PowerUPS 200 Essential Line Interactive Series

Installer/User Guide

600 VA / 800 VA / 1000 VA / 1440 VA UPS; 120 VAC; VRLA

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Refer to local regulations and building codes relating to the application, installation, and operation of this product. The consulting engineer, installer, and/or end user is responsible for compliance with all applicable laws and regulations relation to the application, installation, and operation of this product.

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Technical Support Site

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

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

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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.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING! Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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2 Product Description

The Vertiv™ PowerUPS 200 Essential Series is a line-interactive UPS designed to provide reliable power protection for computers, workstations, retail point-of-sale (POS) equipment, wireless networks, and surveillance systems. Designed with user-friendly controls, the Vertiv PowerUPS 200 Essential Series delivers dependable power protection for a wide range of applications.

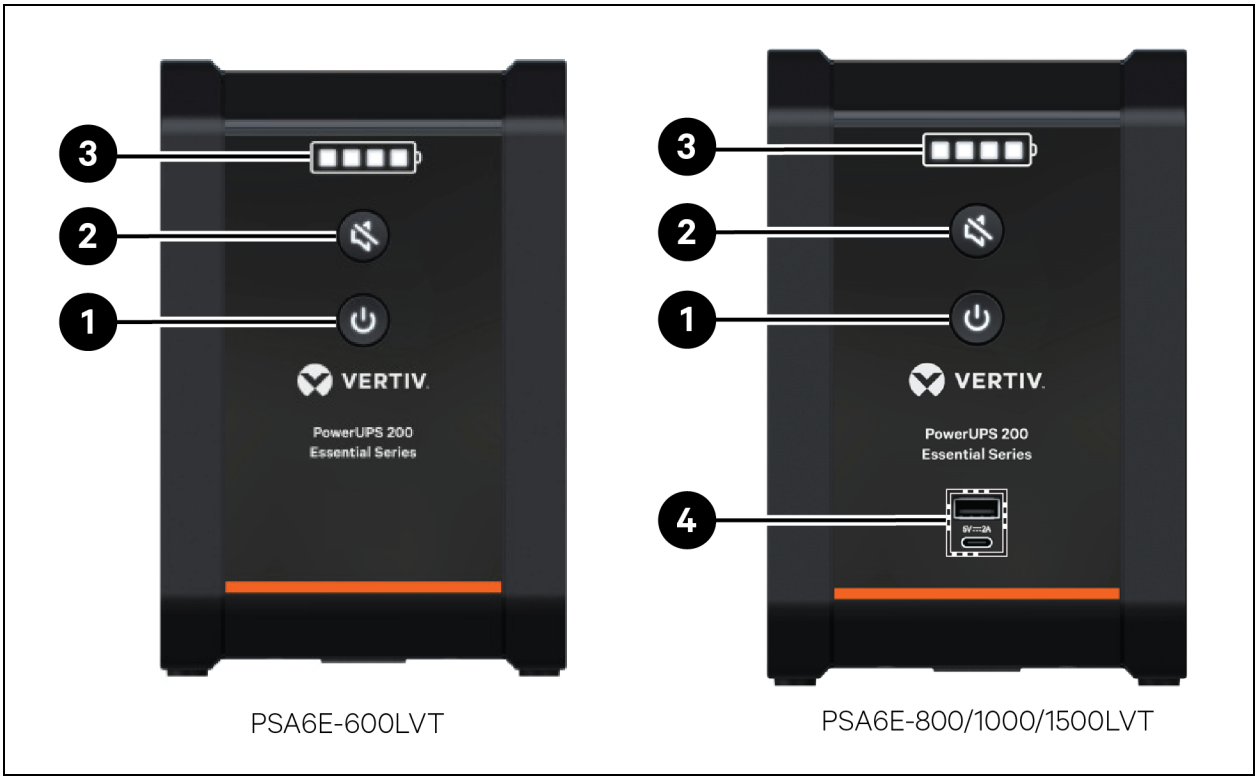
2.1 Available Models

Table 2.1 Vertiv PowerUPS 200 Essential Series Models

Model Number	Nominal Power Rating
PSA6E-600LVT	600 VA / 360 W
PSA6E-800LVT	800 VA / 450 W
PSA6E-1000LVT	1000 VA / 550 W
PSA6E-1500LVT	1440 VA / 850 W

