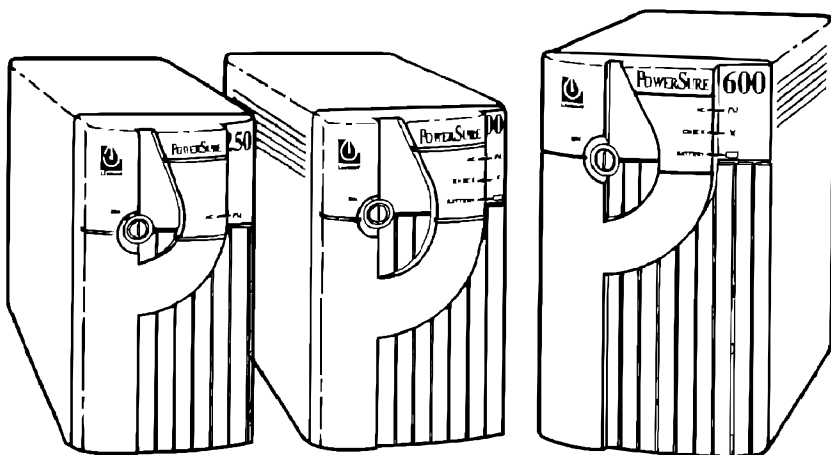


PowerSure™



PS250-50S
250 VA

PS400-50S
400 VA

PS600-50S
600 VA

POWER PROTECTION

Uninterruptible Power System

250 VA – 600 VA
230 VAC

USER'S MANUAL

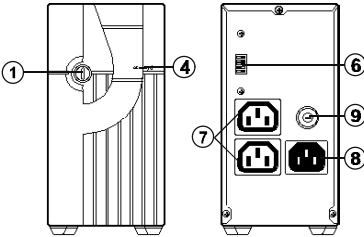


IMPORTANT SAFETY INSTRUCTIONS

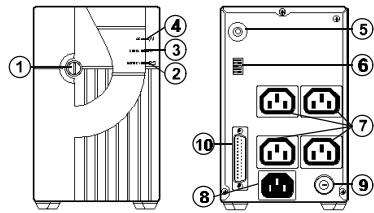
WARNING: Do not attempt to service this product yourself except to replace the battery. Opening or removing the cover may expose you to dangerous voltages, even when the AC cord is disconnected from the electrical outlet. Refer all servicing to qualified service personnel.

1. **SAVE THESE INSTRUCTIONS.** ADHERE TO ALL OPERATING INSTRUCTIONS AND WARNINGS ON THE UNIT AND IN THIS MANUAL.
2. **This equipment is designed for Commercial/Industrial use only. Liebert Corporation neither recommends nor knowingly sells this product for use in critical life support applications.**
3. Read all safety and operating instructions before operating UPS. Operate the UPS indoors only. Protect it from moisture and install it in a clean environment, free from flammable liquids, gases, or corrosive substances.
4. **WARNING:** Operate the UPS only from an earthed outlet (2-wire plus earth), 230 VAC, 50 Hz supply. UPS must be earthed at all times while in use. Turn UPS OFF before unplugging it, or the safety earth to the equipment will be removed.
5. **CAUTION:** Output receptacles on the UPS are electrically live if the UPS is ON, even if the UPS is not plugged in. The on/off button on the UPS does not electrically isolate the internal parts. To isolate the UPS, switch OFF the UPS first, then unplug it.
6. **CAUTION:** Earth leakage current must not exceed 2.75 milli-amperes. Most data processing equipment meets this requirement if you use no more than 4 pieces of equipment. Note: These instructions may be modified by local wiring regulations.
7. Unplug the UPS and turn it OFF before cleaning. Use only water dampened cloth, never liquid or aerosol cleaners.
8. Operate the UPS only from an earthed outlet (2 wire plus earth) 230 VAC, 50 Hz. Use an H05V power supply cord with 2-pin plus earth plug for UPS AC input. If unable to fully insert plug into outlet, contact an electrician for replacement.
9. Route power supply cords so they are not walked on or pinched.
10. Never block or insert any object into ventilation holes or other openings. Maintain a minimum clearance of 100 mm all around the UPS for proper air flow and cooling.

