

VERTIV PST5 Liebert Uninterruptible Power Supply User Manual

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VERTIV PST5 Liebert Uninterruptible Power Supply



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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 the outlined procedures.

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

PST5 DESCRIPTION

The Liebert® PST5 is an off-line/standby UPS designed with the features you need providing reliable power protection for small home/office computers, network gear, and home entertainment equipment. Designed with controls for user-friendly operation, the Liebert® PST5 provides the run time to save work in process.

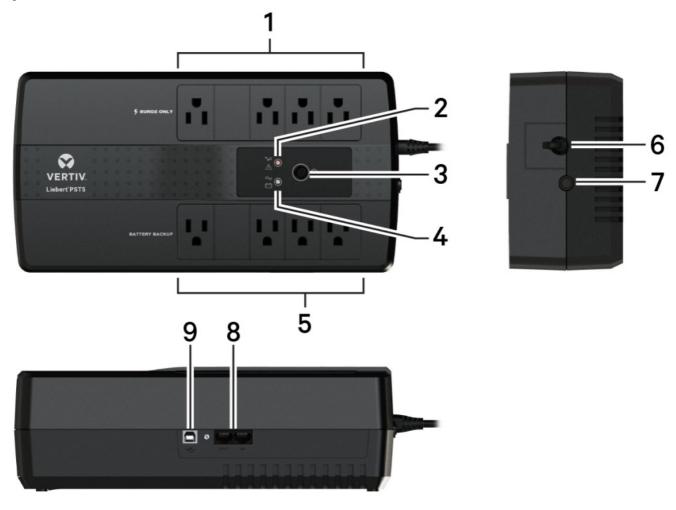
Available Models

Table 11 psT5 Models.

MODEL NUMBER	NOMINAL POWER RATING
PST5-350MT120	350 VA/200 W
PST5-500MT120	500 VA/300 W
PST5-660MT120	660 VA/400 W
PST5-850MT120	850 VA/500 W

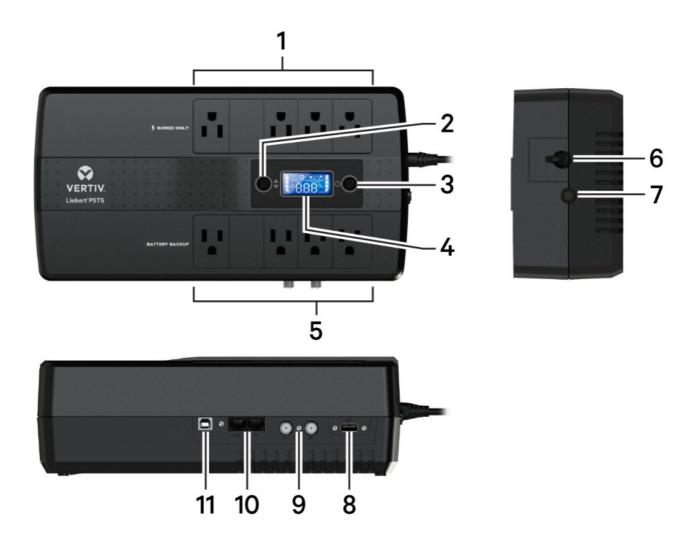
Controls and Features

Figure 1.1 PST5-350MT120 and PST5-500M T120 Controls and Features



ITEM	DESCRIPTION
1	Surge-protected-only output-power receptacles
2	Red Fault LED
3	Power button
4	Green Mode LED
5	Battery-backed and surge-protected output power receptacles
6	Input Power Cord
7	Input Circuit Breaker
8	RJ11/45 connectors for phone/fax/modem or network surge protection.
9	USB Type B connector for USB communication with a PC for UPS monitoring and PC shutdown.