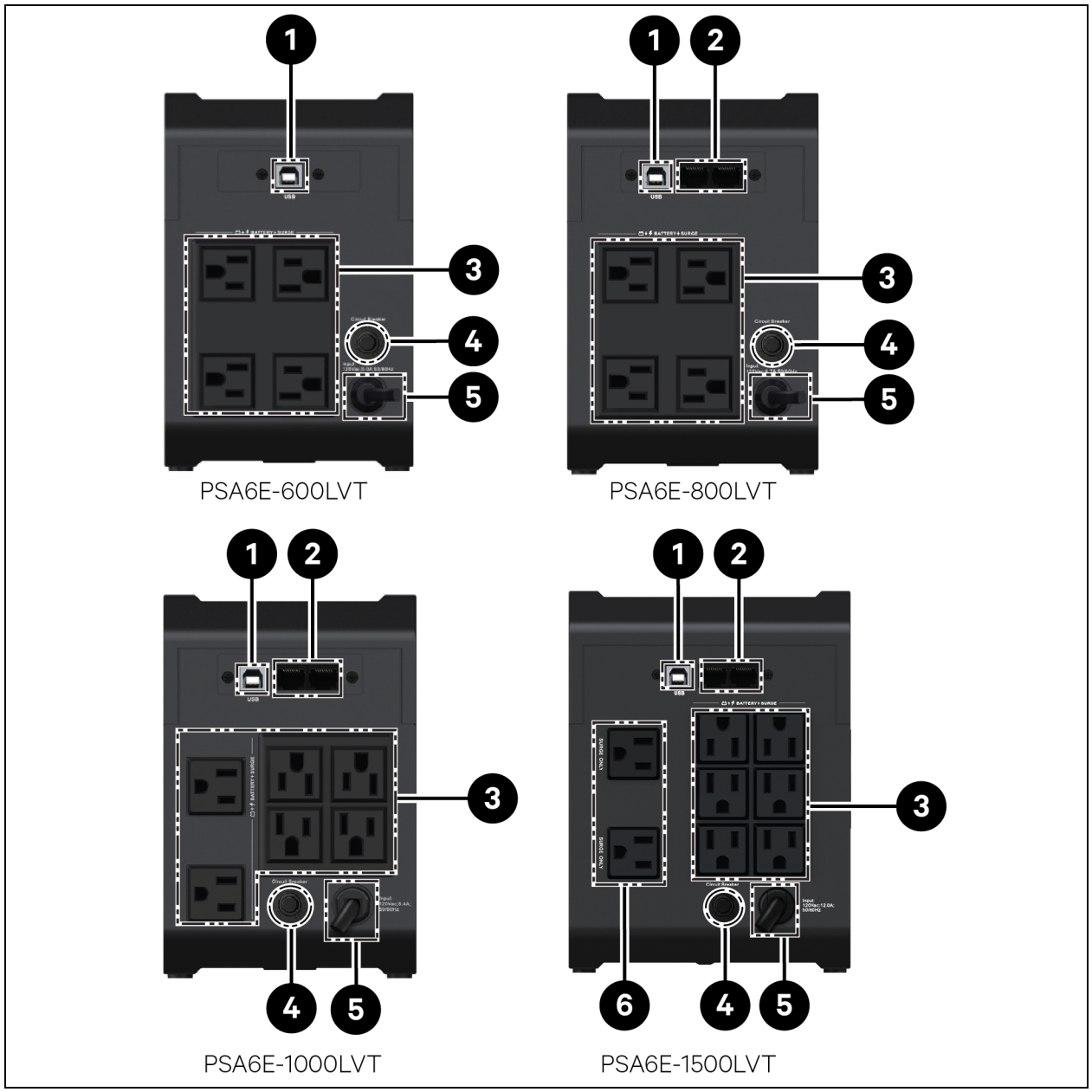
2.2 Front and Rear Panel Controls and Features

