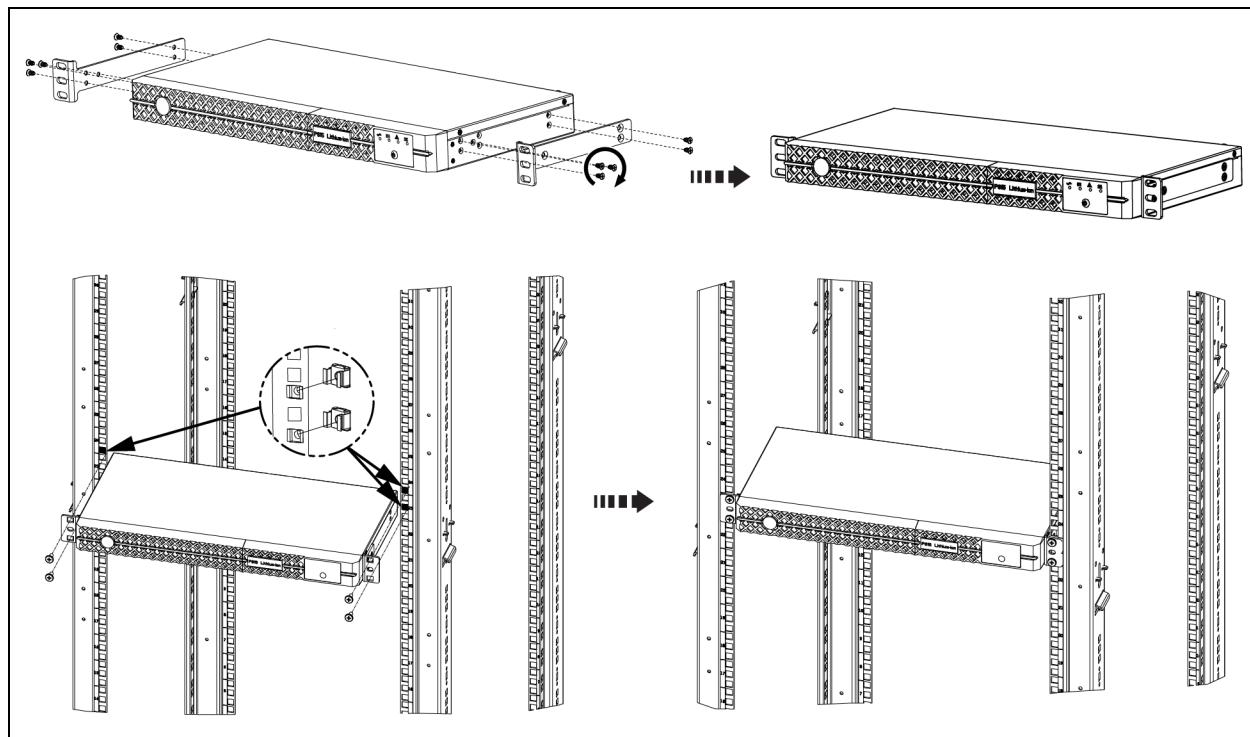


Figure 3.2 Rack Installation



### 3.4.2 2U and 3U Models

The 2U and 3U UPS may be installed in a tower or rack configuration. Determine the configuration that meets your application needs, refer to **Figure 3.3** below for tower installation or **Figure 3.4** on the facing page for rack mount installation.

**Figure 3.3 Tower Installation**

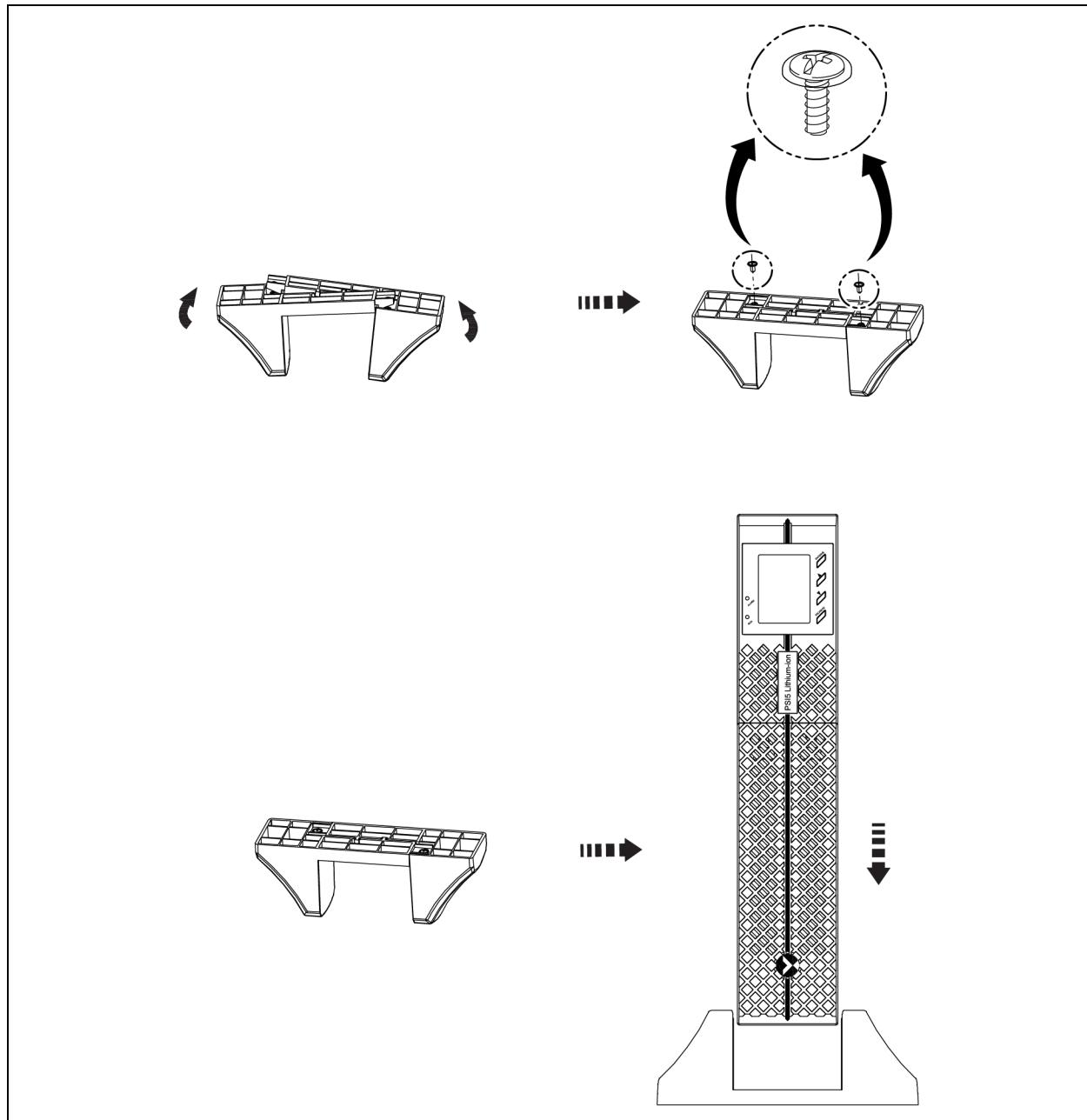
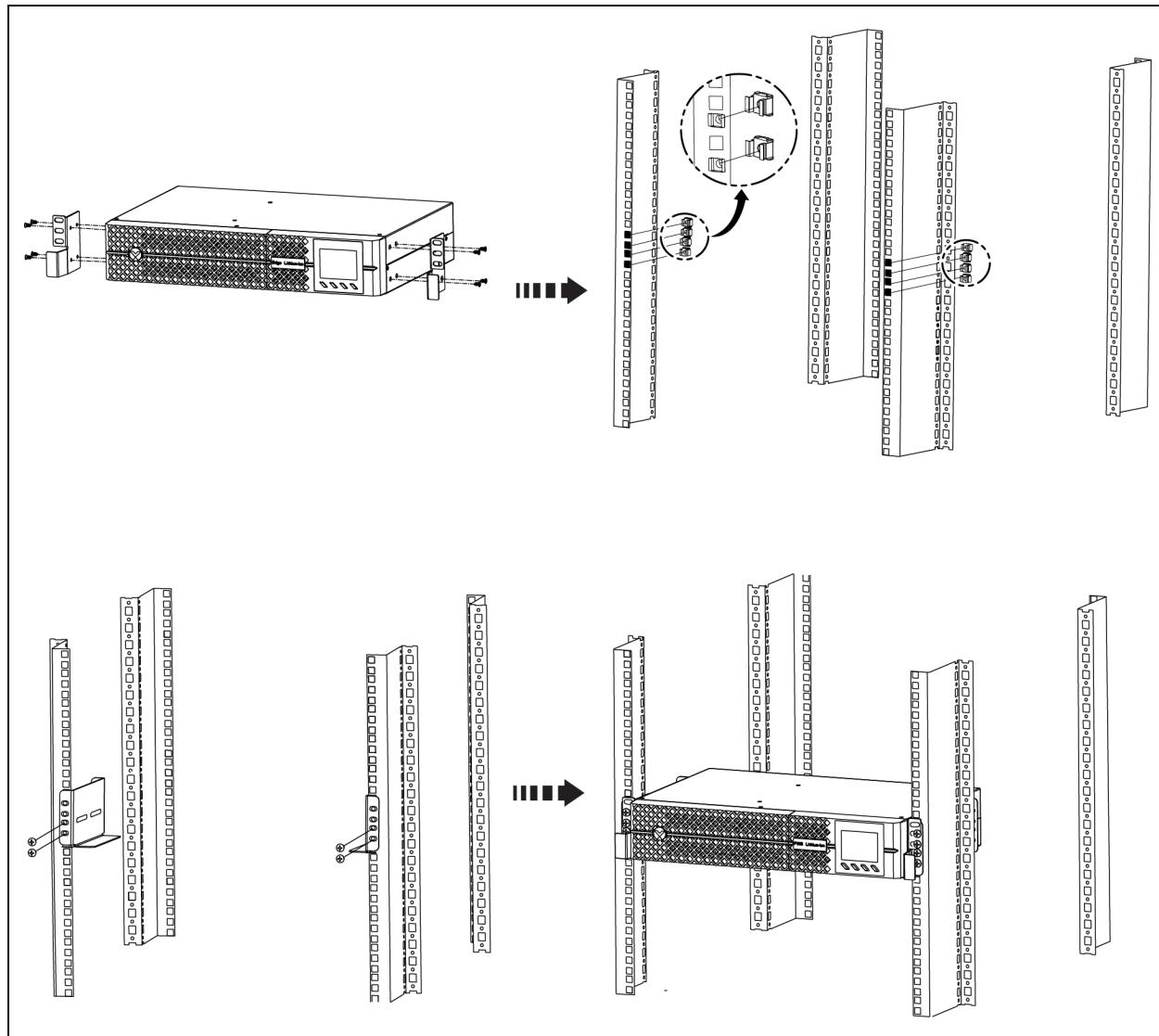