Figure 1.2 PST5-660MT120 and PST5-850MT120 Controls and Features



ITEM	DESCRIPTION
1	Surge-protected-only output-power receptacles
2	Scroll button
3	Power button
4	LCD Display with icons and numerical information
5	Battery-backed and surge-protected output power receptacles
6	Input Power Cord
7	Input Circuit Breaker
8	USB charging port (5 V, 2.0 A)
9	Coax Cable connections for cable modem, DSS receiver, or cable-TV converter surge-protection connection.
10	RJ11/45 connectors for phone/fax/modem or network surge-protection connection.
11	USB Type B connector for USB communication with a PC for UPS monitoring and PC shutdown.

INSTALLATION

What's Included

- USB cable; one 2 m (6.5 ft) long
- Coax cable, one 1 m (3 ft) long (PST5-660MT 120 and PST5-850MT120 models only)
- · Quick Installation Guide
- · Safety and Regulatory Guidelines
- Wall-mounting template

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.

Preparation for Installation

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 23.
- 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.

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.

Installing the UPS

Connecting Loads

The UPS has 4 battery-backed outlets and surge-protected receptacles and 4 surge-protected-only receptacles. Plug your critical equipment (such as computer, monitors, etc.) into the battery-backed receptacles and your less-critical equipment (such as printers and other less-often used peripherals) into the surge-only receptacles. Take note not to exceed the output-load rating of the UPS

Connecting for Network or TelephoneProtection

Protection from electrical surges to your computer network or telephone is provided. Use the network/telephone 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!

Connecting for Television/Cable Protection

NOTE: For PST5-660MT120 and PST5-850MT120 models only.

Surge protection for your cable modem, DSS Receiver, or cable-TV connection is also provided using the coax 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.

USB Communication Connection

You can connect the PST5 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. 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 side panel of the UPS and the other end into an open USB port on your computer.

USB Charging Ports

NOTE: For PST5-660MT120 and PST5-850MT120 models only.

The PST5 has an easily-accessible, side-panel USB Type-A charging port. This port charges phones or other small USB powered devices. The port provides up to 2.0 A of charge current. You may plug devices into this port at any time during installation and operation.

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 23, 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.

OPERATION

Modes of Operation

NOTE: In all of the following modes, including Off mode:

The UPS always provides surge protection and input-breaker protection to the 4 battery-backed-up outlets and the 4 surge-only outlets. The UPS does not need to be On to provide this protection.

The surge-only outlets always have the same voltage level as the UPS input voltage, even when the UPS is Off. The surge-only outlets are not voltage regulated, battery backed-up, or switched by the UPS.

1. Off Mode

The UPS input is plugged into a stable, 120-VAC source, but the battery-backed-up outlets are turned off.

The internal batteries are charging.

NOTE: The surge-only outlets will still have power.

2. On/Normal Mode

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

3. 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 battery-backedup outlets.

NOTE: The surge-only outlets will not have power.

4. Fault Mode

An error or fault condition has occurred. The battery-backed-up 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.

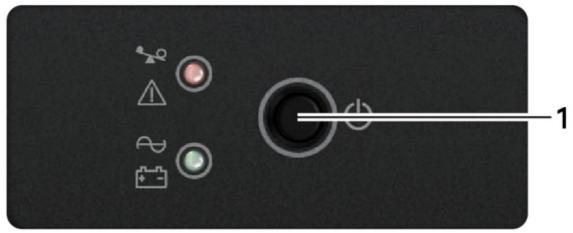
5. Battery Self-test Mode

The UPS enters a cycle of approximately 10 seconds during which it tests the internal battery. The battery-backed-up 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 power button for 3 seconds when the unit is On.

Controls

Figure 3.1 Buttons on PST5-350MT120 AND PST5-500MT120 Models



Tohla 21 Putton Control

ITEM	DESCRIPTION
	Power button.
1	Press for 1 second to cycle between on and off mode.
	Press and hold for 3 seconds to enter battery self-test mode.