Figure 2.1 Vertiv™ PowerUPS 200 Essential Series Front Panel



Item	Description
1	Power button
2	Mute button
3	Battery capacity LED
4	USB charging ports 5 V / 2 A maximum (Type A and C) **NOTE: USB charging ports are available on PSA6E-800/1000/1500LVT models except the PSA6E-600LVT.**

Figure 2.2 Vertiv™ PowerUPS 200 Essential Series Rear Panel



Item	Description
1	USB communication port (Type B)
2	RJ45 connectors for network surge protection
3	Battery-backed and surge-protected receptacles
4	Input circuit breaker
5	Input power cord (NEMA 5-15P)
6	Surge-protected only receptacles

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3 Installation

3.1 What's Included

- Vertiv™ PowerUPS 200 Essential Series UPS
- Quick Installation Guide
- Safety and Regulatory Guide
- One USB cable: 1.2 m (4 ft)

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 the packaging list. If there is any discrepancy, contact your local dealer or your Vertiv representative immediately.

3.3 Preparation for Installation

3.3.1 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 on page 17.
- 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 mains socket outlet that supplies the UPS should be near the UPS and easily accessible.
- This UPS is not used 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.

3.3.2 Installation Clearances

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

3.4 Installing the UPS

3.4.1 Connecting Loads

All UPS outlet receptacles have surge protection and battery backup. Plug your critical equipment (such as computer, monitors, printers and other peripherals etc.) into the outlet receptacles. Note that the load should not exceed the output load rating of the UPS.

3.4.2 Connecting for Network, Telephone or TV Protection

All Vertiv™ PowerUPS 200 Essential Series models except the 600 VA models feature a separate RJ45 port on the rear panel for network/telephone surge protection. Connect the IN port to the line from the wall jack and the OUT port to your device port. Use of this port is optional and does not interfere with the normal operation of the UPS.

3.4.3 USB Communication Connection

User can connect the Vertiv PowerUPS 200 Essential Series UPS to a computer via USB allowing unattended, controlled shutdown of your computer using Vertiv™ Power Assist software in case of UPS input power failure. The UPS works with the computer running software built-in within the Microsoft Windows operating system. 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. Use of this port is optional and does not interfere with the normal operation of the UPS.

3.4.4 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 17, 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 24 hours prior to providing full backup time protection for any utility power abnormality.

4 Operation

4.1 Modes of Operation

In all the following modes:

- The UPS always provides surge protection and input breaker protection to all the outlets.
- The outlets are voltage regulated and always have the same voltage level as the UPS mode voltage (±10%).
- The surge-only outlets are not voltage regulated, battery backed-up or switched by the UPS.

4.1.1 Off Mode

The UPS input is plugged into a stable, 120 VAC source, the surge-only outlets are turned on but the outlets are turned off. The internal batteries are charging.

4.1.2 On/Normal Mode

The UPS input is plugged into a stable, 120 VAC source, and the UPS is turned on, the battery backed outlets are now powered. The internal batteries are charging.

4.1.3 On/Automatic Voltage Regulation (AVR) Mode

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

NOTE: The surge-only outlets will have the abnormally low input voltage and equipment plugged into these outlets may not work.

4.1.4 On/Battery Mode

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

NOTE: The surge-only outlets may still have power if the UPS input is plugged in.

4.1.5 Fault Mode

An error or fault condition has occurred. The outlets are shut off, and the internal batteries are not charging.