Figure 3.4 Rack Installation



### 3.4.3 External Battery Cabinet VEBCLI-38VSRT1U Installation for Model PSI5-1500SRT2UXLI

**NOTE:** The PSI5-1500SRT2UXLI can support up to 5 extended battery cabinets in parallel.

Figure 3.5 Tower Installation

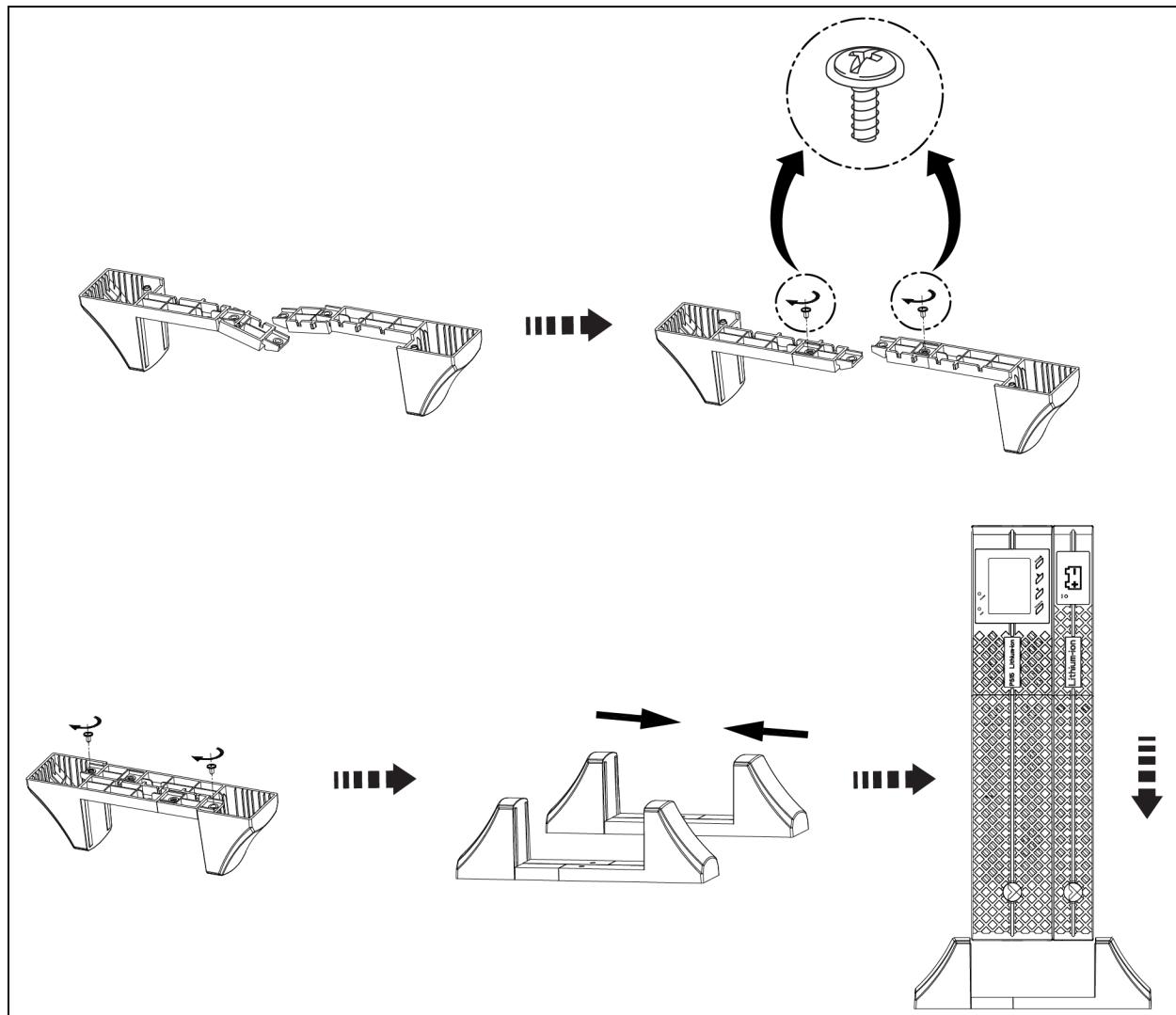
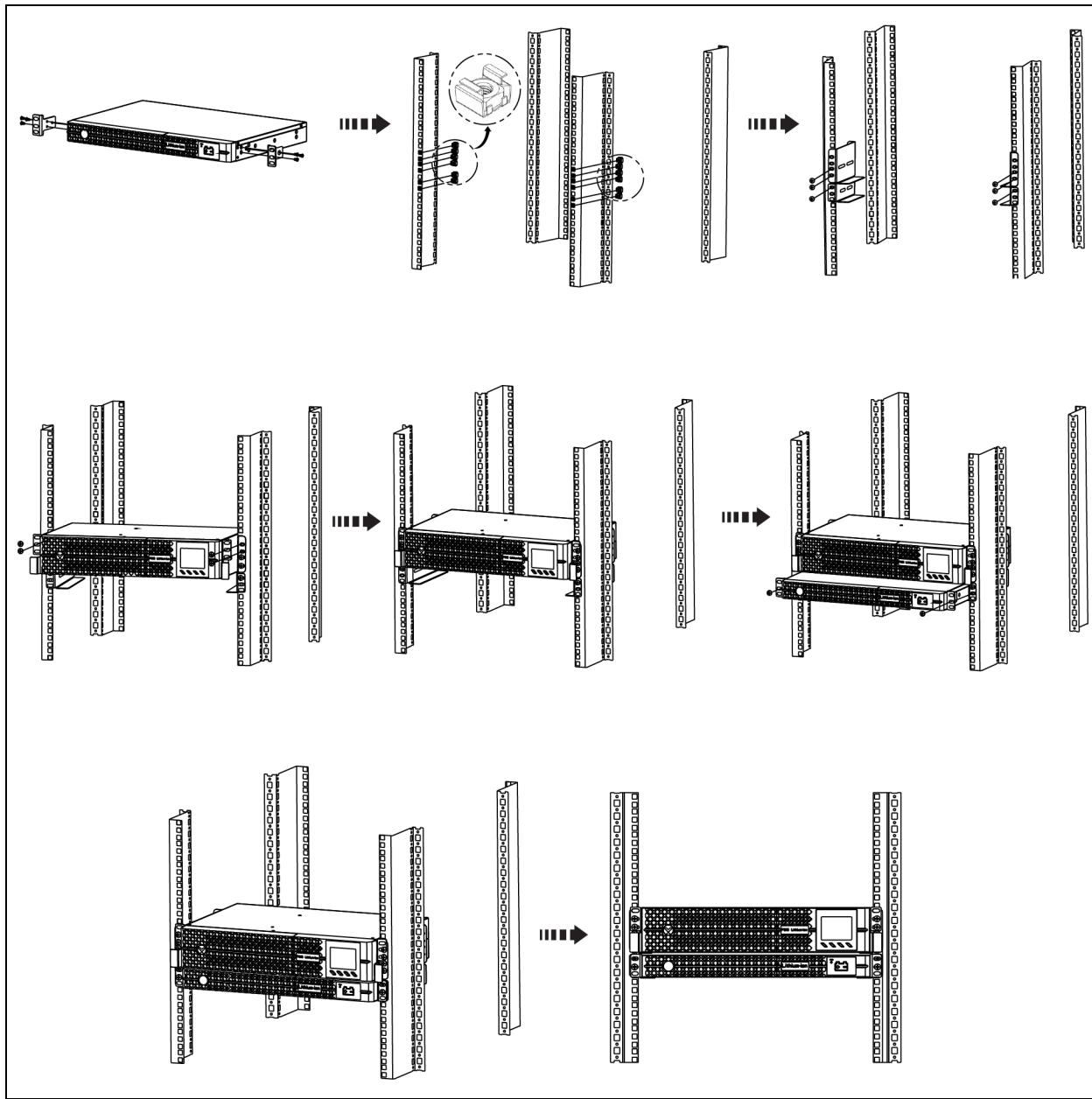


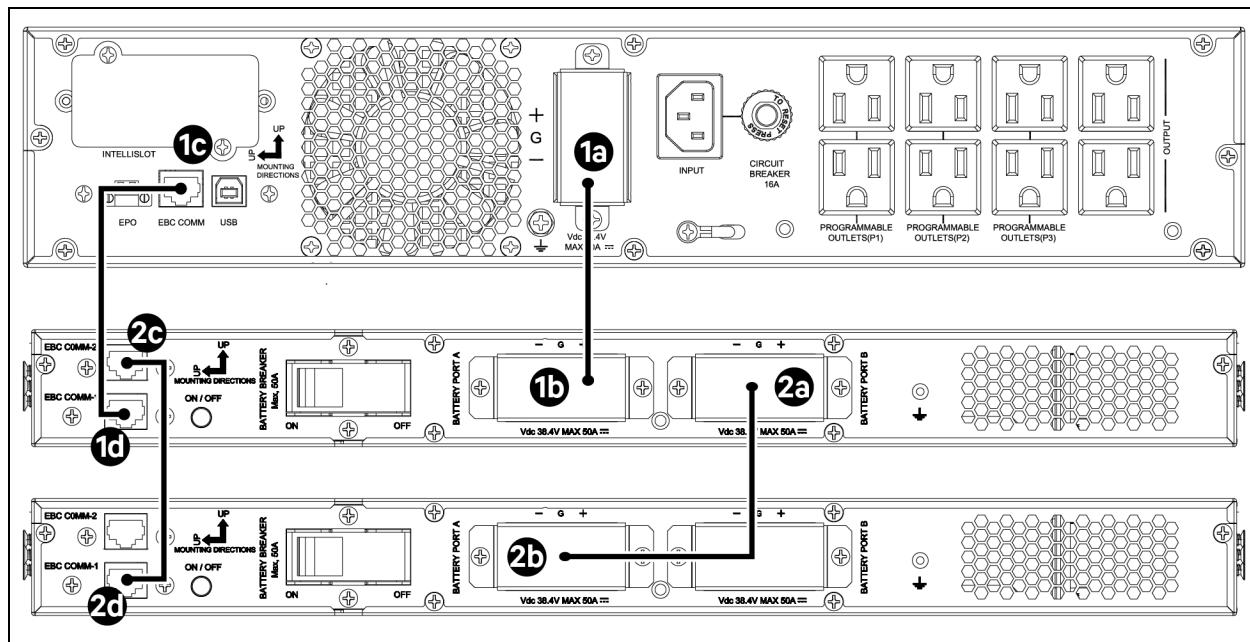
Figure 3.6 Rack Installation



#### To connect the Extended Battery Cabinet (EBC):

1. Verify that the EBC breaker is in the Off position.
2. Connect EBC power cable (included in the package) to the UPS (1a) and EBC (1b) of the EBC. Connect one end of a communication cable to UPS port (1c) and the other end to EBC COM port (1d).
3. If connecting more than one external battery, connect EBC Power cable to port (2a) of first EBC and (2b) of second EBC. Connect one end of a communication cable to the COM port of the first EBC (2c) and the other end to the COM port of the second EBC (2d).
4. Repeat step 3 for each additional battery cabinet.

Figure 3.7 Connection of Extended Battery Cabinet (for 1500 VA model only)



### 3.5 Connecting Loads

The UPS has non-programmable and programmable outlets. Plug your critical equipment into the non-programmable outlets and your less critical equipment or equipment that required remotely reboot into the programmable outlets.

