



# Liebert® PSI5™

Installer/User Guide

### **Technical Support Site**

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

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## 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.vertivco.com/ComplianceRegulatoryInfo>, before attempting to install, connect to supply, or operate this UPS.

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# 1 PSI5 DESCRIPTION

The Liebert PSI5 is a 2U, line-interactive UPS designed for IT applications such as network closets and small data centers. It provides reliable power protection for servers, critical nodes, network workstations, large network peripherals, network routers, bridges, hubs and other electronic equipment. Matching battery cabinets are available to extend the on-battery operating time. Remote alerts and unattended orderly shutdown of your system is available through the built-in USB port, included USB cable and MultiLink™ shutdown software and with the optional Liebert Network Communication Card, advanced monitoring and control is also available.

## 1.1 Available Models

**Table 2.1 PSI5 Models**

MODEL NUMBER	NOMINAL POWER RATING
PSI5-800RT120 PSI5-800RT120TAA	800 VA/720 W
PSI5-1100RT120 PSI5-1100RT120TAA	1,100 VA/990 W
PSI5-1500RT120 PSI5-1500RT120TAA	1,500 VA/1350 W
PSI5-2200RT120 PSI5-2200RT120TAA	1,920 VA/1920 W
PSI5-3000RT120 PSI5-3000RT120TAA	3,000 VA/2,700 W
PSI5-5000RT208 PSI5-5000RT208TAA	5,000 VA/4,500 W

## 1.2 Front and Rear Panel Controls and Features

### 1.2.1 Rear Panel Views

Figure 2.1 PSI5-800/1100/1500RT120 Rear Panel

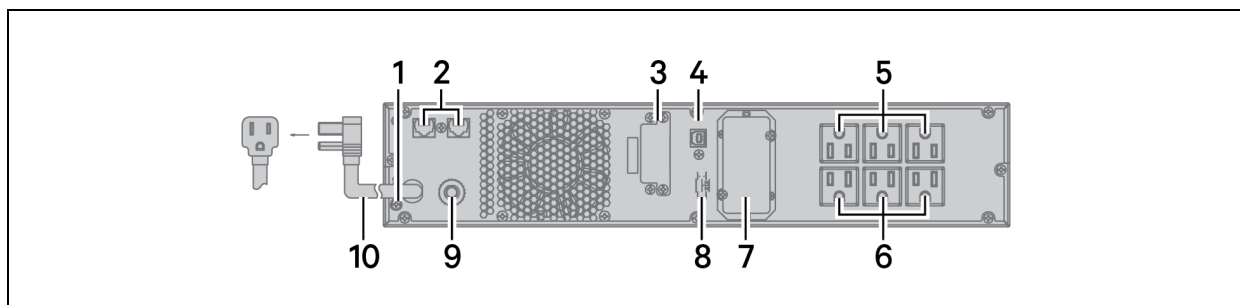


Table 2.2 PSI5-800/1100/1500RT120 Rear-panel Descriptions

ITEM	DESCRIPTION
1	Grounding screw
2	Network/Fax/Modem surge protection input and output
3	External battery connector
4	USB communication port
5	Programmable receptacles
6	Non-programmable receptacles
7	SNMP IntelliSlot port
8	Emergency-power-off (EPO) connector
9	Input circuit breaker
10	AC input



Figure 2.2 PSI5-2200RT120 Rear Panel

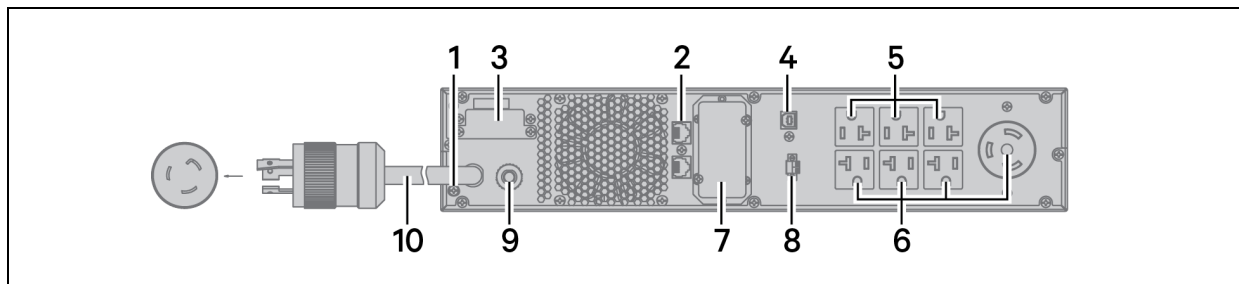


Table 2.3 PSI5-2200RT120 Rear-panel Descriptions

ITEM	DESCRIPTION
1	Grounding screw
2	Network/Fax/Modem surge protection input/output
3	External battery connector
4	USB communication port
5	Programmable receptacles
6	Non-programmable receptacles
7	SNMP IntelliSlot port
8	Emergency-power-off (EPO) connector
9	Input circuit breaker
10	AC input

Figure 2.3 PSI5-3000RT120 Rear Panel

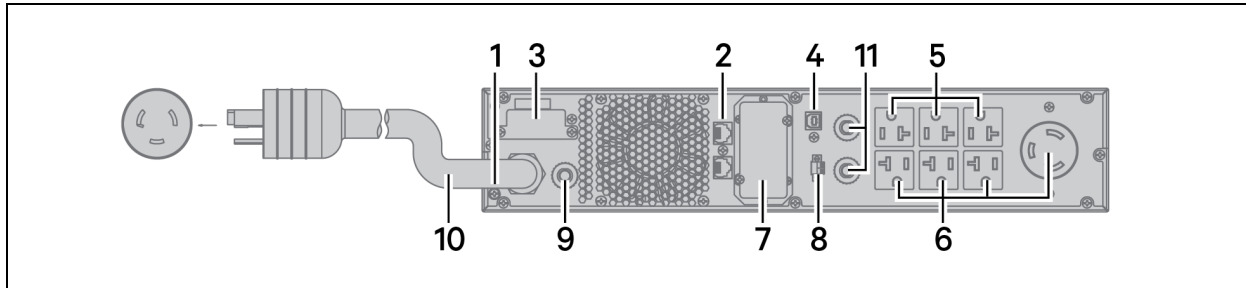


Table 2.4 PSI5-3000RT120 Rear-panel Descriptions

ITEM	DESCRIPTION
1	Grounding screw
2	Network/Fax/Modem surge protection input/output
3	External battery connector
4	USB communication port
5	Programmable receptacles
6	Non-programmable receptacles
7	SNMP IntelliSlot port
8	Emergency-power-off (EPO) connector
9	Input circuit breaker
10	AC input
11	Output circuit breaker