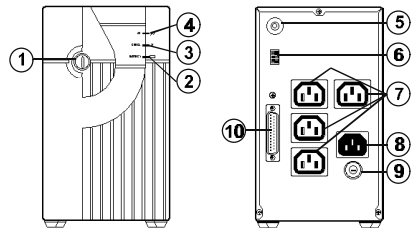
250 VA / 230 V



400 VA / 230 V



600 VA / 230 V

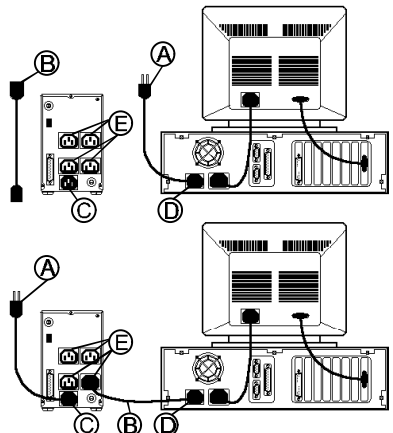


1. ON/OFF Button
2. Battery Light (400/600 Only)
3. Check Light (400/600 Only)
4. AC Light
5. Battery Test Button (400/600 Only)
6. Option Switches
7. Output Receptacles
8. Power Cord Input
9. Circuit Breaker
10. Communications Port

ATTENTION: Please refer to these drawings when reading this manual. This manual references the various parts of your UPS by number.

INSTALLATION INSTRUCTIONS

1. Unpack unit and check contents. There should be one UPS, two CEE-22 output cables, and one User's Manual. Check items for damage. If any appear faulty or damaged, contact your dealer immediately. Store packaging in a safe place for possible future shipment of UPS.
2. Place UPS on a sturdy, dry surface in a well-ventilated area away from direct heat sources. Leave at least 100 mm clearance all around UPS for adequate ventilation.
3. Shut down load equipment, turn OFF mains supply, and unplug load equipment's power input cable (A) from AC supply socket.
4. Unplug power input cable (A) from load equipment input socket (D) and plug it into UPS input socket (C). Replug the power input cable (A) into AC supply socket. Turn ON both the mains supply and the UPS. Turning ON the UPS charges the batteries. Charge batteries for at least 8 hours before connecting load equipment.



- After charging, shutdown both the UPS and load equipment and unplug them from the AC supply socket. Connect the supplied CEE-22 output cable (B) between the load equipment input socket (D) and one of the UPS AC output sockets (E). Connect all load equipment to UPS in this way.
- When all equipment is plugged in, plug UPS into the AC supply socket and turn it ON. The UPS is ready for normal operation.

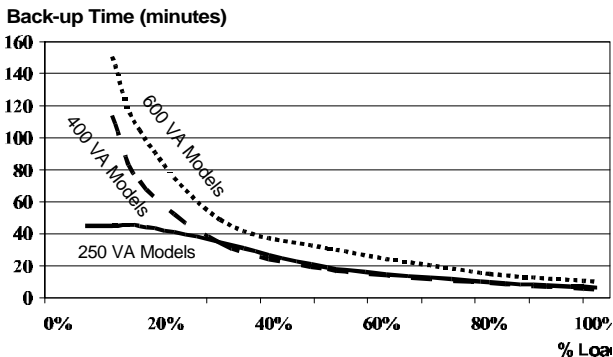
OPERATING INSTRUCTIONS

- Check that all power connections to and from the unit are secure and fitted with the correct cables and switch the AC input supply ON.
- Press the ON/OFF Button (1) to ON.
- Switch your equipment ON at their respective power switch(es).
- Check the condition of the UPS front panel LED's. The 250 VA AC LED (4) should be lit. For the 400/600 VA models, the AC LED (4) should be lit, and the Check and Battery LED's (3 & 2) should be unlit.
- Check the operation of your equipment. It should display normal operational conditions.
- If any function provides an abnormal condition, refer to the troubleshooting guide later in this manual. If a problem persists, consult your dealer or call Tech Support at the number listed at the end of this manual.