### 3.6 Network and USB Connectivity

This product is designed and intended to be deployed and operated in a physically secure and network firewall protected location. Vertiv recommends a review of the physical security and operating environment of the unit. Since an attacker or disgruntled user can cause serious disruption, below are some recommended best practices that include, but are not limited to:

- Restrict access to areas, racks, and units with encrypted card RFID/badges, unique multi-factor passcode authentication for access, man traps, and biometric scanners for physical access to the equipment.
- Trusted and background checked security guards with 24x7x365 physical presence and written logs to help document and note physical access to a data center, building, rack, etc.
- Restrict physical access to telecommunications equipment and network cabling. Physical access to the telecommunications lines and network cabling should be restricted to protect against attempts to intercept or sabotage communications. Best practices include use of metal conduits for the network cabling running between equipment cabinets.
- All USB, RJ45, and/or any other physical ports should be restricted on the units.
- Do not connect removable media (e.g., USB devices, SD cards) for any operation (e.g., firmware upgrade, configuration change, or boot application change) unless the origin of media is known and trusted. Before connecting any portable device through a USB port or SD card slot, scan the device for malware and viruses.

### 3.6.1 Network Communication Card Connection (Optional)

Advanced monitoring and simple control of the Vertiv™ Liebert® PSI5 can be done with the use of a Vertiv™ Liebert® IntelliSlot™ RDU120 card. Visit [www.vertiv.com/intellislot](http://www.vertiv.com/intellislot) for additional information.

To install an Liebert® IntelliSlot™ card:

1. Remove the screws from the slot cover plate and remove the plate.
2. Insert the card into the slot, and secure with the screws that held the cover plate.

To make connections to the card, refer to the Installer/User Guide for the appropriate IntelliSlot card available at [www.vertiv.com](http://www.vertiv.com).

Vertiv™ Environet™ Connect may be used with a network communication card to help improve efficiency, protect valuable critical equipment and increases visibility of your UPSs. See [UPS Management Software \(Optional\)](#) below for more information.

### 3.6.2 USB Communication Connection (Optional)

Direct monitoring of the Liebert® PSI5 and unattended controlled shutdown of your computer in case of a power failure can be done using the Vertiv™ Power Assist software via the USB port. See Section 17 for more information.

### 3.6.3 UPS Management Software (Optional)

Vertiv offers three UPS management software packages:

- Vertiv™ Power Insight software provides UPS management and graceful unattended system shutdown in the event of an extended power outage. Power Insight requires a network card. Visit [www.vertiv.com/powerinsight](http://www.vertiv.com/powerinsight) for a free download of the software and additional information.
- Vertiv™ Environet Connect software provides extra features for managing several UPS at once. Environet Connect requires a network card. Visit [www.vertiv.com/environetconnect](http://www.vertiv.com/environetconnect) for additional information.
- Vertiv™ Power Assist is an easy to use management and shutdown software package. Power Assist connects locally to the UPS via a USB port. Visit [www.vertiv.com/powerassist](http://www.vertiv.com/powerassist) for a free download of the software and additional information.

### 3.6.4 Network Protection Connection (Available on PSI5-3000SRT120LI)

Connect a network, fax, or modem to the network/fax/modem surge protection ports on the rear panel for protection from electrical surges to your computer or telephone network.

## 3.7 Emergency Power Off (EPO) Connection

To comply with national and local wiring codes and regulations, the EPO connector internally disconnects all power sources to equipment connected to the UPS output. The default operation is "active open" which means you must remove the factory installed jumper and connect to external contacts that are normally closed, but open during a power-off event. The logic may be reversed in the Settings. If you do not use the EPO connector, leave the factory installed jumper in place and the default EPO settings.

## 3.8 Connecting AC Input

Ensure that all the loads are first powered off. Connect to an input power supply/wall outlet that is properly protected by a circuit breaker in accordance with national and local electrical codes. The input receptacle must be grounded. We recommend installing an upstream circuit breaker of the same series as the input circuit breaker of the Vertiv™ Liebert® PSI5.

**Table 3.2** below lists the specifications of the input circuit breaker on the rear panel by UPS model.

**Table 3.2 Input Circuit Breaker Specification**

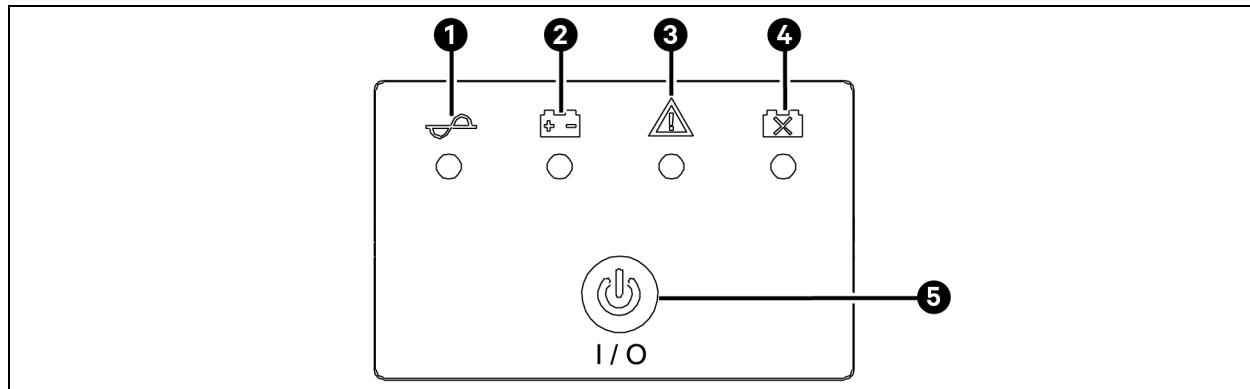
Model	Rated Circuit Breaker
PSI5-500SRT1ULI	
PSI5-800SRT2ULI	20 A
PSI5-1100SRT2ULI	
PSI5-1500SRT2UXLI	
PSI5-3000SRT120LI	30 A

**NOTE: While every precaution has been taken to ensure that the battery is in good condition, we recommend allowing the UPS to be plugged into AC input and to charge the battery for at least 2 hours prior to providing backup time protection for any utility power abnormality.**

# 4 Operations

## 4.1 Controls

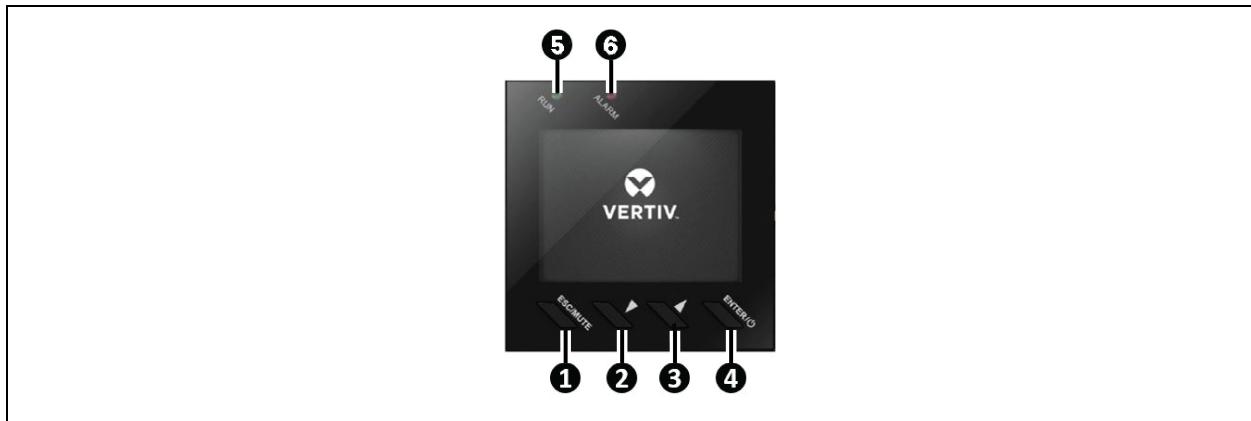
Figure 4.1 Front Panel of PSI5-500SRT1ULI Model



Item	Description
1	Line indicator (LED Green) <ul style="list-style-type: none"> <li>Blinking: UPS is on but the UPS output is off. (Line standby)</li> <li>On: UPS is on but the UPS output is on. (Line mode)</li> <li>Off: UPS is off or alarm forced to drop the UPS output.</li> </ul>
2	Battery indicator (LED Yellow) <ul style="list-style-type: none"> <li>Blinking (Battery standby): UPS is operating on battery and UPS output is off.</li> <li>On (Battery mode): UPS is operating on battery and UPS output is on.</li> <li>Off: UPS operating by input power or UPS is off.</li> </ul>
3	Alarm indicator (LED Red) <ul style="list-style-type: none"> <li>Blinking: Alarm occurs. (if Alarm indicator and Line indicator blinking together its Site Fault error)</li> <li>On: Fault occurs.</li> <li>Off: UPS operating normally, or UPS is off.</li> </ul>
4	Battery status (LED Red) <ul style="list-style-type: none"> <li>Blinking: Battery low.</li> <li>On: Battery fault.</li> <li>Off: UPS operating normally, or UPS is off.</li> </ul>
5	ON/Off Button <ul style="list-style-type: none"> <li>Turn UPS on (Cold start): When UPS input power is not available, press and hold the button for 2 seconds to power it on using the battery.</li> <li>Turn UPS output on (Line mode): When UPS is on press and hold for 5 seconds to turn on the UPS output.</li> <li>Turn UPS output off (Line standby): When UPS is in Line mode (green LED is on) press and hold for 5 seconds to turn off the output of UPS (Line standby).</li> <li>Mute the current event or alarm: Press and hold for 1 second.</li> <li>Start Battery test: Press and hold for 3 seconds.</li> </ul>

**NOTE: To power off the PSI5-500SRT1ULI, switch to *Line Standby* mode and disconnect the input power. The UPS will automatically shut down after 30 seconds.**

**Figure 4.2 Front Panel of 800 VA - 3000 VA Models**



Item	Function	Description
1	ESC/MUTE	Mute the alarm: Press and hold this button for at least 2 seconds to mute an active alarm. Esc Key: Press this button to exit from menu or cancel the setting.
2	DOWN/LEFT	Press this button to select the lower or left item in the menu, next page in the screen, or decrease the number in the setting.
3	UP/RIGHT	Press this button to select the upper or right item in the menu, previous page in the screen, or increase the number in setting.
4	ENTER / ⏪	Enter: Press this button to enter the main menu from the flow screen, or use this button to select an item when not in the flow screen. Turn on/off the UPS: Press this button for at least 3 seconds to turn the UPS on (with confirmation dialog if not a cold start) when the UPS is off, or turn the UPS off (with confirmation dialog) when the UPS is on.
5	RUN indicator (green)	On: No fault or alarm Off: A fault or alarm has occurred
6	ALARM indicator (red)	On: A fault has occurred Blinking: An alarm has occurred Off: No fault or alarm

**NOTE: Press any button quickly to wake the display.**

## 4.2 LCD Menu and Screens

The LCD user interface lets you browse the UPS status, view operating parameters, customize settings, control operation, and view alarm/event history. Use the control buttons to navigate through the menu, and view statuses or select settings in the screens.

### 4.2.1 Start Up Guidance

On first startup or after factory reset, the UPS will display Startup Guidance screens allowing the user to set the system language, date, time, output voltage, and output frequency configurations.