Figure 2.4 PSI5-5000RT208 Rear Panel

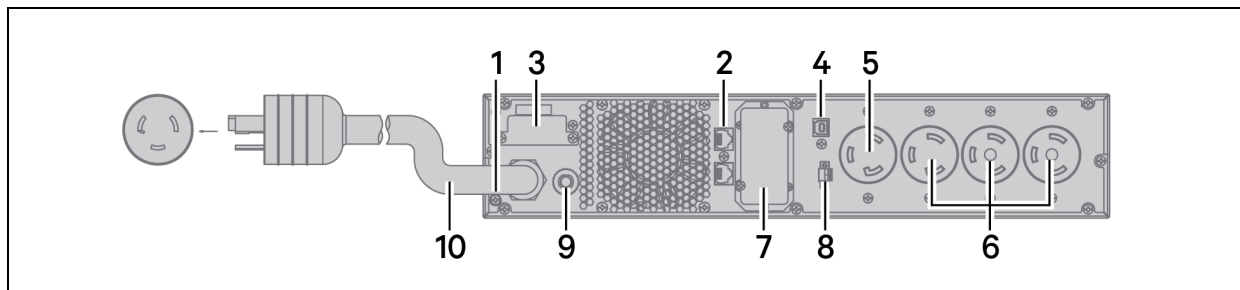
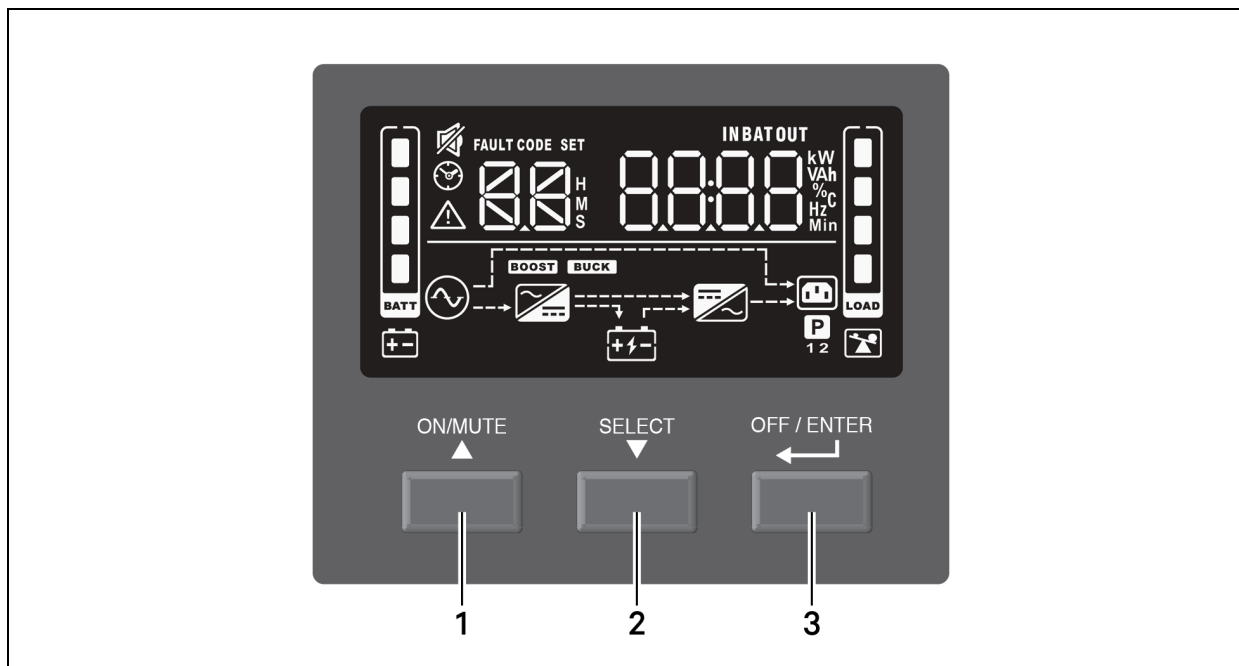


Table 2.5 PSI5-5000RT208 Rear-panel Descriptions

ITEM	DESCRIPTION
1	Grounding screw
2	Network/Fax/Modem surge protection input/output
3	External battery connector
4	USB communication port
5	Programmable receptacles
6	Non-programmable receptacles
7	SNMP IntelliSlot port
8	Emergency-power-off (EPO) connector
9	Input circuit breaker
10	AC input

## 1.2.2 Front Panel

Figure 2.5 Controls and Display



ITEM	DESCRIPTION
1	ON/MUTE button. See <a href="#">Controls</a> on page 20, for details.
2	SELECT button. See <a href="#">Controls</a> on page 20, for details.
3	OFF/ENTER button. See <a href="#">Controls</a> on page 20, for details.

**NOTE:** For detailed descriptions of the LCD display. See [Display Panel Indicators](#) on page 21.

## 2 INSTALLATION

### 2.1 What's Included

- USB cable; one 2 m (6.5 ft) long
- Quick Installation Guide
- Safety and Regulatory Guidelines
- Tower-support stands
- Rack-mount rail kit

The following are available online at [www.VertivCo.com](http://www.VertivCo.com):

- PS15 Installer/User Guide (this document)
- Liebert MultiLink™ Shutdown Software
- PS15 USB-settings Software

### 2.2 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.

### 2.3 Preparation for Installation

#### 2.3.1 Installation Environment

- Install the UPS indoors in a controlled environment, where it cannot be accidentally turned Off. The installation environment should meet the specifications listed in Specifications table, see [Specifications](#) on page 29.
- Place it in an area of unrestricted air-flow around the unit, away from water, flammable liquids, gases, corrosives, and conductive contaminants. Avoid direct sunlight.
- The socket outlet should be nearby and easily accessible.
- This UPS is not for use in a computer room as defined in the standard for the Protection of Electronic Computer/Data Processing Equipment ANSI/NFPA 75.

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

#### 2.3.2 Installation Clearances

Maintain at least 4 in. (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.

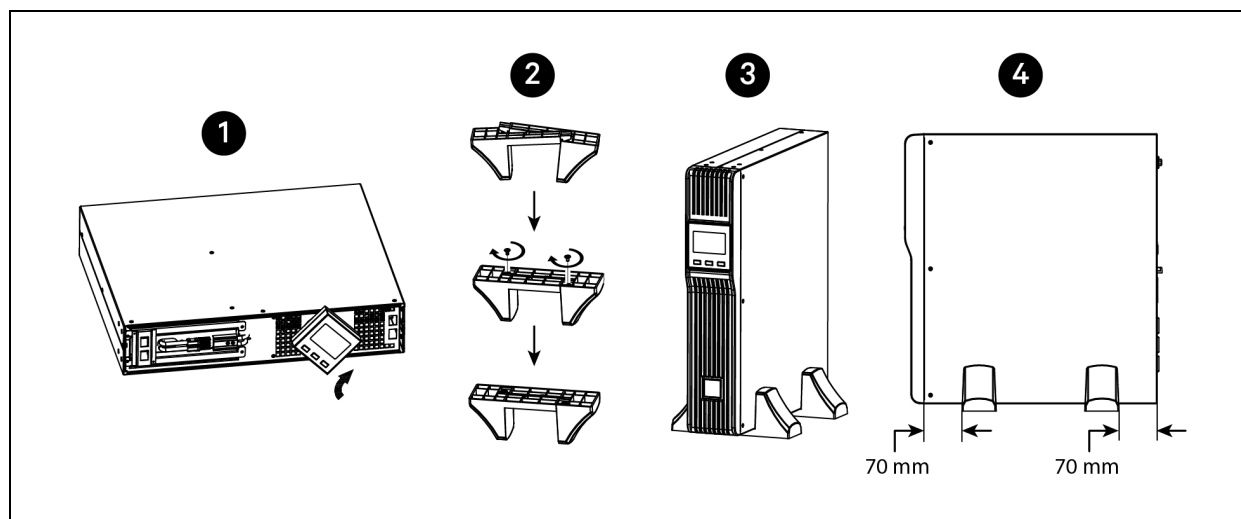
### 2.4 Installing the UPS

The PS15 and optional battery cabinets may be installed in a tower or rack configuration. Determine the configuration that meets your application needs, see [Tower Installation](#) on page 14, or [Rack-Mount Installation](#) on page 15.