STARTING FROM BATTERY (400/600 VA only): Turn OFF UPS. Press and hold BATTERY TEST button (5) for 4 seconds. Switch ON UPS and release BATTERY TEST button (5). UPS will run in backup mode with the Battery LED (2) lit. To stop, switch OFF at front panel.

Battery Back-up Time

Battery Run Time



COMPUTER/LAN INTERFACE (400/600 VA ONLY)

Optional SiteNet 1 kits provide connection to a wide range of popular computer operating systems; such as Novell, UNIX, UNISYS, SUN, WINDOWS and many others. SiteNet 1 software automatically performs an orderly shutdown of computer operating systems, in the event of a power outage and/or low battery conditions.

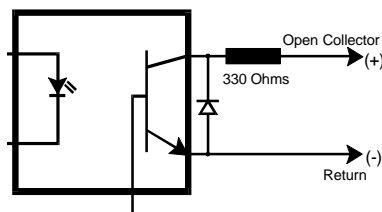
The SiteNet 1 kit supplies a cable to connect supported computer systems to the UPS communications port (10). The table below shows connector details.

Note: Your dealer supplies computer communications kits separately, if you wish. They come with installation instructions, cable connections, and appropriate computer software.

INTERFACE FUNCTION	DB25 ADAPTER
UPS Shutdown/Active High*	19
On Battery/Return	17
On Battery/Normally Open	16
Low Battery/Normally Open	11
Low Battery/Return	9
UPS Shutdown/Return	7

*Remote Shutdown (5-12V DC, 5-10 mA. max.); battery operation

COLLECTOR TO EMITTER ¹



¹ Maximum voltage and current on pins 11 & 16 are +40V DC; 1.0mA

OPTION SWITCH SETTINGS

On the back of your UPS is a bank of option switches (6) with a removable plastic cover. These switches determine transfer levels and operating frequency. Slide the switches to the left to turn them OFF, to the right to turn ON. Turn OFF equipment and UPS and unplug the UPS prior to changing switch settings, or the UPS will ignore the new settings. Replace the plastic option switch cover.

Option Switch 1: 50/60 Hz Select – When OFF, this switch sets UPS for 60 Hz mains. Output in backup mode will be 60 Hz. When ON, the switch sets UPS for 50 Hz mains and output in backup mode is 50 Hz. The switch must match the mains frequency or the UPS will not start. The factory setting is 50 Hz.

Option Switch 2: High Line Transfer –

250VA model: When ON, this switch transfers the UPS to battery operation when the mains voltage reaches 270 VAC. When OFF, the UPS will not transfer to battery. Factory setting is ON.

400/600VA models: You may select at which voltage the UPS will transfer to battery operation when it encounters a high mains voltage. The ON position transfers the UPS to battery operation at 270VAC; the OFF position transfers at 280VAC. Factory setting is 270 VAC.

Option Switch 3 & 4: Low Voltage Limit Select – Low voltage limit is the voltage level at which battery operation starts. You may set the low voltage limit of the UPS to 180V, 190V, or 200V. The factory setting is 190V. This option reduces excessive battery usage in brownout conditions. Make sure your computer equipment can operate at 180 VAC before selecting the lowest limit (most will). Refer to the tables below to change switch settings:

250 VA MODEL

VOLTAGE	SWITCH #3	SWITCH #4
200V	OFF	N/A
190V	ON	OFF
180V	ON	ON

400/600 VA MODELS

VOLTAGE	SWITCH #3	SWITCH #4
200V	ON	N/A
190V	OFF	OFF
180V	OFF	ON

BATTERY TEST BUTTON

The Battery Test Button (5) on the 400 and 600 VA models tests the condition of the battery. If the charge is sufficient, the UPS lights the Battery Light (2), runs on battery power for 15 seconds, then returns to mains power. If the battery fails the test, the Check Light (3) illuminates and the UPS immediately returns to mains power. The Check Light remains lit while on mains power. A battery in unacceptable condition requires recharge or replacement of the battery.