Figure 3.2 Buttons on PST5-660MT120 AND PST5-850MT120 Models



Table 3.2 Button Controls

ITEM	DESCRIPTION				
1	Scroll button. •When the UPS is in On mode, press to cycle through UPS operating parameters. • Press-and-hold for 2 seconds during Battery mode to mute the battery-alarm beep. • Press quickly to wake the display.				
2	Power button. Press-and-hold for 1 second to cycle between On and Off mode. Press-and-hold for 3 seconds to enter Battery Self-test mode. Press quickly to wake the display.				

Display-panel Indicators

NOTE: The display automatically powers off to conserve power. However, the display remains on when there is a warning or fault to call attention to the event.

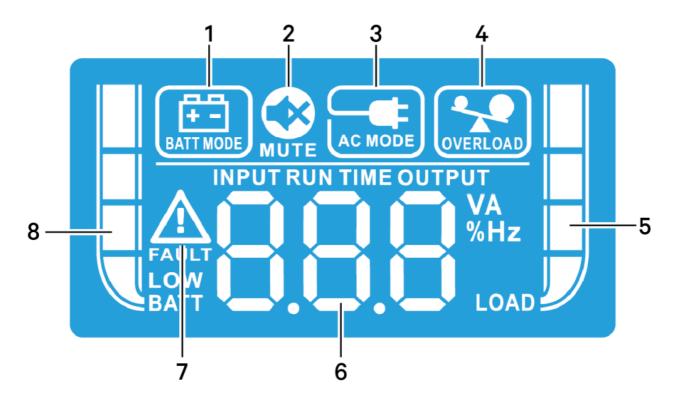
Figure 3.3 LED indicators on PST5-350MT120 AND PST5-500MT120 Models



Table 3.3 Front-panel Indicators

ITEM	DESCRIPTION				
1	Warning/Fault, red LED. See Warnings on page 17, and Faults on page 18, for descriptions an troubleshooting.				
	On/AC/Battery, green LED				
	On solid when the UPS is in On/Normal mode				
2	Blinking when the UPS is in On/Battery mode				

Figure 3.4 LCD Display on PST5-660MT120 AND PST5-850MT120 Models



ITEM	DESCRIPTION				
1	Battery mode when lit.				
2	Battery-mode alarm muted when lit. See Audible-tone Indicators on the facing page, for more de tails				
3	Normal mode when lit.				
4	Output-overload warning when flashing. See Warnings on the facing page, for more details				
5	Output-load level graph in 25% increments				
6	Numeric display of UPS operational parameters: • VAC = input/output voltage • Hz = input/output frequency				
7	Fault when lit. Fault codes indicated: • E01 • E04 • E05 • E06 See Faults on page 18, for more details				
8	Battery-capacity graph in 25% increments				

Table 3.4 Display Icons and Indicators

Audible-tone Indicators
Table 3.5 Tones and Beeps of the UPS

TYPE	INDICATES
1 beep every 10 seconds	Battery mode
2 beeps every second	UPS warning
2 beeps every 5 seconds	Low-battery warning
3 beeps every 30 seconds	Replace-battery warning
Constant, solid tone	UPS fault
3-second tone followed by 2 beeps	Power-on in battery self-test mode
1 long tone	Power off
3 beeps	Manual battery self-test

Warnings

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 3.6 Warning Indicators and Actions for PST5-350MT120 AND PST5-500MT120 Models

RED LED	AUDIBLE TONE	DESCRIPTION	SUGGESTED TROUBLESHOOTING
On s olid	1 beep eve ry second	The load devices plugged-in to the UPS output are drawing more power than the UPS rating.	Reduce the load to below the UPS rating in the specifications table, see Specifications on page 23.
Blinki ng	2 beeps every 5 seconds or 3 beeps every 30 seconds	The battery is weak or damaged.	Charge the UPS battery for at least 12 hours, or replace the battery, see Battery Replacement on page 21.

Table 3.7 Warning Indicators and Actions for PST5-660MT120 AND PST5-850MT120 Models.