## 2.4.1 Tower Installation

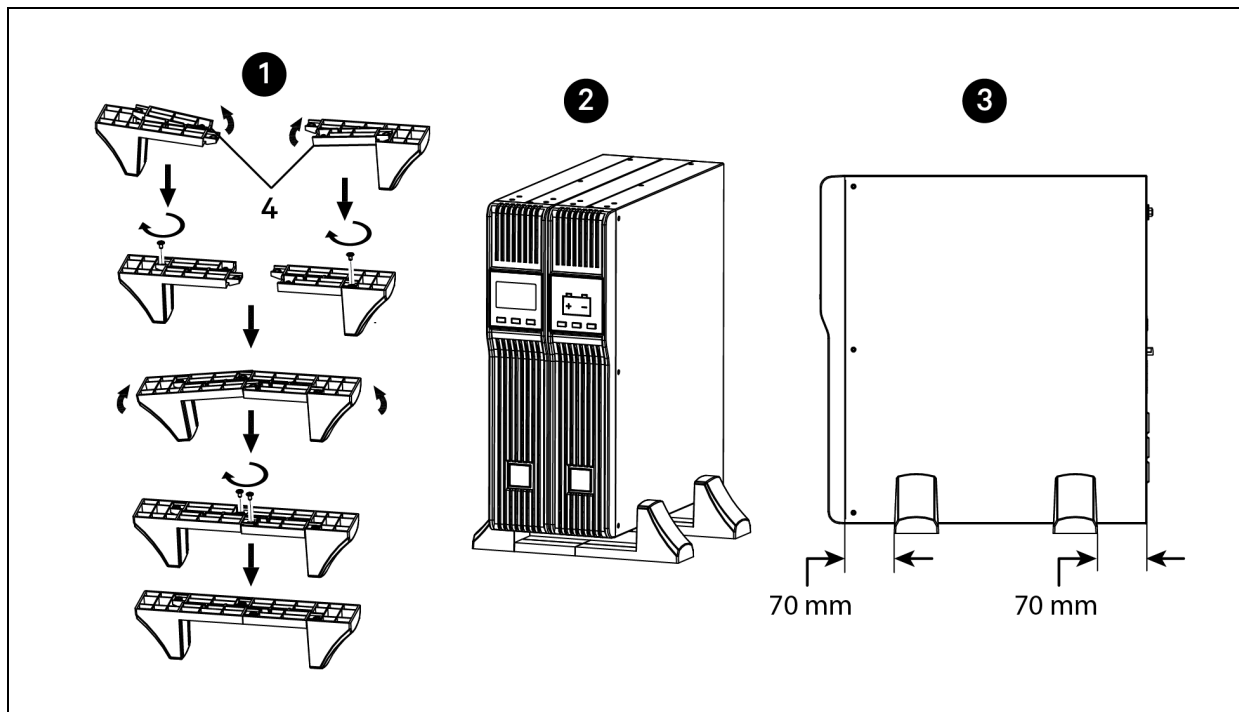
When using the PSI5 in a tower configuration, see Figure 3.1 below. If you have an external battery, see Figure 3.2 on the facing page.

**Figure 3.1** Attaching stands to the UPS



ITEM	DESCRIPTION
1	Rotate the display by pulling out, and turning it clockwise until it is seated in the proper orientation.
2	Connect the two halves of the stand together.
3	Place the UPS in the stands.
4	Make sure that the stands are installed 70 mm (2.76 in.) from the edge of the unit.

Figure 3.2 Attaching stands to the UPS and external battery



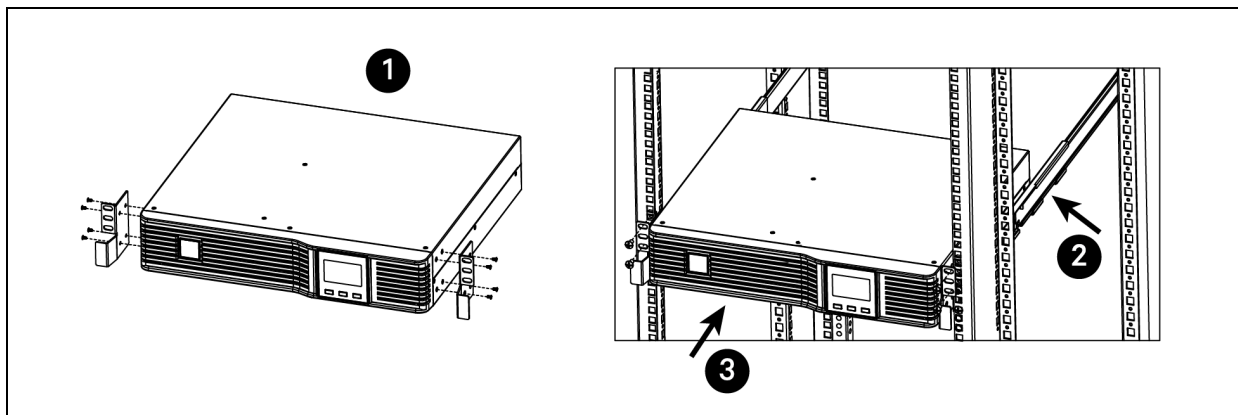
ITEM	DESCRIPTION
1	Connect the two halves of the stand to the spacer, after installing the additional stand components shown in item 4, and install the securing screws.
2	Place the UPS and external battery pack in the stands. (Rotate the display on the UPS if needed, see Figure 3.1 on the previous page.)
3	Make sure that the stands are installed 70 mm (2.76 in.) from the edge of the unit.
4	Insert the stand expansion components and install the securing screws.

## 2.5 Rack-Mount Installation

**!** **CAUTION:** Do not use the mounting brackets to lift the unit. Only use the mounting brackets to secure the UPS to the rack.

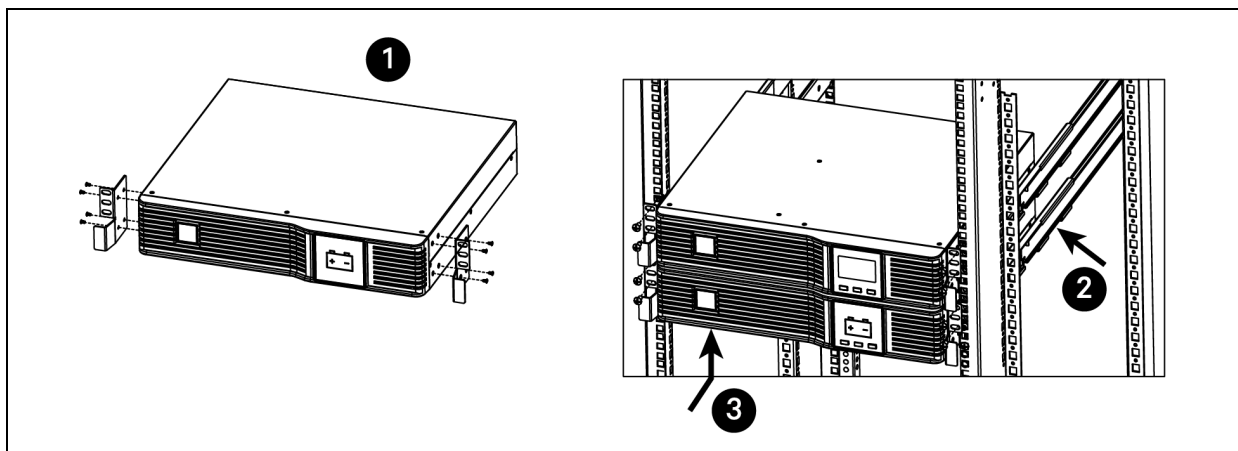
When using the PSI5 in a rack, see Figure 3.3 on the next page, to install the unit. If you have an external battery, see Figure 3.4 on the next page.

Figure 3.3 Installing the UPS in a rack



ITEM	DESCRIPTION
1	Attach the brackets to the UPS.
2	Install the supplied rack kit into the rack.
3	Install the UPS in the rack.

Figure 3.4 Installing the external battery in a rack



ITEM	DESCRIPTION
1	Attach the brackets to the external battery.
2	Install the supplied rack kit into the rack.
3	Install the external battery in the rack.

### 2.5.1 Connecting Loads

The UPS has non-programmable and programmable outlets. Plug your critical equipment (such as computer, monitors, etc.) into the non-programmable outlets and your less-critical equipment (such as printers and other less-often used peripherals) into the programmable outlets.



## 2.6 Connecting for Network Protection (Optional)

Protection from electrical surges to your computer network or telephone is provided. Use the network/fax/modem surge-protection ports on the rear panel. Connect the “IN” port to the line from the wall jack and the “OUT” port to your device port. Use of this feature is not required for proper operation of the UPS.

### 2.6.1 USB Communication Connection

You can connect the PSI5 to a computer via USB allowing unattended, controlled-shutdown of your computer in case of UPS input power failure. The UPS works with the computer running software built-in within the Microsoft® Windows® operating system or the Liebert Multilink™ Shutdown software located at [www.VertivCo.com](http://www.VertivCo.com). Use of this feature is not required for proper operation of the UPS. To use this feature, plug the provided USB cable into USB Type-B port located on the rear panel of the UPS and the other end into an open USB port on your computer.