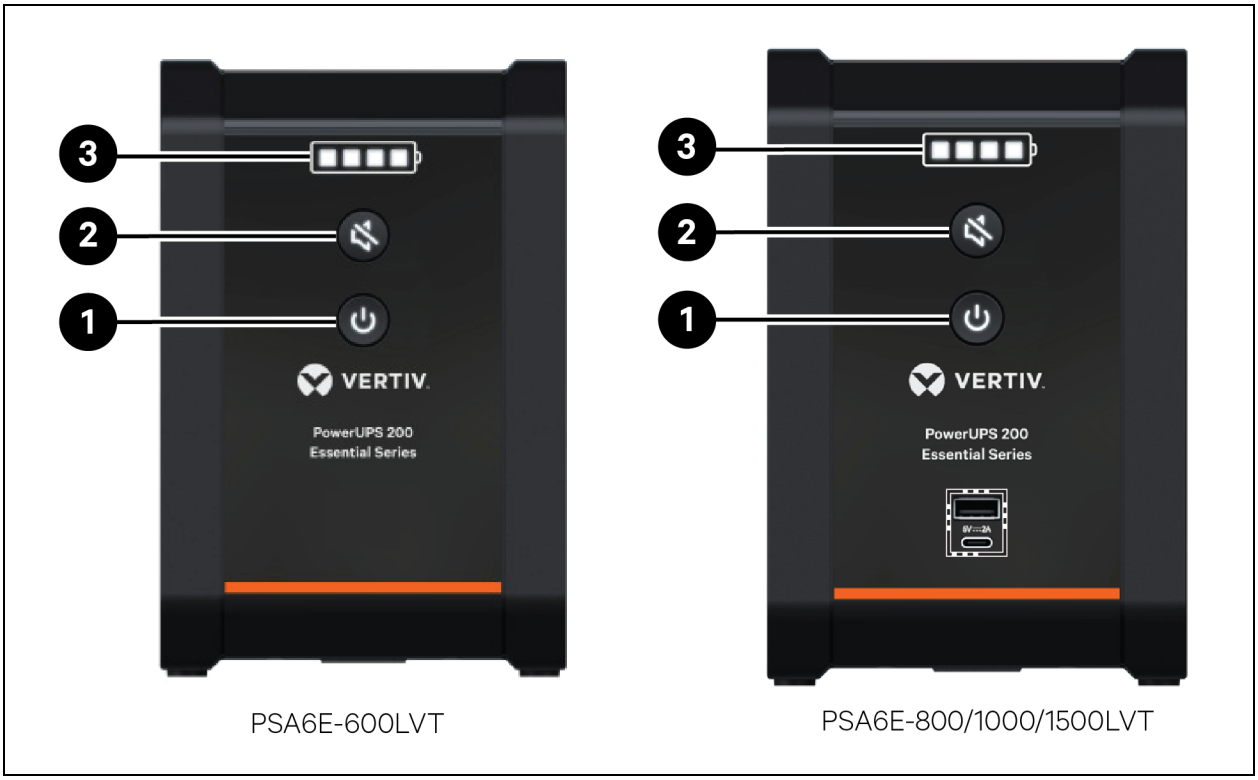
NOTE: The surge-only outlets may still have power if the UPS input is plugged in.

4.1.6 Battery Self Test Mode

The battery self test mode occurs at startup when the UPS is powered on. 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.

4.2 Controls

Figure 4.1 Buttons and Indicator on the Front Panel



Item	Description
1	Power button • Press and hold for 1 second to cycle between *On* and *Off* mode.
2	Mute button • Press and hold for 1 second during On/Battery mode to mute the battery alarm beep. • Press and hold for 4 seconds to cycle between voltage mode selection in off charging mode.
3	Indicator—Battery capacity LED display in 25% increments.

4.3 Normal Startup

With the UPS connected to AC input, press and hold the power button for 1 second.

4.4 Normal Shutdown

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

5 Maintenance

5.1 Precautions

Although the Vertiv™ PowerUPS 200 Essential Series models are 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.

5.2 Battery Charging

The batteries are valve regulated, non-spillable, lead acid and should be kept charged to attain their design life. The Vertiv PowerUPS 200 Essential Series UPS charges the batteries continuously when it is connected to the utility input power. If the UPS 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.

5.3 Battery Replacement

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 Specifications on page 17, for the part number of the replacement battery for your UPS model number.

To replace the battery, follow the steps shown in the applicable Figure 5.1 below or Figure 5.2 on the facing page:

Figure 5.1 Battery Replacement—Vertiv™ PowerUPS 200 Essential Series 600/800/1000 VA UPS Models