ICON DISPLAYED AUDIBLE TON E		DESCRIPTION	SUGGESTED TROUBLESHOOTING
1 beep every s econd		Output-overload. The load devices plu gged-in to the UPS output are drawing more power than the UPS rating.	Reduce the load to below the UPS ra ting in the specifications table, see Sp ecifications on page 23.
LOW	3 beeps every 30 seconds	The battery is weak or damaged.	Charge the UPS battery for at least 1 2 hours, or replace the battery, see B attery Replacement on page 21.

Faults

The PST5-350MT120 AND PST5-500MT120 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 tone, the UPS has detected a problem and automatically shut off the output.

To troubleshoot the fault:

Turn off the UPS, disconnect all loads, and restart the UPS.

- If the fault is still active, contact Vertiv technical support for a replacement.
- If the fault is no longer active, plug in the equipment one at a time to locate the device that is causing the fault.
 PST5-660MT120 AND PST5-850MT120 Models display fault codes, described in Fault Codes and Actions for PST5-660MT120 AND PST5-850MT120 Models below, when it detects a problem and automatically shuts-off output power.

Table 3.8 Fault Codes and Actions for PST5-660MT120 AND PST5-850MT120 Models

FAULT CO DE	DESCRIPTION	SUGGESTED TROUBLESHOOTING		
		Turn-off the UPS, disconnect all loads, and restart the UPS. • If the fault is still active, contact Vertiv technical support for a re		
		placement.		
E01	Output short circuit.	If the fault is no longer active, plug in equipment one at a time t o locate the device with the short circuit.		
		Turn off the UPS, disconnect all loads, and restart the UPS.		
	Output over-voltage during	If the fault is still active, contact Vertiv technical support for a replacement.		
E04	battery mode.	If the fault is no longer active, plug-in equipment one at a time t o locate the device that is causing the fault.		
E05	Battery-charge failure.	Turn off the UPS and call Vertiv technical support for a replacement u nit.		
E06	The internal battery is dead or damaged.	Charge the UPS for at least 12 hours or replace the battery, see Batte ry Replacement on page 21.		

Normal Start-up

With the UPS connected to AC input, press-and-hold the power button for 1 second. A long tone and 2 short beeps sound while the UPS is in battery self-test mode for a few seconds. After a successful self-test, the outlets are on.

Normal Shut-down

- Press-and-hold the power button for 1 second.
 - The outlets are turned off.
- Disconnect AC-input power.
- Remove the battery cover and disconnect the battery connector.

Full Shut-down

- Press-and-hold the power button for 1 second.
- The outlets are turned off.
- Disconnect AC-input power.
- Remove the battery cover and disconnect the battery connector. The unit is fully shut down.

MAINTENANCE AND BATTERY REPLACEMENT

Precautions

Although the PST5 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.

Battery Charging

The batteries are valve-regulated, non-spill-able, lead acid and should be kept charged to attain their design life. The PST5 charges the batteries continuously when it is connected to the utility input power. If the PST5 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.

Battery Replacement

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 in Specifications on page 23, for the part number of the replacement battery for your UPS model number.

To replace the battery:

- 1. Power off the UPS and disconnect the input power.
- 2. Turn the UPS upside down.
- 3. Remove the battery-compartment screw, then slide off the battery compartment cover, see Removing the cover and battery on the next page.
- 4. Lift the white tab and pull the battery out, see Removing the cover and battery on the next page. Figure 4.1 Removing the cover and battery.



- 5. Disconnect the red battery connector, then the black battery connector.
- 6. Orient the replacement battery in the same way as the removed battery, connect the black battery connector, then the red battery connector.

NOTE: When connecting the last wire to the battery, there can be a small spark. This is normal.

- 7. Seat the battery fully into the UPS and replace the compartment cover and screw.
- 8. Press and hold the power button for 3 seconds to initiate the battery self-test and clear any previous battery fault warning.
 - Properly dispose of the old batteries at an appropriate recycling facility or return them to Vertiv in the packing material for the new batteries.