### 2.6.2 Emergency Power-off (EPO) Connection (Optional)

To comply with national and local wiring codes and regulations, the EPO connector internally disconnects all power sources to the UPS and connected equipment. 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, see [Configuring UPS with the Settings Menu](#) on page 25. If you do not use the EPO connector, leave the factory-installed jumper in place and the default EPO settings in the Settings.

## 2.7 External Battery Cabinet Connection (Optional)

External battery cabinets provide longer battery run-time for connected devices. Refer to Table 6.1 on page 30, and , to select the appropriate model and quantity for your PSI5 model and applications. You can connect up to 6 battery cabinets to the PSI5.

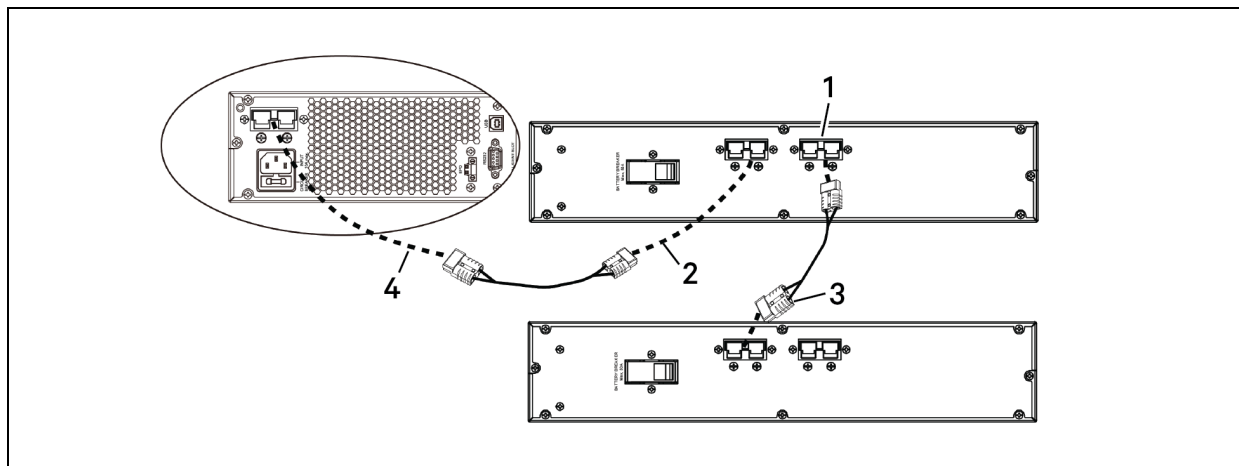
To connect an external battery pack:

1. Turn off the UPS utility input.
2. Open the front-left cover on the UPS and the External Battery Cabinet (EBC) and disconnect the internal batteries.
3. Remove the EBC-terminal covers from the UPS and the EBC, and connect one end of the external-battery cable to the UPS and one end to the battery cabinet as shown in Figure 3.5 on the next page.
  - If connecting more than one external battery, connect one end of the external battery cable to the second connector on the battery cabinet, the connect the other end to the next battery cabinet as shown in Figure 3.5 on the next page.
4. Once the UPS and EBC(s) are connected, secure the connection with the screws, reconnect the internal batteries, and replace the front-left covers on the units.

**NOTE: After install and initial start-up, set the number of installed battery cabinets in the UPS Settings.**

**NOTE: When 2 or more external battery cabinets are used with PSI5-1100/2200/3000/5000 models, the UPS load rating is decreased by 20%.**

Figure 3.5 Connecting External Batteries



ITEM	DESCRIPTION
1	Connection to second connector on external battery cabinet for additional battery cabinets.
2	Connection from UPS to single/first external battery.
3	Connect to next external battery.
4	Connection to UPS.

## 2.8 Network Communication Card Connection (Optional)

For external status monitoring, there is a Network Communications port where one of the network cards may be installed:

- IntelliSlot Relay card, IS-UNITY-SNMP
- IntelliSlot Unity™ card, IS-UNITY-DP

To install the card:

1. Remove the two screws and protective cover on the rear-panel Network Communications Port.
2. Insert the card into the port and secure it with the screws.
3. Refer to the documentation with the card or at [www.VertivCo.com](http://www.VertivCo.com) for cable connection and operation.

### 2.8.1 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. See [Specifications](#) on page 29, for input cord rating.

Once the UPS is plugged into the wall outlet, it begins charging the battery.

**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 12 hours prior to providing full back-up time protection for any utility-power abnormality.

## 3 OPERATION

### 3.1 Modes of Operation

#### 3.1.1 Off Mode

The UPS input is plugged into a stable, nominal source, but the outlets are turned off. The internal batteries are charging.

#### 3.1.2 On/Normal Mode

The UPS input is plugged into a stable, nominal source, and the outlets are turned on. The internal batteries are charging.

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

The UPS input is plugged in, but the voltage source is abnormally 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.

#### 3.1.4 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.

#### 3.1.5 On/Battery Mode

The UPS input is not plugged in, or the voltage 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.

#### 3.1.6 Fault Mode

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

#### 3.1.7 Battery Self-test Mode

The UPS enters a cycle of approximately 10 seconds during which it tests the internal battery. The outlets are still temporarily powered by the internal battery. Self-test mode occurs at the following instances:

- At start-up turning the UPS On.
- Automatically every 8 weeks as a self-check.
- Manually by pressing and holding the ON/Mute button for 3 seconds when the unit is On.