To navigate the Startup Guidance:

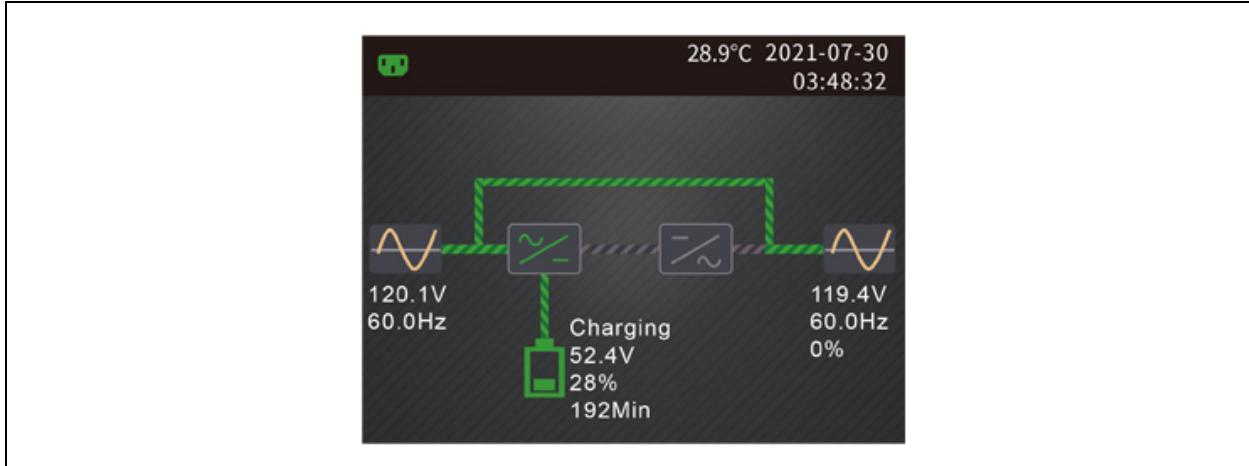
1. Use the arrow buttons to move the cursor between the Startup settings, Previous, and Next selections.
2. To change a Startup setting:
  - a. Navigate to the setting using the arrow buttons.
  - b. Press the **Enter** button to select the highlighted setting.
  - c. Use the arrow buttons to alternate between setting options.
  - d. Press the **Enter** button to select the setting option or press the **ESC** button to cancel.
3. To navigate to the previous or next page:
  - a. Navigate to the Previous or Next selections.
  - b. Press the **Enter** button to select Previous or Next.

### 4.2.2 Default Screen and Flow Screens

At startup, the UPS executes a system test and displays the Vertiv logo screen for about 10 seconds.



After the test completes, an overview screen shows status information, the active (green) power path, and the non-working power path (gray).

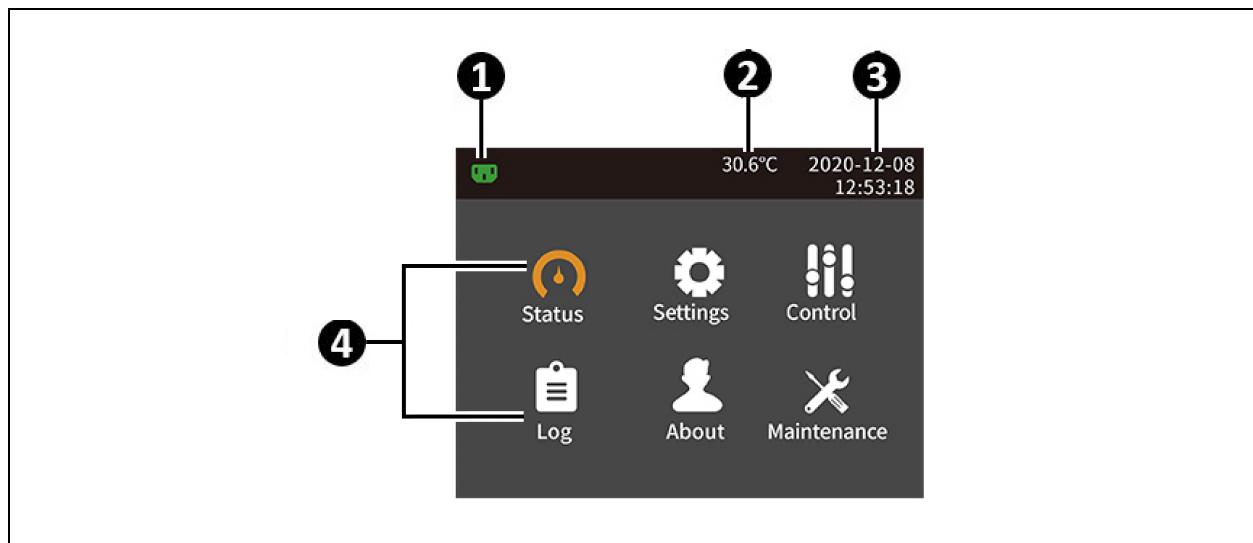


**NOTE: While the UPS is operating, the LCD will dim and display a screen saver if there is no active alarm or user interaction for two minutes. After 5 minutes, the screen will turn off. Any button press will wake it. If an alarm or fault occurs or if any button is pressed, the UPS flow screen displays.**



### 4.2.3 Main Menu Screen

To access the main menu, press **Enter** while at the flow screen. Use the arrow buttons to select the sub-menu options, and press **Enter** to open the sub menu. Press **ESC** to return to the flow screen.



Item	Description
1	Programmable outlet indicator (green when on, gray when off)
2	Ambient temperature
3	Date and time
4	Status, Settings, Control, Log, About, Maintenance sub menus (see following sections)

#### 4.2.4 Status Screen

The status screen displays voltages, currents, frequencies, and parameters on individual tabs for input, battery, output, and load status.

To view the UPS status information:

1. At the main menu, select the Status icon, and press **Enter**.
2. Use the arrow buttons to move the cursor left/right and select a tab, then press **Enter** to display the status information for the selected tab.
3. Use the arrow keys to move the cursor through status information for the selected tab. Press **ESC** to return to the tab selection. Press **ESC** again to return to the main menu.

##### **Input Status Options**

###### **L-N voltage (V)**

Line-neutral voltage of input power.

###### **L-N current (A)**

Line-neutral current of input power.

###### **Frequency (Hz)**

Frequency of input power.

###### **Energy (kWh)**

Input power.

###### **Input blackout count**

The number times that the input voltage was lost or dropped below 60 VAC (black out) Resets to 0 when UPS is powered down.

###### **Input brownout count**

The number of times that the input voltage was too low to support the load and the UPS was forced to switch to battery power (brown out) Resets to 0 when the UPS is powered down.

##### **Battery Status Options**

###### **Battery status**

Current battery state: charging, discharging, or full.

###### **Battery voltage (V)**

Voltage of battery power.

###### **Battery current (A)**

Current of battery power.

###### **Backup time (Min)**

Amount of backup time remaining for battery.

**Remaining capacity (%)**

Percent of battery capacity remaining.

**Discharge count**

Number of discharges for the battery module.

**Total discharge time (Min)**

Total number of minutes the battery has discharged.

**Battery running time (Day)**

Number of days the batteries have been in operation.

**Battery replacement time**

Date of last time battery was replaced.

**Output Status Options****L-N voltage (V)**

Line-neutral voltage of output power.

**L-N Current (A)**

Line-neutral current of output power.

**Frequency (Hz)**

Frequency of output power.

**Energy (kWh)**

Cumulative output power.

**Load Status Options****Sout (kVA)**

Apparent output power to connected loads.

**Pout (kW)**

Active output power to connected loads.

**Power factor**

Power factor of output power.

**Load percent (%)**

Percentage of recent power rated to output power.

#### 4.2.5 Settings Submenu

The settings screen consists of tabs that list UPS settings for configuration and adjusting parameters with tabs for:

- Input
- Output
- Battery
- Monitor
- System
- Outlet1 (Programmable Outlets)
- Outlet2 (Programmable Outlets if its available)
- Outlet3 (Programmable Outlets if its available)

To modify UPS settings:

1. At the main menu, select the Settings icon, and press **Enter**.
2. When prompted Enter the Settings password. Use the arrow buttons to increase the digit or change to the next digit. Press **Enter** when finished. The default Settings password is 111111 (six ones).
3. Use the arrow buttons to move the cursor left/right and select a tab. Then press **Enter** to navigate the option list for the selected tab.
4. Use the arrow buttons to move the cursor through the options. Press **Enter** to modify the selected option. Use the arrow buttons to change the setting. Press **Enter** to confirm the selection or **ESC** to cancel the selection.
5. Press **ESC** to exit from the option list and return to the tab selection. Press **ESC** again to return to the main menu.

**NOTE: Parameter settings are password protected, for details see [Editing Display and Operation Settings](#) on page 36.**

##### Input Parameter Options

###### Input Waveform sensitivity

Input waveform sensitivity setting.

- High (Default) (4 to 6 ms typical)
- Medium (6 to 8 ms typical)
- Low (8 to 10 ms typical)

##### Output Parameter Options

###### Voltage selection

Nominal voltage setting. Set the nominal system voltage to match the input voltage of the UPS

- 100 V
- 110 V
- 115 V
- 120 V (default)
- 125 V

**Frequency selection**

Selects the frequency of the output:

- Auto : Automatically detects frequency of utility/mains power and sets the nominal frequency to match (default)
- 50 Hz
- 60 Hz

**Battery Parameter Options****Low battery time**

Sounds an alarm when the selected amount of time remains for the UPS to operate in *Battery* mode.

- 2 - 30 minutes (default of 2 minutes)

**Battery periodic test enable**

The UPS can periodically self test the battery every 8 weeks.

- Enable (default)
- Disable

**Battery reminder (months)**

Sets the length of time after the batteries are replaced to generate an alarm to remind the user to replace the batteries

- Disable (default)
- 1 - 72 months

**Discharge protect time**

Sets the maximum discharge time for the UPS. The default setting is the maximum, allowing the battery to fully discharge. This can be set lower to limit the amount of time the UPS will provide battery protection after which it will shut down. If the discharge time remaining on the battery is lower than the setting value, it will have no effect.

- Disable (default)
- 1 - 4320 minutes (default of 4320 minutes)

**Temp compensation**

When enabled, the UPS will adjust the charging voltage of the batteries based on temperature in order to preserve battery life. It will increase the voltage if the UPS is operating in a cold environment. It will decrease the voltage if the UPS is operating in a warm environment.

- Enable
- Disable (default)

**Replace battery**

Activates newly installed battery packs after replacement and reset all battery statistics for new battery packs.

- Provides a confirmation window with Yes/No options to confirm replacement of batteries.

## Monitor Settings Options

### Language

Select display language. The options are:

**Table 4.1 Language Availability**

Language	PSI5-800SRT2ULI	PSI5-1100SRT2ULI	PSI5-1500SRT2UXLI	PSI5-3000SRT120LI
English (default)	YES	YES	YES	YES
Español (Latin Spanish)	YES	YES	YES	NA
Français (French Canadian)	YES	YES	YES	NA
日本語 (Japanese)	YES	YES	YES	NA

### Date

Select the current date for the UPS display, YYYY-MM-DD.

### Time

Select the current time for the UPS display, HH:MM:SS.

### Audible alarm

If enabled, the UPS will beep when an alarm is generated. If disabled, it will be silent.