Pressing the Battery Test Button (5) also silences alarms.

BATTERY CARE AND USE

STORAGE: If the unit is not in continued use, plug in the UPS every 4 to 6 months for 12 hours to recharge the battery. Warranty is void if the battery discharges below the minimum battery cutoff point. To prevent such discharge, DO NOT leave UPS ON for more than two days without plugging it in.

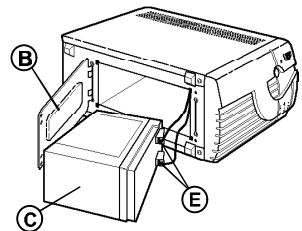
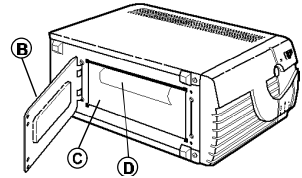
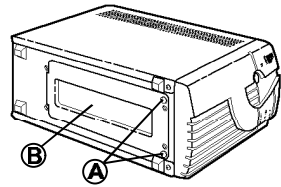
BATTERY LIFE & REPLACEMENT: Excessive battery use, storage at high ambient temperatures, and lengthy periods in a discharged state greatly reduce battery life. Your UPS maximizes battery life by limiting the depth of battery discharge. You may replace the UPS battery yourself, but if you feel unqualified, refer battery replacement to qualified personnel. Contact your local dealer or call Liebert for a replacement battery.

WARNING: To replace batteries, turn OFF UPS and unplug it from mains supply.

CAUTION: Observe proper precautions. When replacing batteries, use the same number and type of batteries. Proper battery disposal required. Refer to local codes for disposal requirements. Do not open or mutilate battery. Released electrolyte is harmful to skin and eyes and is toxic.

To Replace the Battery:

1. Close active programs and turn off computers. **Turn OFF the UPS and unplug it from mains supply.**
2. Place UPS on its side and remove retaining screws (A) to battery door (B).
3. Open battery door (B) and remove the battery (C) by pulling on the battery tab (D).
4. Remove terminal wires (E) from old battery. Connect terminal wires (E) to new battery (C); the red connects to the positive terminal, the black connects to the negative. **DO NOT** reverse terminal connections. Slide battery (C) into unit, and close battery door (B). Dispose of used battery properly (it contains lead and acid).
5. Plug in UPS, turn it on, and charge batteries for 8 to 10 hours.



RESETTING THE CIRCUIT BREAKER

If the UPS is overloaded, the circuit breaker (9) at the lower rear of the UPS activates to protect the UPS. If the circuit breaker activates, its center bar will extend. To reset the circuit breaker, simply push the bar back in. If the circuit breaker activates often, ask your dealer to check the UPS sizing or call Tech Support at the number listed at the end of this manual.

ALARM CONDITIONS

The 400 VA and 600 VA models sound alarms and flash visual indications at the front panel LED's (2, 3, 4) whenever they sense a power failure, low battery voltage (while on battery), an overload, or a mains overvoltage condition. The 250 VA model only sounds an alarm. Sometimes, a fault in your computer equipment may cause an overload alarm. See following page for alarm indications.

You may silence the On-Battery alarm on 400 VA and 600 VA models by pressing the BATTERY TEST button (5), on the rear panel. You must turn off your computer equipment and then turn off the UPS to silence an alarm on a 250 VA model.

Refer to the first table on the next page for recommended actions when alarms occur. **Check this table first before calling for assistance.** It diagnoses and solves common problems, and helps prevent potential problems.