### 3.1.8 Controls

Figure 4.1 Display and Buttons on the front panel

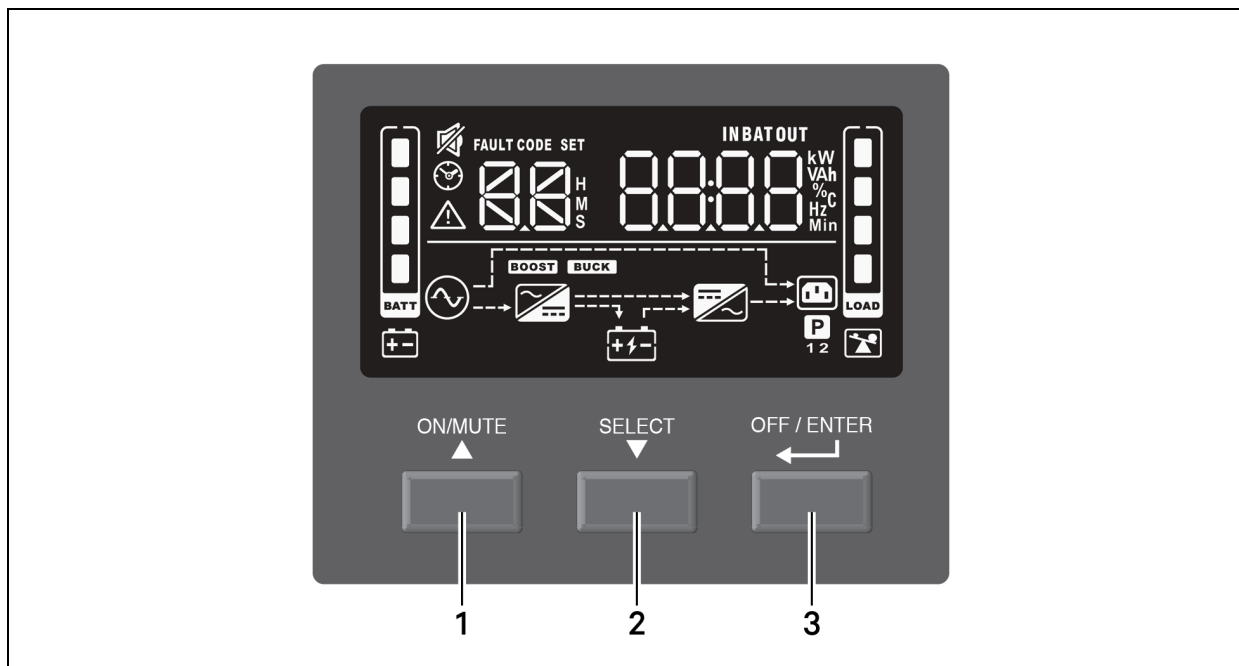


Table 4.1 Control-button descriptions

ITEM	DESCRIPTION
1	<p>On/Mute Button. Powers the UPS on and other functions depending on the current operating mode.</p> <ul style="list-style-type: none"> <li>• UPS On: When in Off mode, press and hold for 2 seconds to enter Battery Self-test mode, then On mode.</li> <li>• Manual Battery Self-check:: Press and hold for 3 seconds to temporarily enter Battery Self-test mode.</li> <li>• Mute: When in On/Battery mode, press and hold for 3 seconds.</li> <li>• Settings Menu UP: When the Settings Menu, press to cycle Up through options, see <a href="#">Configuring UPS with the Settings Menu</a> on page 25.</li> </ul>
2	<p>Select Button.</p> <ul style="list-style-type: none"> <li>• Select: Press to cycle through the operating parameters.</li> <li>• Settings Menu: When in Off mode, press and hold for 3 seconds.</li> <li>• Settings menu DOWN: When in Settings Menu, press to cycle Down through setting options, see <a href="#">Configuring UPS with the Settings Menu</a> on page 25.</li> </ul>
3	<p>OFF/Enter Button.</p> <ul style="list-style-type: none"> <li>• UPS Off: When in On mode, press and hold for 2 seconds to enter Off mode.</li> <li>• Settings menu ENTER: When in the Settings Menu, press to confirm selections, see <a href="#">Configuring UPS with the Settings Menu</a> on page 25.</li> </ul>

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

### 3.2 Display Panel Indicators

**NOTE:** The display automatically powers-off to conserve power.

Figure 4.1 on the previous page, shows the LCD display on the front panel of the UPS.

**Table 4.2** Display icons, sections and functions




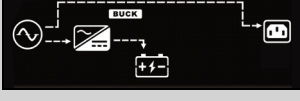







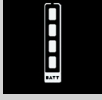





ICONS AND DISPLAY	DESCRIPTION
	Off mode
	On/Normal mode
	On/AVR/Boost mode
	On/AVR/Buck mode
	On/Battery mode
	Estimated back-up time in H (hours), M (minutes), or S (seconds)
	Indicates warning and fault codes. See <a href="#">Faults</a> on page 24, and <a href="#">Warnings</a> on page 23.
	Displays various UPS-operation parameters.
	Settings menu. See <a href="#">Configuring UPS with the Settings Menu</a> on page 25.
	Audible On/Battery-mode alarm silenced

Table 4.2 Display icons, sections and functions (continued)

ICONS AND DISPLAY	DESCRIPTION
	UPS output load in 25% increments
	Battery level in 25% increments
	Low battery
	Overload icon
	Programmable-outlet icon
	Battery icon
	Battery charging icon

### 3.3 Audible-tone Indicators

Table 4.3 Tones and Beeps of the UPS

TYPE	INDICATES
1 beep every 10 seconds	Battery mode
1 beep every second	Overload warning
1 beep every 2 seconds	Low-battery warning
	Other warning
Constant, solid tone	Fault
1 beep	Power-on
	Battery self-test
	Button press
1 long tone	Power off

### 3.4 Warnings

The UPS has early-warning indicators that allow the UPS to function normally for a short period before the outputs are shut-off.

**Table 4.4 Warning Indicators and Actions**

DISPLAY	DESCRIPTION	TROUBLESHOOTING
bL	Battery low	Charge the UPS battery for at least 12 hours or replace the battery, see <a href="#">Replacing the UPS Batteries</a> on page 27.
OL	Overload	Reduce the load to below the rating indicated in the <a href="#">Specifications</a> on page 29.
SF	Site wiring fault	Turn Off the UPS, and call an electrician to correct the wiring. Possible causes are that the line and neutral are reversed or that there is no ground conductor.
EP	Over temperature	Call Vertiv customer support, 1-800-222-5877.
CH	Charger failure	Call Vertiv customer support, 1-800-222-5877.
bF	Battery fault	Charge the UPS battery for at least 12 hours or replace the battery, see <a href="#">Replacing the UPS Batteries</a> on page 27.
bR	Battery replacement	Charge the UPS battery for at least 12 hours or replace the battery, see <a href="#">Replacing the UPS Batteries</a> on page 27.
EE	EEPROM error	Call Vertiv customer support, 1-800-222-5877.
nC	Internal battery is not connected	Check the connection of the battery, see <a href="#">Replacing the UPS Batteries</a> on page 27.
OC	Over charge	Call Vertiv customer support, 1-800-222-5877.
EP	Emergency power off activated	Remove the EPO state on the EPO connector. <b>NOTE: Output immediately shuts-off when the EPO warning occurs.</b>

### 3.5 Faults

The UPS displays fault codes when it detects a problem and automatically shuts-off output power.

**Table 4.5 Fault Codes and Actions**

CODE	DESCRIPTION	TROUBLESHOOTING
01	Bus start fail	Call Vertiv customer support, 1-800-222-5877.
02	Bus over	
03	Bus under	
11	Inverter soft start fail	
12	Inverter voltage high	Turn off the UPS, disconnect all connected loads, and restart the UPS. If the fault is still active, call Vertiv customer support, 1-800-222-5877. If the fault is no longer active, plug each piece of equipment in one at a time to locate the device that has the short circuit.
13	Inverter voltage low	
14	Inverter output short	
27	Battery voltage too high	Replace the battery or call Vertiv customer support, 1-800-222-5877.
28	Battery voltage too low	
41	Over temperature	Make sure that the air temperature is within the range listed in <a href="#">Specifications</a> on page 29. Otherwise, call Vertiv customer support, 1-800-222-5877.
43	Overload	Reduce the load to below the UPS rating listed in <a href="#">Specifications</a> on page 29, and re-start the UPS.
45	Charger failure	Call Vertiv customer support, 1-800-222-5877.

### 3.6 Normal Start-up

- With the UPS connected to AC input, press-and-hold the ON/MUTE button for 2 seconds. The UPS is in Battery Self-test mode for 10 seconds. After a successful self-test, the UPS is On.

### 3.7 Normal Shut-down

1. Press-and-hold the power button for 2 seconds. The outlets are turned off.
2. Disconnect AC-input power.

### 3.8 Full Shut-down

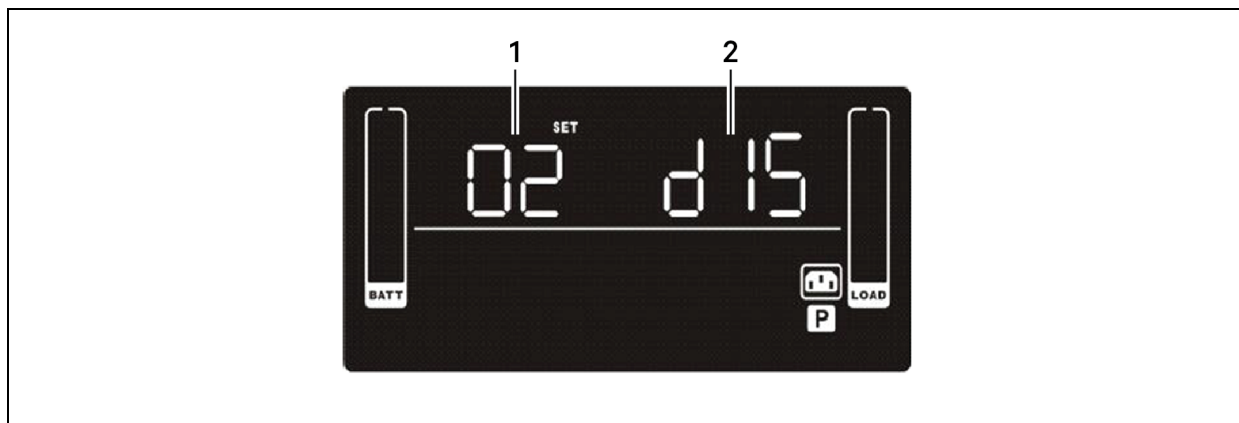
1. Press-and-hold the power button for 2 seconds. The outlets are turned off.
2. Remove the front bezel, disconnect the battery connector, and replace the front bezel. The unit is fully shut down.