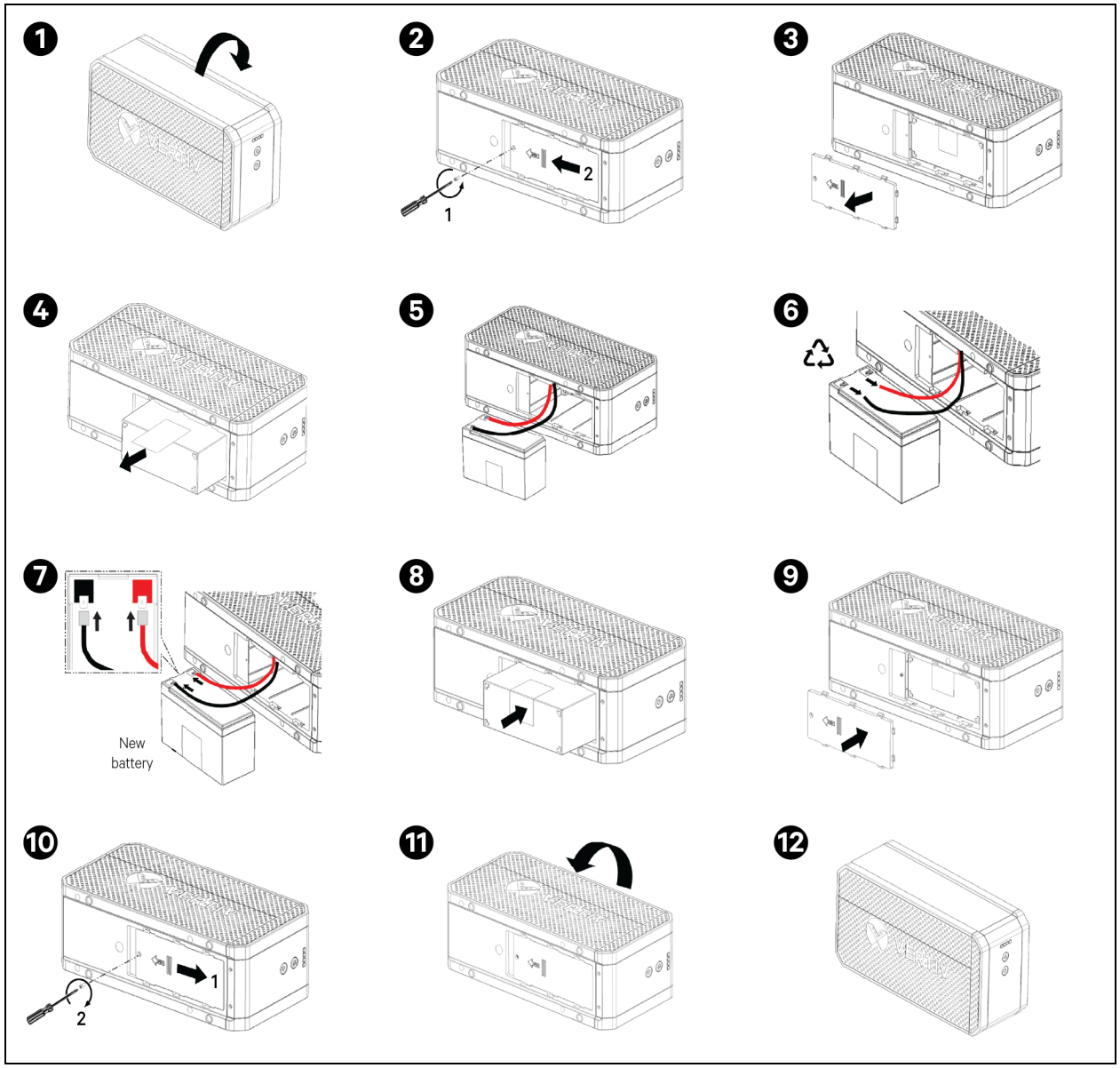
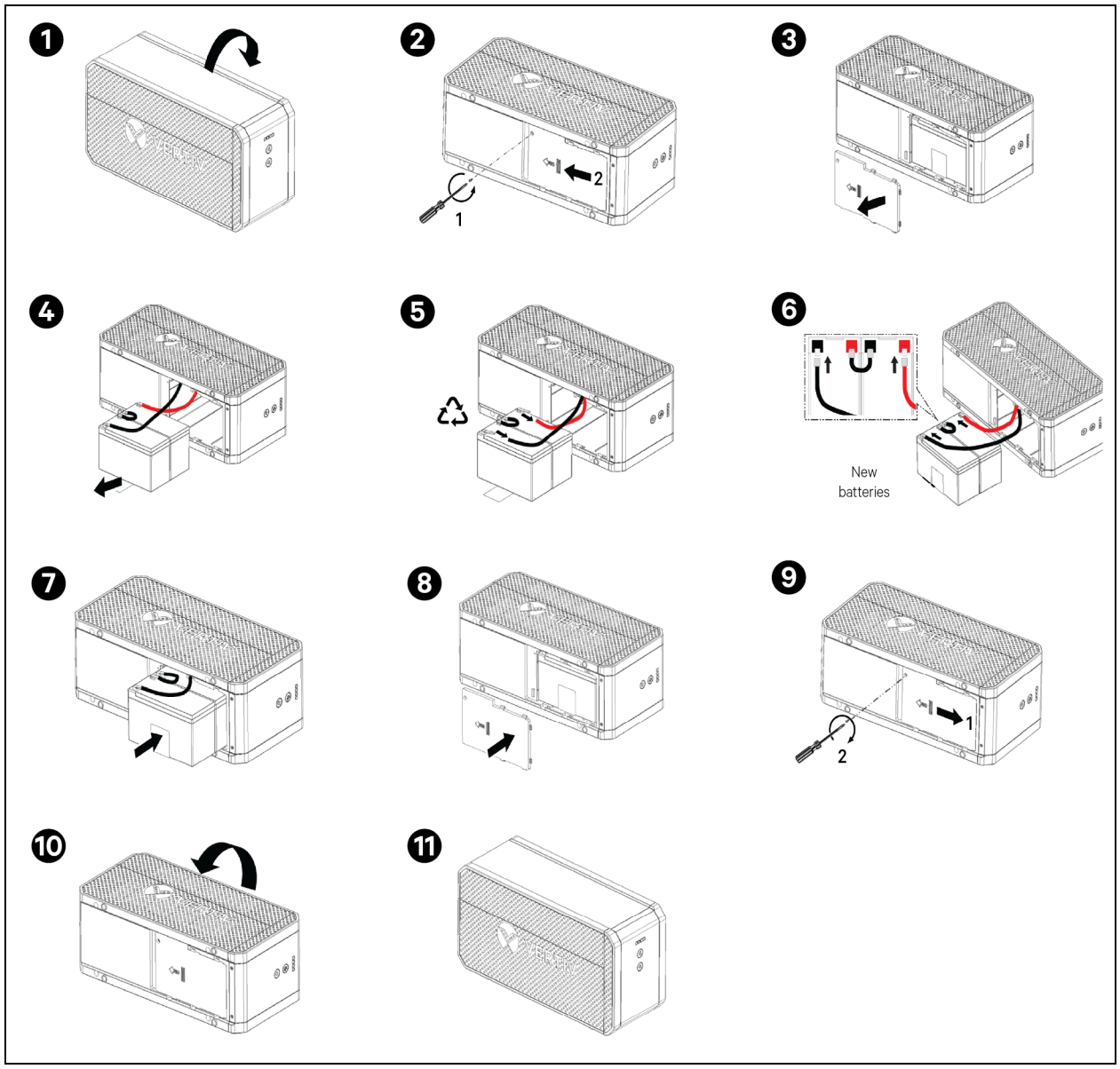