Specifications

Table 5.1 PST5 Specifications

MODEL NUMBER	PST5- 350MT120	PST5- 500MT120	PST5-660MT120	PST5- 850MT120		
Capacity (VA / W)	350 / 200 500 / 300 660 / 400 850 / 500			850 / 500		
Unit Dimensions, in. (mm) W x D x H	12 x 6.24 x 3.82 (305 x 158.5 x 97)					
Unit Weight, lbs (kg)	6.6 (3.0) 7.7 (3.5) 9.4 (4.3) 9.7 (4.4)					
Shipping Dimensions, in. (mm) W x D x H	15 x 10.5 x 8 (381 x 266.7 x 203.3)					
Shipping Weight, lbs (kg)	7.9 (3.6)	9.0 (4.1)	10.6 (4.8)	11.0 (5.0)		
Input AC						
Nominal Voltage	120 VAC					
Voltage Range	90-145 VAC					
Input Voltage Measurement Tolera nce	±5%					
High Line Normal Mode to Battery Mode	145 VAC					
High Line Battery Mode to Normal Mode	140 VAC					
Low Line Battery Mode to Normal Mode	95 VAC					
Low Line Normal Mode to Battery Mode	90 VAC					
Frequency Range	60 Hz, ±5 Hz					
Internal Rear-panel Input Breaker Rating	5 A, 250 VAC	7 A, 250 VAC		10 A, 250 VAC		
Surge Energy Rating	316 Joules					
Input Cord	6 ft. attached with NEMA 5-15P					
Output AC (On Utility)						
Nominal Voltage	120 VAC					
Voltage Range	90-145 VAC					
Frequency Range	60 Hz, ±5 Hz					
Efficiency	>95% at full load					
Output AC (On Battery)						

Nominal Voltage	120 VAC			
Voltage Range	Nominal ±8% at onset, ±15% at EOD			
Frequency Range	60 Hz, ±1 Hz			
Waveform	PWM Simulated Sine wave			
Transfer Time	6-8 ms, typical	6 ms, typical		
Overload Capacity in Normal Mod e	100% – alarm warning 110% – alarm warning and shutdown after 5 minutes 120% – alarm warnin g and immediate shutdown			

MODEL NUMBER	PST5- 350MT120	PST5- 500MT120	PST5-660MT120	PST5- 850MT120	
Overload Capacity in Battery Mod e	110% – alarm warning and shutdown after 5 seconds 120% – alarm warning and immediate shutdown				
Protection	Electronic (over current, short circuit w/ latching shutdown)				
Battery Type	Valve Regulated Lead Acid (VRLA)				
	CSB / GP1245	CSB / HR1221	Leoch / DJW12-	Leoch / DJW12-	
Battery Manufacturer / Model	Leoch / DJW12- 4.5	Leoch / DJW12- 5.0	6.0 BB / BP5-12	6.0 BB / SHR7-12	
Battery Quantity x VDC x Ah	1 x 12V x 4.5Ah	1 x 12V x 5.0Ah	1 x 12V x 5.0/6.0 Ah	1 x 12V x 6.0/7.0 Ah	
Battery Backed Outlets	(4) NEMA 5-15R				
Surge Only Outlets	(4) NEMA 5-15R				
Environmental Requirements					
Operating Temperature, deg(degC)	32-104 (0-40)				
Operating Elevation, feet (meter)	0-9,842 (0-3,000)				
Relative Humidity	0-95% non-condensing				
Storage Temperature, deg F (deg C)	5 to 113 (–15 to 45)				
Storage Elevation, feet (meter)	0-49,212 (0-15,000)				
Audible Noise	<40 dBA @ 3 ft (1 m) from all sides				
Agency					
Safety	cTUVus (UL 1778, 5th Edition; CSA 22.2 No. 107.3:2014)				
RFI / EMI	FCC part 15 subpart B, CLASS B				
	EN61000-4-5, Level 2 (Line-Neutral)				
Surge Immunity	EN61000-4-5, Level 3 (Line-Ground)				
Transportation	ISTA Procedure 1A				