### 3.9 Configuring UPS with the Settings Menu

You may adjust several settings to configure the UPS to operate with you equipment. In Settings mode, the displays two parameter fields, see Figure 4.2 below. The first selects the program option to configure, and the second lists the parameter values for selection for each program option. Table 4.6 on the next page, describes the program options. In addition, symbols relevant to the program option may display. The symbols are described in Table 4.2 on page 21.

**Figure 4.2 UPS Display in Settings Mode**



ITEM	DESCRIPTION
1	Program option
2	Settings options for selection.

To access Settings mode and adjust settings:

1. Power-off the UPS by pressing the OFF/Enter button for at least 2 seconds.
2. Press and hold the Select button for 3 seconds.  
Settings mode displays, see Figure 4.2 above.
3. Use the up/down arrow buttons to display the number of the program function to adjust, then press OFF/Enter. See Table 4.6 on the next page, for the options.
4. Use the up/down arrow buttons to select the setting, then press OFF/Enter. See Table 4.6 on the next page, for the settings.
5. When finished, select program option 00, and press OFF/Enter to exit settings mode.

**Table 4.6 Settings Menu Options**

PROGRAM NUMBER	SETTING OPTIONS
01	<p>Nominal-voltage setting. Set the nominal system voltage to match the input voltage of the UPS. This setting affects the buck/boost/on-battery transfer points and sets the output voltage in Battery mode.</p> <p>For 120-VAC models:</p> <ul style="list-style-type: none"> <li>• 100 = 100 VAC</li> <li>• 110 = 110 VAC</li> <li>• 115 = 115 VAC</li> <li>• 120 = 120 VAC (default)</li> <li>• 125 = 125 VAC</li> </ul> <p>For 208-VAC models</p> <ul style="list-style-type: none"> <li>• 200 = 200 VAC</li> <li>• 208 = 208 VAC (default)</li> <li>• 240 = 240 VAC</li> </ul>
02	<p>Enable/Disable programmable outlets.</p> <ul style="list-style-type: none"> <li>• ENA = Enable</li> <li>• DIS = Disable (default)</li> </ul>
03	<p>Programmable-outlets time limit. Set a maximum time the programmable outlets are powered when running on battery. Setting a shorter time limit for programmable outlets extends the time the non-programmable outlets are powered on battery.</p> <ul style="list-style-type: none"> <li>• 0 to 999 = minutes (999 is default)</li> </ul>
04	<p>Enable/Disable site fault detection.</p> <ul style="list-style-type: none"> <li>• ENA = Enable (default)</li> <li>• DIS = Disable</li> </ul>
05	<p>Enable/Disable neutral grounding in battery mode.</p> <ul style="list-style-type: none"> <li>• ENA = Enable (default)</li> <li>• DIS = Disable</li> </ul>
06	<p>Non-programmable-outlets time limit. Set a maximum time the non-programmable outlets are powered when running on battery.</p> <ul style="list-style-type: none"> <li>• 0 to 999 = minutes, selecting 0 (zero) sets a limit of 10 seconds.</li> <li>• DIS = Disable. Back-up time depends on battery capacity (default)</li> </ul>
07	<p>Set the number of connected external battery cabinets.</p> <ul style="list-style-type: none"> <li>• 0 to 6 (0 is default)</li> </ul> <p><b>NOTE: For PSI5-1100/2200/3000/5000: When using 2 or more external battery cabinets (EBCs) the UPS load rating will be decreased by 20%. The % load graph on the LCD automatically adjusts to reflect this derating.</b></p>
08	<p>Set the emergency-power-off (EPO) logic function.</p> <ul style="list-style-type: none"> <li>• AO = Active Open (default) Activates emergency power-off when EPO connector pins are not jumpered (open).</li> <li>• AC = Active Close Activates emergency power-off when EPO connector pins are jumpered (closed).</li> </ul>
09	<p>Set the sensitivity of acceptable input-voltage quality. When distortion or disturbances are detected on the input voltage, the UPS protects the plugged-in equipment by switching to battery mode. The lower the sensitivity setting, the less often the UPS switches to battery, but the more distortion and noise may be passed through to the plugged-in equipment. If you are using a poor quality input source such as a generator or step-wave source on which your equipment can fully operate, a lower sensitivity setting may provide longer battery life and runtimes.</p> <ul style="list-style-type: none"> <li>• ST1 - High sensitivity (default). Provides the maximum protection. The transfer time is typically 4 to 6 ms, 10 ms max.</li> <li>• ST2 - Medium sensitivity. Provides medium protection. The transfer is typically 6 to 8 ms, 11 ms max.</li> <li>• ST3 - Low sensitivity. Provides the least protection but may provide longer battery life and run-time for tolerant equipment. The transfer time is typically 8 to 10 ms, 13 ms max.</li> </ul>
00	<p>Exit Settings mode.</p>

## 4 MAINTENANCE AND BATTERY REPLACEMENT

### 4.1 Precautions

Although the 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:

- Turn off and unplug the UPS before cleaning it.
- Clean the UPS with a dry cloth. Do not use liquid or aerosol cleaners.
- Never block or insert any objects into the ventilation holes or other openings of the UPS.
- Do not place the UPS power cord where it might be damaged.

### 4.2 Battery Charging

The batteries are valve-regulated, non-spill-able, lead acid and should be kept charged to attain their design life. The PSI5 charges the batteries continuously when it is connected to the utility input power. If the PSI5 will be stored for a long time, we recommend connecting the UPS to input power for at least 24 hours every 4 to 6 months to ensure full recharge of the batteries.

### 4.3 Replacing the UPS Batteries

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

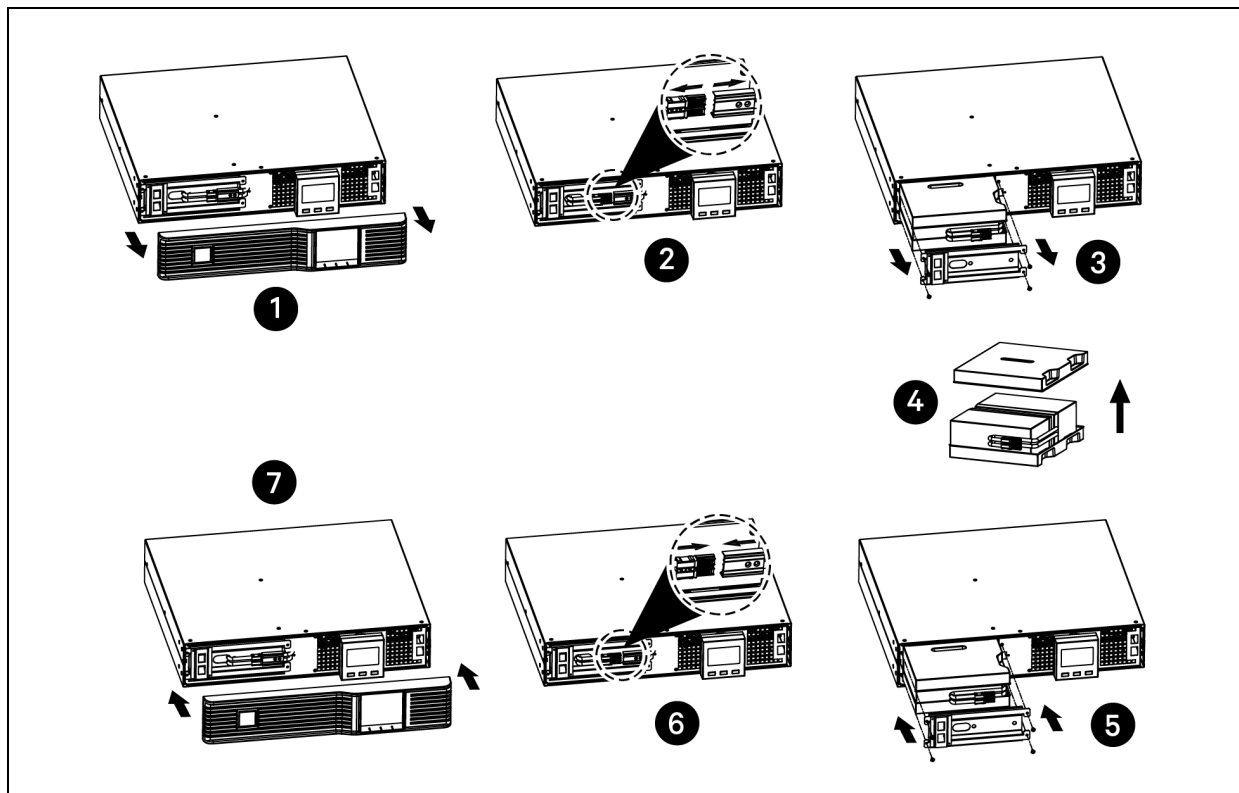
You may safely replace the internal battery pack. See the [Specifications](#) on page 29, for the part number of the replacement battery for your UPS model number.