Figure 5.2 Battery Replacement—Vertiv™ PowerUPS 200 Essential Series 1500 VA UPS Model



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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 Status Indicators

An audible alarm accompanies various events during UPS operations. Table 6.1 below, describes the sounds and their meaning.

Table 6.1 Audible Alarm and LED Indicator Descriptions

Sound	Indicates	LED Indicator
One long beep	Power on	Solid white
One beep every 10 seconds	Battery mode	Blinking green (every 2 seconds)
One beep every 0.5 seconds	UPS overload warning	Solid yellow
One beep every second	Low battery warning	Blinking yellow (every 1 second)
One beep every 2 seconds	Battery replacement warning. To replace the battery, refer Battery Replacement on page 11.	Blinking yellow (every 2 seconds)
Continuous beep	UPS fault	Solid red

6.2 Warning Indicator

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

Table 6.2 Warning Indicators and Actions

Yellow LED	Audible Alarm	Description	Corrective Action
On solid	One beep every 0.5 seconds	The load devices plugged in to the UPS output are utilizing more power than the UPS rating.	Reduce the load to below the UPS rating specified in **Table 7.1** on page 17.
Blinking	One beep every 2 seconds	The battery is weak or damaged.	Charge the UPS battery for at least 8 hours, or replace the battery, see Battery Replacement on page 11.