PROBLEM	CAUSE	SOLUTION
UPS will not start	<p>Input voltage below threshold</p> <p>Overload/Short Circuit</p> <p>Input frequency mismatch with option switch setting</p> <p>Mains overvoltage</p>	<p>Wait until mains voltage rises to appropriate level.</p> <p>Check circuit breaker at rear of UPS (9). If it is activated, reset it and restart the UPS (See "Resetting Circuit Breaker"). If problem persists, disconnect some of the equipment from UPS - the total wattage or all your equipment may exceed the capacity of the UPS. If it still will not start, check your computer equipment for short circuits. For further help, call your dealer.</p> <p>Check Option Switch #1 on rear of UPS (6). Slide switch to left for OFF, to right for ON. OFF = 60 Hz, ON = 50 Hz. The UPS frequency must match the frequency of your input mains supply.</p> <p>Mains voltage must be less than 270 VAC.</p>
UPS starts on battery, but will not switch to mains power. (400 & 600 VA only)	<p>UPS not plugged in</p> <p>Circuit breaker activated</p> <p>Power not available at utility receptacle</p>	<p>Plug in power cord securely.</p> <p>Reset circuit breaker (see "Resetting Circuit Breaker") and restart UPS.</p> <p>Call a qualified electrician.</p>
UPS shuts down.	<p>Overload/Short Circuit</p> <p>Low Battery</p> <p>Sitenet 1 Shutdown (400 & 600 VA only)</p>	<p>Check circuit breaker at rear of UPS (9). If it is activated, reset it and restart the UPS (See "Resetting Circuit Breaker"). If problem persists, disconnect some of the equipment from UPS - the total wattage of all your equipment may exceed the capacity of the UPS. If it still will not start, check your computer equipment for short circuits. For further help, call your dealer.</p> <p>Turn OFF equipment and recharge UPS battery for at least 8 hours. If problem persists, replace battery.</p> <p>Consult the SiteNet 1 User Manual or contact your LAN administrator.</p>

250 VA LED & ALARM INDICATIONS

Condition	Green AC Light (4)	Audible Alarm	Status
NORMAL/START UP	On after Beep	Single Beep, then Off	Operate
Start-Up Test Fail	On after Beep	Fast Beep for 15 Sec and then Off	Operate
Input Frequency Mismatch with Option Switch Setting	Off	Continuous	Will Not Start
Input Voltage Below Threshold			
Overload/Short Circuit	Off	Continuous for 15 Sec and then Off	Will Not Start
NORMAL MODE	On	Off	Operate
Battery Test Fail	On	Fast Beep for 15 Sec and then Off	Operate
Overload/Short Circuit	Off	Continuous for 15 Sec and then Off	Shutdown
BACKUP MODE	Off	Slow Beep	Operate
Low Battery Alarm	Off	Fast Beep	Warn of Shutdown
Low Battery Shutdown	Off	Continuous for 15 Sec and then Off	Shutdown
Main Overvoltage (transfer enabled)	Off	Slow Beep	Operate

The UPS starts and repeats the battery test sequence every hour until the test is passed.