**NOTE: Replace the battery with the same type and number as originally installed.**

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 two screws and the metal battery cover plate.
4. Slide out the existing battery kit and disconnect the battery terminals from the connector. Disconnect the red wire first, then the black.
5. Plug the removed connector into the terminals of the new replacement battery kit. Plug the black wire in first, then the red.
6. Orient the connector and the new battery in the same way as the original battery and slide into UPS.
7. Reconnect the two halves of the battery connector and slide the front panel back on until it clicks.
8. Replace the metal plate and secure with the two screws.
9. Snap the front bezel back on.
10. Press and hold the power button for 3 seconds to initiate the Battery-Self Check mode clearing any previous battery fault warning.
11. Properly dispose of the old batteries at an appropriate recycling facility or return them to Vertiv in the packing material from the new batteries.

Figure 5.1 Removing the battery box to replace batteries



ITEM	DESCRIPTION
1	Remove the front panel from the UPS.
2	Disconnect the battery wires.
3	Remove the 2 screws on the front panel of the battery box, and pull out the box.
4	Remove the top cover, place the batteries inside, and return the cover to the battery box.
5	Place the battery box in the UPS, and re-install the front panel of the battery box.
6	Connect the battery wires.
7	Replace the front panel on the UPS.

## 5 SPECIFICATIONS

[PSI5 Specifications](#) on page 30 lists the specification for the Liebert PSI5 UPS.

Table 6.1 PSI5 Specifications

MODEL:	PSI5-800RT120 / PSI5-800RT120TAA	PSI5-1100RT120 / PSI5-1100RT120TAA	PSI5-1500RT120 / PSI5-1500RT120TAA	PSI5-2200RT120 / PSI5-2200RT120TAA	PSI5-3000RT120 / PSI5-3000RT120TAA	PSI5-5000RT208 / PSI5-5000RT208TAA
<b>Power Rating</b>						
125 VAC input	800 VA, 720 W, 6.4 A	1100 VA, 990 W, 8.8 A	1500 VA, 1350 W, 12 A	1920 VA, 1920 W, 15.4 A	3000 VA, 2700 W, 24 A	—
120 VAC input	800 VA, 720 W, 6.7 A	1100 VA, 990 W, 9.2 A	1500 VA, 1350 W, 12 A	1920 VA, 1920 W, 16 A	2880 VA, 2700 W, 24 A	—
115 VAC input	800 VA, 720 W, 7.0 A	1100 VA, 990 W, 9.6 A	1500 VA, 1350 W, 12 A	1840 VA, 1840 W, 16 A	2760 VA, 2760 W, 24 A	—
110 VAC input	680 VA, 612 W, 6.2 A	935 VA, 842 W, 8.5 A	1275 VA, 1147 W, 11.6 A	1632 VA, 1632 W, 14.8 A	2550 VA, 2295 W, 23.2 A	—
100 VAC input	680 VA, 612 W, 6.8 A	935 VA, 842 W, 9.4 A	1200 VA, 1147 W, 12 A	1600 VA, 1600 W, 16 A	2400 VA, 2400 W, 24 A	—
240 VAC input	—	—	—	—	—	5000 VA, 4500 W, 20.8 A
230 VAC input	—	—	—	—	—	5000 VA, 4500 W, 21.7 A
220 VAC input	—	—	—	—	—	5000 VA, 4500 W, 22.7 A
208 VAC input	—	—	—	—	—	4250 VA, 3825 W, 20.4 A
200 VAC input	—	—	—	—	—	4250 VA, 3825 W, 21.3 A
<b>Dimensions and Weights</b>						
Unit Dimensions, W x D x H, in (mm)	17.2 x 16.1 x 3.5 (438 x 410 x 88)		17.2 x 20 x 3.5 (438 x 510 x 88)		17.2 x 24.8 x 3.5 (438 x 630 x 88)	
Shipping Dimensions, W x D x H, in (mm)	10.2 x 22.9 x 21.7 (258 x 582 x 550)		10.2 x 26.5 x 21.7 (258 x 672 x 550)		10.2 x 26.7 x 21.7 (258 x 782 x 550)	
Unit Weight, lb (kg)	28.4 (12.9)	29.5 (13.4)	42.6 (19.3)	59.1 (26.8)	70.8 (32.1)	87.7 (39.8)
Shipping Weight, lb (kg)	32.2 (16.9)	37.9 (17.2)	51.8 (23.5)	70.1 (31.8)	81.8 (37.1)	98.8 (44.8)
<b>Input</b>						
Voltage Input Range (with battery operation)	0~150 VAC		0~150 VAC		0~300 VAC	
Voltage Input Range (without battery operation)	75~146 VAC		75~146 VAC		150~281 VAC	
Input Voltage Measurement Tolerance	±5%		±5%		±5%	
Nominal Voltage Setting	100 / 110 / 115 / 120 / 125 VAC		100 / 110 / 115 / 120 / 125 VAC		200 / 208 / 240 VAC	
High Line Buck to Battery	117 / 129 / 135 / 140 / 146 VAC		117 / 129 / 135 / 140 / 146 VAC		234 / 243 / 281 VAC	
High Line Battery to Buck	114 / 125 / 131 / 137 / 143 VAC		114 / 125 / 131 / 137 / 143 VAC		228 / 237 / 274 VAC	
High Line Normal to Buck	110 / 121 / 127 / 132 / 138 VAC		110 / 121 / 127 / 132 / 138 VAC		220 / 229 / 264 VAC	
High Line Buck to Normal	107 / 118 / 123 / 128 / 134 VAC		107 / 118 / 123 / 128 / 134 VAC		214 / 223 / 257 VAC	

Table 6.1 PSI5 Specifications (continued)

MODEL:	PSI5-800RT120 / PSI5-800RT120TAA	PSI5-1100RT120 / PSI5-1100RT120TAA	PSI5-1500RT120 / PSI5-1500RT120TAA	PSI5-2200RT120 / PSI5-2200RT120TAA	PSI5-3000RT120 / PSI5-3000RT120TAA	PSI5-5000RT208 / PSI5-5000RT208TAA
Low Line Boost to Normal	93 / 102 / 107 / 112 / 116 VAC					
Low Line Normal to Boost	90 / 99 / 104 / 108 / 116 VAC					
Low Line Battery to Boost	80 / 88 / 92 / 96 / 100 VAC					
Low Line Boost to Battery	75 / 83 / 86 / 90 / 94 VAC					
Frequency Input Range	55-65 Hz (57-63 Hz Battery to Normal comeback)					
Internal Rear-panel Input Breaker Rating	10 A	13 A	16 A	20 A	30 A	
Input Surge Protection	ANSI C62.41 Category A, Level 3 1372J					
Input Power Cord	NEMA 5-15, offset 90-degree type (3 m attached)			NEMA L5-20 Plug (3 m attached) NEMA L5-20 to 5-20P adapter cord (150 mm)		NEMA L6-30P Plug (3 mm attached)
<b>Output</b>						
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 Hz $\pm 1\%$					
Output Receptacles - not controllable	(3) NEMA 5-15R			(3) NEMA 5-15/20R, (1) NEMA L5-20R		(3) L6-30R
Output Receptacles - controllable	(3) NEMA 5-15R (3) NEMA 5-20R (1) NEMA L6-30R					
Transfer Time	4-6 ms, Typical					
Output Waveform (on Battery)	Pure Sinewave					
Output Overload Operation	100% - alarm warning 110% - alarm warning and shutdown after 10 seconds 120% - alarm warning and immediate shutdown					
Protection	Electronic (over current, short circuit w/ latching shutdown)					
A/C-mode Efficiency	96% for 100/110/115/120/125 VAC					
Buck- and Boost-mode Efficiency	93% for 100/110/115/120/125 VAC					
Recharge Time	4 hours to recover 90%					