Run-time Tables
Table 5.2 PST5-120 Battery Run Times

	MODEL RATING				
LOAD PERCENT OF CAPACIT Y	350 VA/200 W	500 VA/300 W	660 VA/400 W	850 VA/500 W	
10%	86	60	56	50	
20%	46	29	28	22	
25%	32	22	13	16	
30%	26	19	14	13	
40%	19	12	11	9	
50%	11	9	7.5	6.5	
60%	10	7	6.5	5	
70%	8	5.5	5	4	
75%	7.2	5.2	4.2	3.2	
80%	7	5	4	3	
90%	5	3.5	3	2	
100%	4	3	2	1.5	

Note: Run times in this table are approximate. They are based upon new, fully charged standard battery module s at a temperature of 25 degC (77 degF) with 100% resistive UPS loading.

APPENDICES

Appendix A: Technical Support

Our Technical Support staff is ready to assist you with any installation or operating issues you may encounter with your Liebert® product. Please call or e-mail us:

Technical support:

- e: <u>liebert.upstech@vertivco.com</u>
- p: 1-800-222-5877 menu option 1

Monitoring support:

- e: liebert.monitoring@vertivco.com
- p: 1-800-222-5877 menu option 2

Warranty support:

- e. microups.warranty@vertivco.com
- p: 1-800-222-5877 menu option 3

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responsibility and disclaims all liability, for damages resulting from the use of this information or for any errors or omissions. Specifications are subject to change without notice.

FAQs

What is the power capacity of the VERTIV PST5 Liebert Uninterruptible Power Supply?

The VERTIV PST5 has a power capacity of 500VA/300W, providing sufficient backup for small electronic devices.

How does the VERTIV PST5 Liebert Uninterruptible Power Supply protect against power surges?

The VERTIV PST5 offers 660 Joules of surge protection to safeguard your devices from voltage spikes and surges.

What type of battery is used in the VERTIV PST5 Liebert Uninterruptible Power Supply?

The VERTIV PST5 uses a sealed, maintenance-free lead-acid battery, ensuring reliable performance and long battery life.

How long can the VERTIV PST5 Liebert Uninterruptible Power Supply provide backup power?

The VERTIV PST5 can provide up to 8 minutes of backup power at half load, allowing you to safely shut down your equipment.

What input and output voltage does the VERTIV PST5 Liebert Uninterruptible Power Supply support?

The VERTIV PST5 supports an input and output voltage of 120V, which is standard for most home and office devices.

How often should I replace the battery in the VERTIV PST5 Liebert Uninterruptible Power Supply?

It is recommended to replace the battery in the VERTIV PST5 every 3-5 years to ensure optimal performance.

What is the weight and dimensions of the VERTIV PST5 Liebert Uninterruptible Power Supply?

The VERTIV PST5 weighs 6.8 lbs and has dimensions of $5.9 \times 3.5 \times 11$ inches, making it compact and easy to place in various locations.

How does the VERTIV PST5 Liebert Uninterruptible Power Supply handle voltage fluctuations?

The VERTIV PST5 features Automatic Voltage Regulation (AVR) to maintain stable output voltage during fluctuations.

What should I do if the VERTIV PST5 Liebert Uninterruptible Power Supply alarms continuously?

Continuous alarms on the VERTIV PST5 could indicate an overload or low battery. Reduce the load or allow the battery to recharge.

Can I use the VERTIV PST5 Liebert Uninterruptible Power Supply for my gaming setup?

The VERTIV PST5 can be used for gaming setups, but ensure that the total power consumption does not exceed its 300W capacity.

How do I install the VERTIV PST5 Liebert Uninterruptible Power Supply?

To install the VERTIV PST5, plug it into a grounded wall outlet, connect your devices, and optionally connect the UPS to your computer using the USB cable for monitoring.

Video-VERTIV PST5 Liebert Uninterruptible Power Supply 00:00 00

Reference Link

VERTIV PST5 Liebert Uninterruptible Power Supply User Manual-Device.report

References

• User Manual

Manuals+, Privacy Policy

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