- Enable (default)
- Disable

### Change settings password

Opens the dialog to change the password to access and update the UPS parameter settings.

### Display orientation

Selects the orientation of the display for use in rack or tower configuration. Options are:

- Auto rotate—Automatically rotates based on the detected orientation of the UPS (default).
- Horizontal—Screen rotated for rack use.
- Vertical—Screen rotated for tower use.

## System Parameter Options

### Auto restart

Allows the automatic restart of the UPS when input power is restored after a complete shutdown of the UPS system.

- Enable—The UPS will restart automatically when the input power is restored after a complete shut down (default)
- Disable—The UPS will not restart automatically and must be manually turned back on.

**Auto restart delay**

Length of time to elapse before an automatic restart after input power is restored

- 0 - 999 seconds (default 0 seconds)

**Start with no battery**

Allows the UPS to start when the battery has reached the end of discharge (EOD). This can be used to turn on the UPS and power the attached load without battery protection when utility power has been restored after the battery was fully depleted. It works in conjunction with the Auto restart setting above.

- Enable (with Auto restart enable)—The UPS will power the load with no user intervention when mains power returns after the battery has been fully depleted
- Enable (with Auto restart disabled)—The UPS will startup and allow the user to turn on the output when power returns after the battery has been fully depleted
- Disable—The UPS cannot start with a fully depleted battery (default)

**Remote control**

Allows the UPS to be controlled remotely via the Vertiv SNMP card.

- Enable (default)
- Disable

**IT system compatibility**

When this option is enabled, the “Input phase reversed” and “Input ground lost” alarms are disabled.

- Enable (default)
- Disable

**N-G Output Bond in Battery Mode**

When this option is enabled, the output Neutral is connected to Ground when UPS is in *Battery* mode.

- Enable (default)
- Disable

**EPO logic**

Select the EPO function control logic. Options are:

- Active open—The UPS will activate the EPO function when Pin 1 and Pin 2 are open (default)
- Active close—The UPS will activate the EPO function when Pin 1 and Pin 2 are closed (shorted)

**Outlet1 (Programmable Outlets) Parameter Options****Turn on/off outlet**

Turns on or turns off the outlet based on the current state. Provides a confirmation window with Yes/No options to confirm turning on the outlet.

**NOTE: This setting is only available when the UPS is on.**

### Turn on delay

Length of time before outlet turns on after UPS startup.

- 0 - 30 minutes (default of 0 minutes)

### Turn off when UPS overload on battery

When this option is enabled, the programmable outlet will turn off if the UPS is overloaded while in *Battery* mode.

- Enable
- Disable (default)

### Settings based on discharge time

Controls outlets based on amount of time the battery has discharged.

Threshold of turning off the outlet (min)

Length of time that the outlet is powered after the batteries begin to discharge. Select the checkbox to enable or disable (default) the option.

- 0 - 30 minutes (default of 5 minutes)

Turn on when power returns for (min)

Length of time after the mains input power returns before turning on the outlet. Select the checkbox to enable (default) or disable the option.

- 0 - 30 minutes (default of 0 minutes)

### Settings based on backup time

Control outlets based on battery backup time remaining.

Threshold of turning off the outlet (min)

When the selected amount of time remains on *Battery* mode, the outlet is turned off. Select the checkbox to enable or disable (default) the option.

- 0 - 30 minutes (default of 5 minutes)

Turn on when power returns for (min)

Length of time after the mains input power returns before turning on the outlet. Select the checkbox to enable or disable (default) the option.

- 0 - 30 minutes (default of 0 minutes)

### Settings based on capacity

Control outlets based on battery capacity remaining.

Threshold of turning off the outlet (%)

When the selected percentage of capacity remains in *Battery* mode, the outlet turns off. Select the checkbox to enable or disable (default) the option.

- 20 - 80% (default of 20%)

Turn on when power returns for (min)

Length of time after the mains input power returns before turning on the outlet. Select the checkbox to enable or disable (default) the option.

- 0 - 30 minutes (default of 0 minutes)

## 4.2.6 Control Screen

The Control screen offers UPS control options.

### To adjust the UPS controls:

1. At the main menu, select the Control icon, and press **Enter**.
2. Press **Enter** on the Control tab.
3. Use the arrow buttons to move the cursor through the options. Press **Enter** on the option to be modified.
4. Use the arrow buttons to move through the options. Press **Enter** to select the option or **ESC** to cancel.
5. Press **ESC** to exit the option list and return to the tab selection. Press **ESC** again to return to the main menu.

### Control Options

#### Turn on/off

Opens the dialog to change operating modes.

#### Mute/Unmute audible alarm

Mute silences the current alarm until a new alarm is activated. Unmute restores sound to the current alarms.

#### Start/Stop battery manual test

Starts the battery self test manually. If the manual self test is already running, stop the self test.

#### Clear faults

Clears displayed faults after the issue causing the fault is resolved.

#### Reset power statistics

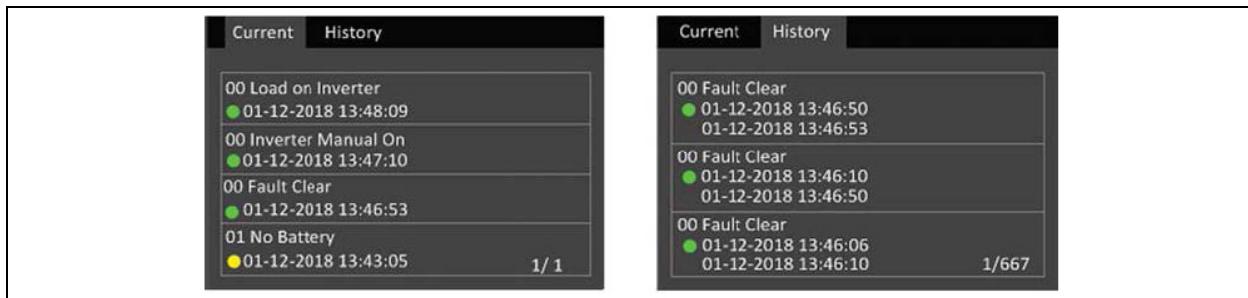
Resets the power statistics.

## 4.2.7 Log Screen

The Log Screen offers tabs that list the current alarms and the alarm/event history. **Table 4.2** below, describes the alarm messages that may appear in the logs.

To view the logs:

1. At the main menu, select the Log icon, and press **Enter**.
2. Use the arrow buttons to move the cursor left/right and select a tab, then press **Enter** to display the log for the selected tab.
3. Use the arrow buttons to move the cursor though the log.
4. Press **ESC** to exit the log and return to the tab selection. Press **ESC** again to return to the main menu.



**Table 4.2** Alarm Messages

Message	Description
Battery fault	Battery voltage is out of range or the charger is faulty. Contact Vertiv Technical Support.
Battery low prewarning	This alarm occurs when the battery approaches the EOD. After the pre-warning, the battery capacity allows two minutes discharge at full load. The user can set the time with the Low Battery Time setting in Battery settings from 2 min - 30 min, (2 min by default). This allows for any loads to be shutdown before the system powers off if utility power cannot be restored.
Battery mode	The UPS operating in battery mode. The alarm will clear when utility power is restored.
Battery overcharge	The battery has been overcharged. Contact Vertiv Technical Support.
Battery replacement timeout	The system time is past the time set for the batteries to be replaced. If you have disabled the "Batt. note duration" or have no batteries installed, the alarm will not occur.
Battery test fail	The voltage of the battery was low when the periodic or manual self test was run. Battery replacement is Recommended.
Battery test started	The battery periodic self test or manual self test has started. This will display in the log whenever the event occurs.
Battery test stopped	The battery periodic self test or manual self test has finished. This will display in the log whenever the event occurs.
Battery to utility transition	The UPS has transferred the load to the mains power from the battery. This will display in the log whenever the event occurs.
Battery voltage abnormal	The battery voltage exceeds the normal range. Check if the battery terminal voltage exceeds the normal range.
Battery voltage abnormal	The UPS has transferred the load to the mains power from the battery. This will display in the log whenever the event occurs.
Charger fail pre-warning	The battery voltage exceeds the normal range. Check if the battery terminal voltage exceeds the normal range.

**Table 4.2 Alarm Messages (continued)**

Message	Description
Charger fault	The charger output voltage is abnormal, and the charger is off. Contact Vertiv Technical Support.
Communication fail	Internal communication is abnormal. Check that the communication cables are connected correctly.
Communication FW Update	Communication board firmware has been updated.
DC bus abnormal	The inverter is off due to DC bus voltage out of acceptable range. The load will transfer to bypass if the bypass is available because the bus voltage is outside of the acceptable range.
DC/DC fault	The discharger is faulty, because the bus voltage exceeds the range when the discharger starts. Contact Vertiv Technical Support.
EEPROM fail	Parameter access failed in non-volatile memory. Contact Vertiv Technical Support.
EOD turn off	The inverter is off due to End of Discharge (EOD). Check the mains power off state and recover the mains.
EPO	UPS shutdown occurred by the EPO terminal contacts. This will display in the log whenever the event occurs.
Faults cleared	The faults have been cleared using <b>Settings &gt; Controls &gt; Clear faults</b> . This will display in the log whenever the event occurs.
Input abnormal	The rectifier and charger are off due to the mains voltage and frequency exceeding normal range. Check that the rectifier input phase voltage and frequency exceed the normal range or that the mains has power off.
Input ground lost or phase reversed	Check that the protective earth (PE) line is well connected and that the alarm can be cleared at the display.
Inverter fault	The inverter is turned off when the inverter output voltage or current exceed the ranges set. Contact Vertiv Technical Support.
LCD module FW update	Communication board firmware has been updated.
Load off due to output short	A short circuit has occurred on the output. Check the output cables and for any equipment that may have shorted.
Main FW update	Main UPS firmware has been updated.
Manual power-on	The system was turned on via the display panel. This will display in the log whenever the event occurs.
Manual shutdown	The system was shutdown via the display panel. This will display in the log whenever the event occurs.
No battery	No battery detected. Check the battery and battery cable connections.
Output off due to overload	The output is off due to an overload of the UPS output.
Output pending	Remote shutdown has been initiated, and the system will turn off shortly.
Output short	The UPS shuts down automatically because a short occurred on the output. Check the output cables and for any equipment that may have short circuited.
Output overload	The UPS shut down automatically because of an overload at the UPS output.
Overload pre-warning	The UPS output is overloaded. Remove excess loads from the UPS output.
Over temp pre-warning	During the UPS operation, the system checks the heat sink temperature. The temperature may exceed the range soon, check if: <ol style="list-style-type: none"> <li>1. The ambient temperature is too high.</li> <li>2. The UPS vents are obstructed.</li> <li>3. A fan fault has occurred.</li> </ol>

**Table 4.2 Alarm Messages (continued)**

Message	Description
Password change	The settings password has been changed successfully. This will display in the log whenever the event occurs.
Remote power-on	The UPS was powered on remotely. This will display in the log whenever the event occurs.
Remote shut-off	The UPS was powered off remotely. This will display in the log whenever the event occurs.
Remote shutdown	Any mode shutdown was initiated by the dry contact input. This will display in the log whenever the event occurs.
Restore factory defaults	On the Maintenance page, “Restore Factory Defaults” has been set while the UPS is in the stand-by state. This will return settings to their factory settings.
Setting login	The settings menu was logged into. This will display in the log whenever the event occurs.
Shutdown due to over temp	The UPS shutdown because the heat sink temperature exceeds the setting range. If an overtemperature occurs, check if: <ol style="list-style-type: none"> <li>1. The ambient temperature is too high.</li> <li>2. The UPS vents are obstructed.</li> <li>3. A fan fault has occurred.</li> </ol>
System over temp	During the UPS operation, the system checks if the heat sink temperature exceeds the setting range. If an overtemperature occurs, check if: <ol style="list-style-type: none"> <li>1. The ambient temperature is too high.</li> <li>2. The UPS vents are obstructed.</li> <li>3. A fan fault has occurred.</li> </ol>
Turn on fail	Appears when proper conditions are not met to turn the UPS on. Check utility input, UPS settings, and for UPS faults.
Turn on programmable outlet	The programmable outlets (OutletX) have been turned on.
Turn off programmable outlet	The programmable outlets (OutletX) have been turned off.