6.3 Faults

The Vertiv™ PowerUPS 200 Essential Series models fault indicator is the red LED on the front panel. If this warning/fault LED is on solid, and there is a continuous audible beep, the UPS has detected a problem and automatically shut off the output.

To troubleshoot the fault:

1. Turn off the UPS, disconnect all connected equipment (loads), and restart the UPS.
2. Check the fault status:
   - If the fault is still active, refer to the Table 6.3 below to identify and resolve the issue. If the fault persists after referring to the table, contact Vertiv Technical Support for assistance or replacement.
   - If the fault is no longer active but the connected equipment is still not receiving power, the issue may be with the equipment itself. Reconnect devices one at a time to identify the faulty device.

Table 6.3 Troubleshooting

Symptom	Possible Cause	Corrective Action
UPS does not turn on	The power button is not pressed.	Press and hold the power button for 1 second and then release it to power on the UPS.
	UPS input cord is not plugged in or outside AC circuit breaker is tripped.	Ensure the UPS is plugged into a properly wired and grounded outlet. Avoid using extension cords, adapters or other connectors.
No LED display	Battery is low.	Charge battery for up to 8 hours.
	Battery is defective.	Call 1-800-543-2378 for service/warranty replacement.
Alarm beeps continuously when AC supply is normal	Overload of the UPS.	Verify that the load matches the UPS capacity specified.
UPS does not provide expected runtime	Overload of the UPS.	Remove any non-critical load.
	Battery defect due to high temperature, or improper operation.	Call 1-800-543-2378 for service/warranty replacement.
Battery mode/green LED is blinking in normal mode	Power cord is loose.	Reconnect the power cord properly.
Power button red	UPS has detected an internal fault.	Call 1-800-543-2378 for service/warranty replacement.

7 Specifications

Table 7.1 PowerUPS 200 Series Specifications

Model Number	PSA6E-600LVT	PSA6E-800LVT	PSA6E-1000LVT	PSA6E-1500LVT
Capacity (VA / W)	600 / 360	800 / 450	1000 / 550	1440 / 850
Unit Dimensions, in. (mm) W x D x H	4.72 x 13.98 x 7.1 (120 x 355 x 180)			5.71 x 15.75 x 7.68 (145 x 400 x 195)
Unit Weight, lbs. (kg)	13 (5.9)	14.8 (6.7)	16.3 (7.4)	21.2 (9.6)
Shipping Dimensions, in. (mm) W x D x H	7.8 x 16.9 x 10.8 (197 x 430 x 275)		9.3 x 19.5 x 12.0 (235 x 495 x 305)	
Shipping Weight, lbs. (kg)	15.2 (6.9)	17.2 (7.8)	18.7 (8.5)	24.5 (11.1)
Input AC				
Nominal Voltage	120 VAC			
Voltage Range	81 to 147 VAC			
Input Voltage Measurement Tolerance	±5%			
Frequency Range	50/60 Hz, ±1 Hz (auto-sensing)			
Internal Rear Panel Input Breaker	7 A, 250 VAC	10 A, 250 VAC	13 A, 250 VAC	16 A, 250 VAC
Surge Energy Rating	400 Joules minimum			
Input Cord Length and Connector	6 ft attached with NEMA 5-15P			
Output AC (On Utility)				
Nominal Voltage	120 VAC			
Voltage Range	95 to 132 VAC (±5%)			
Frequency Range	50/60 Hz, ±1 Hz (auto-sensing)			
Efficiency	>95% at full load			
Output AC (On Battery)				
Nominal Voltage	110 to 120 VAC			
Voltage Range	Nominal ±10% VAC			
Frequency Range	50/60 Hz, ±1 Hz (auto-sensing)			
Waveform	Simulated sine wave			
Transfer Time	2 to 6 ms (10 ms, maximum)			
Overload Capacity in Normal Mode (measurement tolerance ±10%)	110%—Alarm warning and go to fault mode after 5 minutes 120%—Alarm warning and immediate shutdown			
Overload Capacity in Battery Mode (measurement tolerance ±10%)	110%—Alarm warning and shutdown after 5 seconds 120%—Alarm warning and immediate shutdown			
Protection	Electronic (over current, short circuit, over charge)			
Battery Type	Valve Regulated Lead Acid (VRLA)			