Table 6.1 PSI5 Specifications (continued)

MODEL:	PSI5-800RT120 / PSI5-800RT120TAA	PSI5-1100RT120 / PSI5-1100RT120TAA	PSI5-1500RT120 / PSI5-1500RT120TAA	PSI5-2200RT120 / PSI5-2200RT120TAA	PSI5-3000RT120 / PSI5-3000RT120TAA	PSI5-5000RT208 / PSI5-5000RT208TAA
<b>Internal Battery</b>						
Part Number	PSI5-800BATKIT	PSI5-1100BATKIT	PSI5-1500BATKIT	PSI5-2200BATKIT	PSI5-3000BATKIT	PSI5-5000BATKIT
Protection	Electronic (overcurrent, short circuit with latching shutdown)					
Type	Valve-regulated lead-acid (VRLA) in compliance with UL 1989					
Battery Manufacturer/Model	Leoch/DJW12-7.0 CSB/GP1272	Leoch/DWJ12-9.0 CSB/HR1234W	Leoch/DJW12-7.0 CSB/GP1272	Leoch/DWJ12-9.0 CSB/HR1234W	Leoch/DWJ12-9.0 CSB/HR1234W	Leoch/DWJ12-10 CSB/UPS12580
Quantity x Voltage x Ah	2 x 12V x 7.0Ah	2 x 12V x 9.0Ah	4 x 12V x 7.0Ah	6 x 12V x 7.0Ah	6 x 12V x 9.0Ah	6 x 12V x 10Ah
<b>External Battery Cabinets</b>						
Model Number	PSI5-24VBATT					
Protection	circuit breaker					
Type	Valve-regulated lead-acid (VRLA) in compliance with UL 1989					
Battery Manufacturer/Model	Leoch/DWJ12-9.0 CSB/HR1234W					
Quantity x Voltage x Ah	2 x 12V x 9.0Ah // 2 x 12V x 9.0Ah	4 x 12V x 9.0Ah // 4 x 12V x 9.0Ah	6 x 12V x 9.0Ah // 6 x 12V x 9.0Ah	17.2 x 20 x 3.5 (438 x 510 x 88)	10.2 x 26.7 x 21.7 (258 x 672 x 550)	6 x 12V x 9.0Ah
Dimensions, W x D x H, in. (mm)	17.2 x 16.1 x 3.5 (438 x 410 x 88)	17.2 x 20 x 3.5 (438 x 510 x 88)	17.2 x 20 x 3.5 (438 x 510 x 88)	17.2 x 24.8 x 3.5 (438 x 630 x 88)	10.2 x 26.7 x 21.7 (258 x 782 x 550)	
Shipping dimensions, W x D x H, in. (mm)	10.2 x 22.9 x 21.7 (258 x 582 x 550)	10.2 x 26.5 x 21.7 (258 x 672 x 550)	10.2 x 26.5 x 21.7 (258 x 672 x 550)	10.2 x 26.7 x 21.7 (258 x 782 x 550)	10.2 x 26.7 x 21.7 (258 x 782 x 550)	
Unit weights, lb (kg)	37.7 (17.1)	63.9 (29.0)	63.9 (29.0)	90.8 (41.2)	90.8 (41.2)	
Shipping weights, lb (kg)	51.8 (23.5)	70.3 (31.9)	70.3 (31.9)	96.1 (43.6)	96.1 (43.6)	
<b>Environmental Requirements</b>						
Operating Temperature, °F (°C)	32 – 104 (0 – 40)					
Operating Elevation, ft (m)	0 – 9,942 (0 – 3,000) without derating Operating temperature reduced 9° F (5° C) for each additional 1,640 ft (500 m) of altitude.					
Relative Humidity	20% to 90% non-condensing					
Storage Temperature	–15°C to 50°C (–5° F to 122° F)					
Storage Relative Humidity	20% to 90% non-condensing					
Audible Noise	< 45 dB					

< 45 dB @ line mode  
< 55 dB @ battery mode



## 5.1 Run Times

NOTE: PSI5-1100/2200/3000/5000: When using 2 or more external battery cabinets (EBCs) the UPS load rating will be decreased by 20%. The % load graph on the LCD automatically adjusts to reflect this derating.

NOTE: Run times are approximate. They are based on new fully charged batteries at a temperature of 25°C (77°F) with 100% resistive UPS loading.

Table 6.2 PSI5-800RT120

LOAD			NUMBER OF EXTERNAL BATTERY CABINETS						
			INTERNAL BATTERY ONLY	1	2	3	4	5	6
%	VA	W	MINUTES						
100	800	720	3	22	45	70	97	125	154
75	600	540	5	30	60	93	129	165	202
50	400	360	11	53	107	166	226	287	350
25	200	180	25	109	215	326	438	551	665
10	80	72	69	285	539	796	1053	1311	1569

Table 6.3 PSI5-1100RT120

LOAD			NUMBER OF EBCS		LOAD			NUMBER OF EBCS				
			INTERNAL BATTERY ONLY	1				2	3	4	5	6
%	VA	W	MINUTES		%	VA	W	MINUTES				
100	1100	990	2	17	100	880	792	45	68	92	118	144
75	825	743	4	24	75	660	594	65	98	133	168	205
50	550	495	10	44	50	440	396	107	160	215	272	328
25	275	248	23	91	25	220	198	219	321	426	531	636
10	110	99	65	244	10	88	79	534	768	1003	1238	1473

**Table 6.4 PSI5-1500RT120**

LOAD			NUMBER OF EXTERNAL BATTERY CABINETS						
			INTERNAL BATTERY ONLY	1	2	3	4	5	6
%	VA	W	MINUTES						
100	1500	1350	4	24	50	78	107	138	169
75	1125	1013	6	33	66	102	141	181	222
50	750	675	12	59	119	183	249	316	383
25	375	338	28	122	240	363	486	611	736
10	150	135	81	330	619	911	1203	1496	1790

**Table 6.5 PSI5-2200RT120**

LOAD			NUMBER OF EBCS		LOAD			NUMBER OF EBCS				
			INTERNAL BATTERY ONLY	1				2	3	4	5	6
%	VA	W	MINUTES		%	VA	W	MINUTES				
100	1920	1920	4	27	100	1536	1536	72	111	152	194	237
75	1440	1440	7	40	75	1152	1152	104	159	216	274	333
50	960	960	13	66	50	768	768	170	257	346	435	525
25	480	480	30	137	25	384	384	336	497	667	824	989
10	192	192	84	358	10	154	154	835	1213	1592	1971	2350

**Table 6.6 PSI5-3000RT120**

LOAD			NUMBER OF EBCS		LOAD			NUMBER OF EBCS				
			INTERNAL BATTERY ONLY	1				2	3	4	5	6
%	VA	W	MINUTES		%	VA	W	MINUTES				
100	3000	2700	3	20	100	2400	2160	52	78	106	134	164
75	2250	2025	5	27	75	1800	1620	74	112	151	191	232
50	1500	1350	12	50	50	1200	1080	122	182	244	306	370
25	750	675	26	102	25	600	540	244	358	473	589	705
10	300	270	76	282	10	240	216	619	887	1156	1425	1695

**Table 6.7** PSI5-5000RT208

LOAD			NUMBER OF EBCS		LOAD			NUMBER OF EBCS				
			INTERNAL BATTERY ONLY	1				2	3	4	5	6
%	VA	W	MINUTES		%	VA	W	MINUTES				
100	5000	4500	3	15	100	4000	3600	30	44	60	76	92
75	3750	3375	4	20	75	3000	2700	43	63	85	108	131
50	2500	2250	10	36	50	2000	1800	70	104	139	175	212
25	1250	1125	26	82	25	1000	900	156	228	301	375	449
10	500	450	69	215	10	400	360	358	511	665	819	974

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