## 4.2.8 About Screen

About screen offers tabs that list information about the product. Product tab shows the UPS identification information, firmware versions, and information about the communication card (when the card is installed).

**To view the product and battery age information:**

1. At the main menu, select the About icon, and press **Enter**.
2. Use the arrow buttons to move the cursor left/right and select a tab, then press **Enter** to display the information for the selected tab.
3. Use the arrow buttons to move the cursor.
4. Press **ESC** to return to the tab selection. Press **ESC** again to return to the main menu.

### Product Information

#### Product Type

UPS model name.

#### Serial number

UPS serial number.

#### Time since startup

Elapsed time since startup of the UPS.

#### UPS FW version

Version of UPS firmware on the control board.

#### Communication FW version

Version of communication firmware on the communication board.

#### LCD module FW version

Version of LCD module firmware on the display panel.

### Network

#### MAC address

Shows the MAC address of the SNMP card. This is only shown when the SNMP card is installed and setup.

#### IPv4 address

Shows the IPv4 or IPv6 address of the SNMP card. This is only shown when the SNMP card is installed and setup.

## 4.2.9 Maintenance screen

The Maintenance screen offers operation of restore factory default.

### To restore factory default:

1. Put the UPS in *Standby* mode.
2. At the main menu, select the Maintenance icon, and press **Enter**.
3. Use the arrow buttons to move the cursor to restore factory defaults, then press **Enter**.
4. A prompt will appear to confirm the selection. Use the arrow buttons to select Yes and press **Enter**.

### Restore factory default

If the operation is successful a notification will display and the factory defaults will be restored.

## 4.3 Editing Display and Operation Settings

You may adjust the display settings and UPS configuration via the LCD. The display and operation settings are password protected. The default password is 111111(six ones).

### To enter the password:

1. Use the arrow buttons to increase the digits or move to the next digit.
2. Repeat to select each digit, and press **Enter** to submit the password.

### Settings Prompts

While using the operation and display panel, prompts display to alert you to specific conditions or require confirmation of commands or settings. Following **Table 4.3** below lists the prompts and their meaning.

**Table 4.3 Display Prompts and Meanings**

Prompt	Meaning
Cannot set this online, please shut down output	Appears when changing important output settings (output voltage, output frequency).
Password for maintenance	Appears when entering Maintenance page.
Password for settings	Appears when entering Settings page.
Password is correct	Appears when the Settings password is input correctly.
Incorrect password, please input again	Appears when the Settings password is input incorrectly.
Input new password	Appears when attempting to change the Setting password.
Confirm new password	Appears when attempting to change the Setting password.
Password changed OK	Appears upon successful change of the Settings password.
Fail to change password, please try again	Appears when attempting to change the Settings password but the new and confirmation passwords do not match.
Operation failed, condition is not met	Appears when attempting to execute an operation for which the required conditions are not met.

**Table 4.3 Display Prompts and Meanings (continued)**

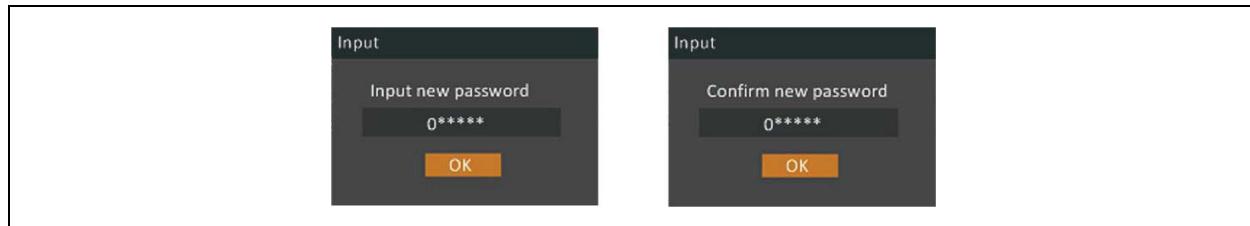
<b>Prompt</b>	<b>Meaning</b>
Turn on failed, condition is not met	Appears when proper conditions are not met for UPS power-on. Applies when using the power button or when selecting Turn on/off in the Control page.
Turn on UPS?	Appears when selecting Turn on in the Control page.
Turn off UPS?	Appears when selecting Turn off in the Control page.
Mute audible alarm?	Appears when selecting Mute audible alarm in the Control page.
Unmute audible alarm?	Appears when selecting Unmute audible alarm in the Control page.
Start battery manual test?	Appears when selecting Start battery manual test in the Control page.
Stop battery manual test?	Appears when selecting Stop battery manual test in the Control page.
Clear faults?	Appears when selecting Clear faults in the Control page.
Reset power statistics?	Appears when selecting Reset power statistics in the Control page.
New alarm present	Appears when new alarm occurs.
Operation Succeeded!	Appears when setting change has succeeded.
Restore factory defaults?	Appears when Restore factory defaults is selected in the Maintenance page.
Reset all battery statistics?	Appears when selecting Replace battery in the Battery tab of the Settings page.
This item can only be set in standby mode	Appears when selecting Restore factory defaults in the Maintenance page. Applies when the UPS is not in standby mode.
Turn on outlet?	Appears when Turn on outlet is selected in one of the Outlet tab of the Settings page.
Turn off outlet?	Appears when Turn off outlet is selected in one of the Outlet tab of the Settings page.

### 4.3.1 Changing the Password

The default password is 111111 (six ones). You must use the current password to change the password.

1. At the main menu, select the Settings icon, and press **Enter**.
2. At the password prompt, use the up-arrow to select the first digit, press the down arrow to move to the next digit, repeat for each digit, then press **Enter** to access the settings.
3. Use the arrow buttons to select the Monitor tab, then press **Enter**.
4. Use the down arrow to highlight Change Settings Password, press **Enter**, and re-enter the current password. The Input new password dialog opens, see below.
5. Enter the new password, then confirm the new password. A confirmation dialog opens to indicate a successful password change.
6. Press **ESC** to return to the settings or main menu.

**Figure 4.3 New and Confirm Password Dialogs**



# 5 Maintenance and Battery Replacement

## 5.1 Precautions



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

A battery can present a risk of electrical shock and high short circuit current



**WARNING! Risk of electric shock** Can cause injury or death.

Hazardous mains and/or battery voltage exists behind the protective cover. No user accessible parts are located behind the protective covers. These covers require a tool for removal. Only qualified service personnel are authorized to remove such covers. If maintenance for a rack is needed, notice that the neutral line is live.

Although the Vertiv™ Liebert® PSI5 is designed and manufactured to ensure personal safety, improper use can result in electrical shock or fire. To ensure safety, observe the following precautions while working on batteries:

- Remove watches, rings and other metal objects.
- Use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of batteries.
- If the battery kit is damaged in any way or shows signs of leakage, contact your Vertiv representative immediately.
- Handle, transport, and recycle batteries in accordance with local regulations.

## 5.2 Replacing the UPS Batteries

**IMPORTANT!** Before you proceed, please review the battery safety precautions available at <https://www.vertiv.com/ComplianceRegulatoryInfo>.



**WARNING!** Risk of explosion. Can cause equipment damage, injury and death.

Do not dispose of the battery in a fire, as it may explode. Released electrolyte is toxic and is harmful to skin and eyes. If electrolyte comes into contact with the skin, wash the affected area immediately with plenty of clean water and get medical attention.



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

A battery can present a risk of electrical shock and high short circuit current.



**WARNING!** Risk of explosion. Can cause equipment damage, injury and death.

A battery can explode if the battery is replaced by an incorrect type. Dispose of used batteries according to the instructions included with the battery pack.

User may safely replace the internal battery pack. See the [Specifications](#) on page 45, for the part number of the replacement battery for the UPS model number.

**NOTE: Replace the battery with the same type and number as originally installed. See [Table 7.1](#) on page 45 for internal battery details.**

**NOTE: The internal battery pack is hot swappable. However, caution should be exercised because during this procedure the load is unprotected from disturbances and power outages. Do not replace the battery while the UPS is operating in *Battery Mode*. This will result in a loss of output power and will drop the connected load.**

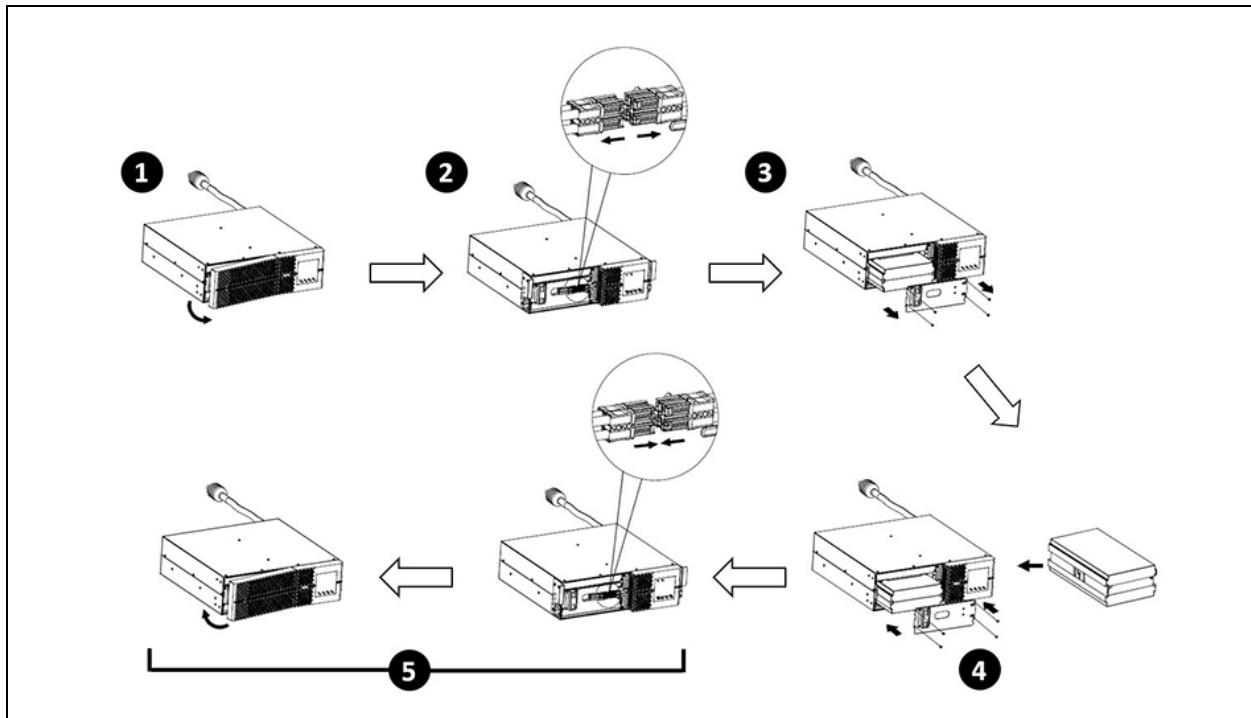
To replace the batteries:

1. Remove the front bezel by pulling firmly until the snaps release.
2. Disconnect the battery connector by squeezing the ends and gently pulling the two pieces apart.
3. Remove the screws securing either the metal battery cover plate or the battery itself (depending on the model). Then, pull the battery kit out.
4. Orient the connector and the new battery in the same way as the original battery, then slide them into the UPS. Reinstall the metal plate and secure with the four screws removed in Step 3.
5. Reconnect the battery connectors. Snap the front bezel back on.
6. Navigate through the menu to **Settings > Battery > Replace Battery** and confirm battery replacement (not available for PSI5-500SRT1ULI).