Table 7.1 PowerUPS 200 Series Specifications (continued)

Model Number	PSA6E-600LVT	PSA6E-800LVT	PSA6E-1000LVT	PSA6E-1500LVT
Battery Manufacturer / Model	Vertiv / VBATKIT201	Vertiv / VBATKIT202		Vertiv / VBATKIT203
Series Connected Battery Quantity x VDC x Ah	1 x 12 V x 7.0 Ah	1 x 12 V x 9.0 Ah		2 x 12 V x 7.0 Ah
Battery Backed and Surge Protected Outlets	4 (NEMA 5-15R)		6 (NEMA 5-15R)	
Surge-Only Protected Outlets	–			2 (NEMA 5-15R)
Environmental Requirements				
Operating Temperature, °F (°C)	32 to 104 (0 to 40)			
Operating Elevation, feet (meter)	0 to 9,842 (0 to 3,000)			
Relative Humidity	0 to 90% non-condensing			
Storage Temperature, °F (°C)	5 to 104 (-15 to 40)			
Storage Elevation, feet (meter)	49, 212 (15,000)			
Audible Noise	<40 dBA at 3 ft (1 m) from all sides			
Agency				
Safety	NOM, cTUVus Listed (UL 1778, 5th Edition; CSA 2.2 No.1073:2014)			
RFI/EMI	FCC Part 15 subpart B, Class B			
Surge Immunity	ANSI 62.41, Category B1 (2KV) EN61000-4-5, Level 2 (Line-Neutral) EN61000-4-5, Level 3 (Line-Ground) EN61000-4-5, Level 3 (Neutral-Ground)			
Environmental	Energy Star, DOE, WEEE, REACH, RoHS, TSCA			
Transportation	ISTA Procedure 3A			
NOTE: This is a Class B UPS product, as defined by Part 15 of the FCC rules, may cause radio interference when used in a residential environment. Users may be required to take additional measures.				

7.1 Battery Run Times

Table 7.2 Battery Run Times in Minutes

Load Percent of Capacity	Model Rating			
	600 VA / 360 W	800 VA / 450 W	1000 VA / 550 W	1440 VA / 850 W
10%	74	74.9	61	47.5
20%	35.5	27.9	31	21.3
25%	23	21	21	13
30%	22	19	18.9	12.7
40%	15.5	12.8	12.4	7.9
50%	9	8.5	8	4.5
60%	7.7	6.6	6.7	3.9
70%	5.8	4.9	5.1	2.8
75%	4.5	3.8	3.8	2
80%	4.4	3.9	4	2.2
90%	3.5	3	3	1.5
100%	2	1.8	1.8	0.8

NOTE: Run times in this table are approximate. They are based upon new, fully charged standard battery modules at a temperature of 25 °C (77 °F) with 100% resistive UPS loading. Run time may vary ±5% due to manufacturing tolerances of the batteries.

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Appendices

Appendix A: Technical Support and Contacts

A.1 Technical Support/Service in the United States

Vertiv Group Corporation

24x7 dispatch of technicians for all products.

1-800-543-2378

Liebert® Thermal Management Products

1-800-543-2778

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™ PowerUPS 200 Essential Series

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

Technical support:

e: liebert.upstech@vertiv.com

p: 1-800-543-2378 menu option 1

Monitoring support:

e: liebert.monitoring@vertiv.com

p: 1-800-543-2378 menu option 3

Warranty support:

e: microups.warranty@vertiv.com

p: 1-800-543-2378 menu option 5

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 https://www.instagram.com/vertiv/

 https://www.linkedin.com/company/vertiv/

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