**NOTE: Default settings password is 111111 (six ones).**

7. Properly dispose of old batteries at an appropriate recycling center or return them to Vertiv in the packing material for the replacement batteries.

Figure 5.1 Removing the Battery Box to Replace Batteries



1. Remove the front panel from the UPS.
2. Disconnect the battery connector by squeezing the ends and pulling the two pieces apart.
3. Remove the four screws holding the metal battery cover plate. Pull the battery kit out.
4. Orient the connector and the new battery in the same way as the original battery, then slide them into the UPS.
5. Reinstall the metal battery cover and secure with the four screws removed in Step 3.
6. Reconnect the battery connectors. Snap the front bezel back on.

## 5.3 Battery Charging

The batteries are LiFePO4 type lithium-ion batteries. They should be kept charged to retain their design life. The PSI5 charges the batteries continuously when it is connected to input power. If the Vertiv™ Liebert® PSI5 Lithium-Ion Installer/User Guide will be stored for a long time, Vertiv recommends connecting the UPS to input power every 4 to 6 months for at least 2 hours to ensure recharge of the batteries.

The lithium-ion batteries used in the Liebert® PSI5 Lithium-Ion series, as well as all Vertiv Lithium-Ion UPSs, contain a Battery Management System (BMS) that self monitors the safety of the lithium-ion batteries in real time. This is an agency tested and certified requirement now eliminating the industry wide safety risk known with previous lithium-ion batteries.

## 5.4 Checking UPS Operation

**NOTE: Operation-check procedures may interrupt power supply to the connected load.**

We recommend checking the UPS operation once every 6 months. Ensure that output power loss to the connected load will not cause data loss or other errors before conducting the check.

1. Press the **Enter** button to check the indicators and display function.
2. Check for alarm or fault indicators on the operation/display panel.
3. Make sure that there are no audible or silenced alarms. Select the Log and look at the Current tab for current alarms and faults. Select the History tab for alarm and fault history. See [Log Screen](#) for more details.
4. Check the flow screen to see if batteries are discharging (operating in *Battery* mode) while utility power is normal. If so, contact Vertiv Technical Support.

## 5.5 Cleaning the UPS



**WARNING! Risk of electric shock. Can cause injury or death. Disconnect all local and remote electric power supplies before working with the UPS. Ensure that the unit is shut down and power has been disconnected before beginning any maintenance.**



**WARNING! Risk of electric shock. Can cause injury or death. Hazardous mains and/or battery voltage exists behind the protective cover. No user accessible parts are located behind the protective covers that require a tool for removal. Only qualified service personnel are authorized to remove such covers. If maintenance for rack is needed, notice that the neutral line is live.**

The UPS requires no internal cleaning. If the outside of the UPS becomes dusty, wipe with a dry cloth. Do not use liquid or aerosol cleaners. Do not insert any objects into the ventilation holes or other openings in the UPS.

## 6 Troubleshooting

This section indicates various UPS symptoms you may encounter and provides a troubleshooting guide in the event the UPS develops a problem. Use the following information to determine whether external factors caused the problem and how to remedy the situation.

### 6.1 Symptoms that Require Troubleshooting

The following symptoms indicate the UPS is malfunctioning:

- The relative indicators illuminate, indicating the UPS has detected a problem.
- An alarm buzzer sounds, alerting the user that the UPS requires attention.

### 6.2 Audible Alarm (Buzzer)

An audible alarm accompanies various events during UPS operations. **Table 6.1** below, describes the sounds and their meaning. To silence an alarm, press and hold the **ESC/MUTE** button for at least 2 seconds.

**Table 6.1 Audible Alarm**

Alarm Source	Alarm
UPS Fault	Continuously sounding
Battery Mode	Sounding every 10 seconds
Battery low pre-warning	Sounding every 2 seconds
Overload pre-warning	Sounding every second
No battery	Sounding every 2 seconds
Battery overcharge	Sounding every 2 seconds
Input ground lost or phase reversed	Sounding every 2 seconds
EPO	Sounding every 2 seconds
Over temp pre-warning	Sounding every 2 seconds
Charger fail pre-warning	Sounding every 2 seconds
Battery fault	Sounding every 2 seconds
Battery replacement timeout	Sounding every 2 seconds
EEPROM fail	Sounding every 2 seconds

**NOTE: When an alarm is indicated, an alarm message is logged. **Table 4.2** on page 32, describes the alarm messages you may see.**

## 6.2.1 Faults

When a fault is indicated, the display panel lists the fault. These faults are described in **Table 6.2** below.

**Table 6.2 Faults**

Fault	Cause
DC/DC fault	The DC bus voltage exceeds the acceptable range.
DC bus abnormal	The inverter is off because the DC bus voltage is abnormal.
Inverter fault	The inverter is off when the inverter output voltage and current exceed the acceptable range.
Inverter output short circuit	The inverter has a short circuit.
Battery voltage abnormal	The battery voltage exceeds the normal range.
Over temp	The internal heat sink temperature or ambient temperature exceeds the setting range, and the output is off.
Overload	The UPS output is overloaded.
Charger failure	The charger does not have output and battery voltage is low.

## 6.3 Troubleshooting UPS Issues

In the event of an issue with the UPS, refer to **Table 6.3** below, to determine the cause and solution. If the fault persists, contact Vertiv Technical Support. Visit <https://www.vertiv.com/en-us/support/> or see [Technical Support and Contacts](#) on page 51 for contact information.

When reporting a UPS issue to Vertiv, include the UPS model and serial number. These are located in several places for your ease of location:

- On the top panel (rack mount orientation)/the left side (tower orientation)
- The rear panel
- On the front of the unit behind the front plastic bezel
- On the LCD select **Main Menu > About**

**Table 6.3 Troubleshooting**

Problem	Cause	Solution
UPS fails to start	UPS is short circuited or overloaded	Ensure the UPS is off. Disconnect all loads and ensure nothing is lodged in output receptacles. Ensure loads are not defective or internally short circuited.
	Batteries are not charged enough or not connected	Check to ensure the internal battery is connected. If it is not, make the connection and try to start the unit. If the battery is connected, leave the UPS connected to input power for at least 2 hours to recharge the batteries, then try to start the unit.
UPS has reduced battery backup time	Batteries are not fully charged	Keep the UPS plugged in continuously at least 24 hours to recharge batteries.
	UPS is overloaded	Check load level indicator and reduce the load on the UPS.
	Batteries may not be able to hold a full charge due to age	Replace the batteries. Contact Vertiv representative or Vertiv Technical Support for a replacement battery kit.

# 7 Specifications

**Table 7.1 UPS Specifications**

Model	PSI5-500SRT1ULI	PSI5-800SRT2ULI	PSI5-1100SRT2ULI	PSI5-1500SRT2UXLI	PSI5-3000SRT120LI
<b>Power Rating</b>					
125 VAC Input	500 VA, 450 W, 4 A	800 VA, 720 W, 6.4 A	1100 VA, 990 W, 8.8 A	1500 VA / 1350 W, 12 A	3000 VA / 2700 W, 24 A
120 VAC Input	500 VA, 450 W, 4.2 A	800 VA, 720 W, 6.7 A	1100 VA, 990 W, 9.2 A	1440 VA / 1350 W, 12 A	2880 VA / 2700 W, 24 A
115 VAC Input	500 VA, 450 W, 4.4 A	800 VA, 720 W, 7 A	1100 VA, 990 W, 9.6 A	1380 VA / 1350 W, 12 A	2760 VA / 2700 W, 24 A
110 VAC Input	450 VA, 405 W, 4.1 A	720 VA, 648 W, 6.6 A	990 VA, 891 W, 9 A	1275 VA / 1147 W, 12 A	2550 VA / 2295 W, 23.2 A
100 VAC Input	450 VA, 405 W, 4.5 A	720 VA, 648 W, 7.2 A	990 VA, 891 W, 9.9 A	1200 VA / 1147 W, 12 A	2400 VA / 2295 W, 24 A
<b>Dimensions and Weight</b>					
Unit Dimensions W x D x H in (mm)	17.24 x 8.86 x 1.67 (438 x 225 x 42.5)	17.24 x 11.81 x 3.39 (438 x 300 x 86.2)	17.24 x 11.81 x 3.39 (438 x 300 x 86.2)	17.24 x 11.81 x 3.39 (438 x 300 x 86.2)	17.2 x 16.9 x 5.1 (438 x 430 x 130.6)
Shipping Dimensions W x D x H in (mm)	22.44 x 14.57 x 7.28 (570 x 370 x 185)	22.44 x 18.5 x 9.45 (570 x 470 x 240)	22.44 x 18.5 x 9.45 (570 x 470 x 240)	22.44 x 18.5 x 9.45 (570 x 470 x 240)	22.4 x 24.4 x 11.1 (570 x 620 x 282)
Unit Weight lb. (kg)	12.3 (5.6)	18.52 (8.4)	18.52 (8.4)	20.50 (9.3)	67.9 (30.8)
Shipping Weight lb. (kg)	14.77 (6.7)	22.71 (10.3)	22.71 (10.3)	24.69 (11.2)	67.9 (30.8)
<b>Input</b>					
Voltage Input Range (without battery operation)	Output Setting	100 VAC	110 VAC	115 VAC	120 VAC
	Output	90 to 110 VAC	99 to 121 VAC	104 to 127 VAC	105 to 132 VAC
	Input	75 to 120 VAC	82 to 132 VAC	86 to 138 VAC	90 to 144 VAC
Nominal Voltage Setting (VAC)	100 / 110 / 115 / 120 / 125 VAC				
High Line Buck to Battery (VAC)	120 / 132 / 138 / 144 / 150 VAC				117 / 129 / 135 / 140 / 146 VAC
High Line Battery to Buck (VAC)	115 / 127 / 133 / 139 / 145 VAC				114 / 125 / 131 / 137 / 143 VAC
High Line Normal to Buck (VAC)	110 / 121 / 127 / 132 / 138 VAC				
High Line Buck to Normal (VAC)	105 / 116 / 122 / 127 / 133 VAC				107 / 118 / 123 / 128 / 134 VAC

**Table 7.1 UPS Specifications (continued)**

Model	PSI5-500SRT1ULI	PSI5-800SRT2ULI	PSI5-1100SRT2ULI	PSI5-1500SRT2UXLI	PSI5-3000SRT120LI		
Low Line Boost to Normal (VAC)	92 / 104 / 109 / 113 / 118 VAC			93 / 102 / 107 / 112 / 116 VAC			
Low Line Normal to Boost (VAC)	90 / 99 / 104 / 108 / 113 VAC						
Low Line Battery to Boost (VAC)	80 / 88 / 92 / 95 / 99 VAC			80 / 88 / 92 / 96 / 100 VAC			
Low Line Boost to Battery (VAC)	75 / 83 / 86 / 90 / 94 VAC						
Frequency Input Range (Hz)	Autodetect 50 / 60 Hz 60 Hz Input range—Normal mode 55 to 65 (57 to 63 Hz Battery to Normal comeback) 50 Hz Input range—Normal mode 45 to 55 (47 to 53 Hz Battery to Normal comeback)						
Internal Rear Panel Input Breaker (A)	8 A	10 A	13 A	16 A	30 A		
Input Surge Protection	ANSI C62.41, Category B, Level 3						
Input Power Cord	8 ft / 2.4 m, IEC 320 C13 to NEMA 5-15P			NEMA L5-30P 8 ft / 24 m			
<b>Output</b>							
Rear Panel Output Breaker Rating					20 A x 3		
Output Voltages (on battery)	100 / 110 / 115 / 120 / 125 VAC ( $\pm 1.5$ on battery before alarm) user selectable (120 VAC is factory default)						
Output Frequency (on battery)	60 (default) / 50 Hz $\pm 0.5\%$						
Output Receptacles—non controllable	(2) NEMA 5-15R	(4) NEMA 5-15R	(2) NEMA 5-15R	(2) NEMA 5-15R	6 NEMA 5-15/20R 1 NEMA L5-30R		
Output Receptacles—controllable	(2) NEMA 5-15R	(2) NEMA 5-15R	(4) NEMA 5-15R	(6) NEMA 5-15R	3 NEMA 5-15/20R		
Transfer Time	Adjustable with User Setting: <ul style="list-style-type: none"><li>High: 4 to 6 ms typical, 11 ms maximum (default)</li><li>Medium: 6 to 8 ms typical, 11 ms maximum</li><li>Low: 8 to 10 ms typical, 13 ms maximum</li></ul>						
Output Waveform (on Battery)	Pure Sinewave						
Output Frequency Tolerance (On Battery)	$\pm 1\text{ Hz}$						
Output Overload Operation Normal mode	<ul style="list-style-type: none"><li>101% to 110% (LCD indicate value): Alarm warning.</li><li>111% to 120% (LCD indicate value): Alarm warning with shutdown after 10 Seconds for 3K model and other models 60 seconds.</li><li>121% and greater (LCD indicate value): Immediate shutdown.</li></ul>						

**Table 7.1 UPS Specifications (continued)**

Model	PSI5-500SRT1ULI	PSI5-800SRT2ULI	PSI5-1100SRT2ULI	PSI5-1500SRT2UXLI	PSI5-3000SRT120LI
Output Overload Operation Battery mode Buck and Boost mode	<ul style="list-style-type: none"> <li>• 101% to 110% (LCD indicate value): Alarm warning.</li> <li>• 111% to 120% (LCD indicate value): Alarm warning with shutdown after 10 seconds.</li> <li>• 121% and greater (LCD indicate value): Immediate shutdown.</li> </ul>				
Protection	Electronic (overcurrent, short circuit w/ latching shutdown)				
AC Mode Efficiency (%) at 100% load	99% or greater	98.9% or greater	98.9% or greater	98.9% or greater	98.3% or greater
Buck and Boost Mode Efficiency	92% or greater	90% or greater	89% or greater	89% or greater	93.9% or greater
Recharge Time (typical)	1.7 hours to 90% 2 hours to 100%				3.3 hours to 90% 3.5 hours to 100%
<b>Internal Battery</b>					
Part Number	PSI5-500SLIBATKIT	PSI5-1100SLIBATKIT	PSI5-1100SLIBATKIT	PSI5-1500SLIBATKIT	PSI5-3000SLIBATKIT
Protection	Electronic (overcurrent, short circuit with latching shutdown)				
Type	LiFePO4 Battery in compliance with UL 1973 and UL 1642				
Quantity (total Wh)	1 (40 Wh)	1 (133.1 Wh)	1 (133.1 Wh)	1 (199.7 Wh)	2 (480 Wh)
<b>Environment Requirements</b>					
Operating Temperature °F (°C)	32 to 104 °F (0 to 40 °C)				
Operating Elevation ft. (m)	<ul style="list-style-type: none"> <li>• 0 to 9,942 (0 to 3,000 without derating).</li> <li>• Operating temperature reduced by 9 °F (5 °C) for each additional 1,640 ft. (500 m) of altitude.</li> </ul>				
Relative Humidity	0% to 90% non-condensing				
Storage Temperature °F (°C)	<ul style="list-style-type: none"> <li>• Without battery: -4 to 122°F (-20 to 50 °C)</li> <li>• 3-12 months with battery: 14 to 77°F (-10 to 25 °C)</li> <li>• 1-3 months with battery: 77 to 95°F (25 to 35 °C)</li> <li>• Within 1 month with battery: 95 to 113°F (35 to 45 °C)</li> </ul>				
Storage Relative Humidity	8 to 90% non-condensing				
Audible Noise	<p>≤45 dBA in Line mode ≤55 dBA in Battery mode</p>				
<b>Agency</b>					
Compliance	cUL, NOM				
Safety	UL 1778 5th Edition CSA 22.2 no. 107.3:2014 UL 1973 and UL 1642 (lithium-ion batteries)				
RFI/EMI	FCC Class B				
Transportation	ISTA 2A UN38.3 (lithium-ion)				

## 7.1 Battery Run Times

Table 7.2 Battery Run Time in Minutes—PSI5-500SRT1ULI

Load			Minutes
%	VA	W	
100	500	450	3.4
90	450	405	4
80	400	360	4.6
70	350	315	5.6
60	300	270	6.7
50	250	225	8.2
40	200	180	10.3
30	150	135	13.8
20	100	90	20.6
10	50	45	36.2

Table 7.3 Battery Run Time in Minutes—PSI5-800SRT2ULI

Load			Minutes
%	VA	W	
100	800	720	8.3
90	720	688	9.2
80	640	616	10.4
70	560	544	11.9
60	480	472	14
50	400	360	16.8
40	320	288	21
30	240	216	28
20	160	144	39.9
10	80	72	69.7

**Table 7.4 Battery Run Time in Minutes—PSI5-1100SRT2ULI**

Load			Minutes
%	VA	W	
100	1100	990	6.03
90	990	891	6.7
80	880	792	7.6
70	770	693	8.5
60	660	594	10
50	550	495	11.8
40	440	396	14.7
30	330	297	19.6
20	220	198	30.1
10	110	99	57.30

**Table 7.5 Battery Run Time in Minutes—PSI5-1500SRT2UXLI**

Load			Internal Battery Only	1x EBC	2x EBC	3x EBC	4x EBC	5x EBC
%	VA	W		1x EBC	2x EBC	3x EBC	4x EBC	5x EBC
100	1500	1350	6.6	14.8	22.7	30.2	37.8	45.4
90	1350	1215	7.4	16.4	25.2	33.6	42	50.4
80	1200	1080	8.3	18.5	28.4	37.8	47.2	56.7
70	1050	945	9.4	20.9	32	42.7	53.3	64
60	900	810	11	24.4	37.3	49.8	62.2	74.7
50	750	675	13	28.9	44.3	59	73.7	88.5
40	600	540	16.1	36	55.3	73.7	92.2	110.6
30	450	405	21.6	48	73.7	98.3	122.9	147.7
20	300	270	33.2	73.9	113.4	151.2	188.9	226.7
10	150	135	66.3	147.8	226.7	302.3	377.9	453.4

**Table 7.6 Battery Run Time in Minutes—PSI5-3000SRT120LI**

Load			Internal Battery Only
%	VA	W	Minutes
100	3000	2700	7.7
90	2700	2430	8.9
80	2400	2160	10.4
70	2100	1890	12.3
60	1800	1620	14.8
50	1500	1350	18.3
40	1200	1080	23.4
30	900	810	31.7
20	600	540	43.2
10	300	270	84.9

# Appendices

## Appendix A: Technical Support and Contacts

### A.1 Technical Support/Service in the United States

#### Vertiv Group Corporation

24x7 dispatch of technicians for all products.

1-800-543-2378

#### Liebert® Thermal Management Products

1-800-543-2778

#### Liebert® Channel Products

1-800-222-5877

#### Liebert® AC and DC Power Products

1-800-543-2378

### A.2 Locations

#### United States

Vertiv Headquarters

505 N Cleveland Ave

Westerville, OH, 43082, USA

#### Europe

Via Leonardo Da Vinci 8 Zona Industriale Tognana

35028 Piove Di Sacco (PD) Italy

#### Asia

7/F, Dah Sing Financial Centre

3108 Gloucester Road, Wanchai

Hong Kong

### **A.3 Vertiv™ Liebert® PSI5 Lithium-Ion UPS**

Our Technical Support staff is ready to assist you with any installation or operating issues you may encounter with your Liebert product. Visit <https://www.vertiv.com/en-us/support/> for additional assistance. Alternatively, please call or email us:

#### **Europe, Middle East, and Africa**

##### **Multi-language technical support and warranty**

Email: warranty.channel.emea@vertiv.com

Phone: Toll free 0080011554499

#### **Asia-Pacific**

##### **Technical support and warranty**

Email: DPG.Warranty@vertiv.com

Phone: Australia: 1300-367-686 opt.1

Phillipines: 620-3655 opt.2

Singapore: 1800-467-2326 opt.2

Malaysia: 1800-221-388

#### **United States/Canada**

##### **UPS technical support**

Email: liebert.upstech@vertiv.com

Phone: 1-800-222-5877 menu option 1

##### **Software and monitoring technical support**

Email: liebert.monitoring@vertiv.com

Phone: 1-800-222-5877 menu option 2

##### **Warranty support**

Email: microups.warranty@vertiv.com

Phone: 1-800-222-5877 menu option 3

#### **Latin America**

##### **Technical support and warranty**

##### **Peru:**

Email: CallCenter.Peru@vertiv.com

Phone: 0800 - 77737

##### **Chile:**

Email: CallCenter.Chile@vertiv.com

Phone: 800 - 395429

**Argentina:**

Email: CallCenter.Argentina@vertiv.com

Phone: 0800 – 1220869

**Columbia:**

Email: CallCenter.Colombia@vertiv.com

Phone: 018000 - 125527

**Mexico:**

Email: CallCenter.Mexico@vertiv.com

Phone: 01800 - 2530414

**Central America and Caribbean countries:**

Email: CallCenter.CA@vertiv.com

**Paraguay:**

Email: CallCenter.Paraguay@vertiv.com

**Uruguay:**

CallCenter.Uruguay@vertiv.com

**Bolivia:**

Email: CallCenter.Bolivia@vertiv.com

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