400/600 VA LED & ALARM INDICATIONS

Condition	Green AC Light (4)	Amber Battery Light (2)	Red Warning Light (3)	Audible Alarm	Status
NORMAL/START UP	On	Flash Once & then Off	Off	Single Beep and then Off	Operate
Start-Up Test Fail	Off	Off	On	Continuous for 15 Sec and then Off	Will Not Start
Input Frequency Mismatch with Option Switch Setting	Off	On for 15 Sec and then Off	Flash	Continuous for 15 Sec and then Off	Will Not Start
Overload/Short Circuit					
Input Voltage Below Threshold	Off	Off	Flash	Continuous for 15 Sec and then Off	Will Not Start
NORMAL MODE	On	Off	Off	Off	Operate
Battery Test Fail	On	Off	On	N/A	Operate
Overpower	On	Off	Flash	Fast Beep	Alarm Only
Overload/Short Circuit	Off	On for 15 Sec & then Off	Flash for 15 Sec & then Off	Continuous for 15 Sec & then Off	Shutdown
Charger Fail	On	Off	On	Slow Beep	Alarm Only
BACKUP MODE	Off	On	Off	Slow Beep	Operate
Low Battery Alarm	Off	On	On	Fast Beep	Operate
Low Battery Shutdown	Off	On*	On*	Continuous for 15 Sec & then Off	Shutdown
Mains Undervoltage	Off	On	Off	Slow Beep	Operate
Mains Overvoltage	Off	On	Flash	Slow Beep	Operate
Overload/Short Circuit SiteNet 1 Shutdown	Off	On*	Flash*	Continuous for 15 Sec & then Off	Shutdown

*If there is insufficient utility voltage, this indicator illuminates for 15 seconds then turns off to preserve the battery.

SPECIFICATIONS

Model # / Stock #	PS250-50/PS250-50S	PS400-50 / PS400-50S	PS600-50 / PS600-50S
Model Rating	250 VA / 150 W	400 VA / 240 W	600 VA / 360 W
Dimensions: mm			
Unit (W x D x H)	90 x 262 x 175	109 x 262 x 186	124 x 262 x 216
Shipping (W x D x H)	181 x 365 x 303	212 x 482 x 292	237 x 482 x 334
Weight: Kg			
Unit	4	5.7	9
Shipping	4.6	7	10.5
AC Parameters			
Receptacles	(2) CEE-22	(4) CEE-22	(4) CEE-22
Input Voltage Range	180-300 VAC, Single Phase, 2 Wire Plus Earth		
Low Voltage Transfer Point	190 VAC, User Selectable to 180 or 200 VAC		
High Voltage Transfer Point	270 VAC	270 VAC, User Selectable to 280 VAC	
Input Frequency Range	47 – 53 Hz, 57 – 63 Hz		
Spike Protection	80 Joules		
Output Voltage (on battery)	230 VAC, ± 5%		
Output waveform (on battery)	Stepped Sine Wave		
Max. Output Current at 230 V	1.1 A	1.7A	2.6A
Output Frequency	50 or 60 Hz, ± 5%		
Max. Overload Capacity	115% of Power Rating		
Battery			
Type	Valve-Regulated Lead Acid		
Qty x Voltage x Rating	1 x 12 V x 4.5 AH	1 x 12 V x 7 AH	2 x 12 V x 7 AH
Back-up Time	6 minutes at full load		
Time from Low Battery Alarm to Shutdown	Approximately 2 Minutes, depending on load		
Recharge Time	8 – 10 Hours to 90% Capacity		
Battery Life	3 – 5 Years Typical		
Transfer Time to/from Inverter	2 – 6 msec. Typical		
Agency Approvals			
Safety	EN 50091-1		
RFI	Meets EN 55022 Class B, IEC 801-2, 3, 4		
Surge Protection	Meets IEC 801-5 (Draft)		
MTBF (Bellcore Method)	100,000 Hours (Excluding Battery)		
Environmental Standards			
Operating Temperatures	+10° C to +40° C		
Storage Temperatures	-20° C to +40° C (High Temperatures Reduce Battery Life)		
Cooling	Convection		
Audible Noise	Less than 40 dB @ 1 meter		
Operating Elevation	Up to 3,000 m		
Storage Elevation	Up to 10,000 m		

LIMITED WARRANTY

Liebert Corporation extends the following LIMITED WARRANTY to the purchaser and to its customer (collectively referred to as the "Purchaser"): the enclosed Uninterruptible Power System (UPS) and components are free from defects in materials and workmanship under normal use, service, and maintenance FOR A PERIOD OF TWO YEARS FROM THE DATE OF ORIGINAL PURCHASE from Liebert or the Liebert dealer or retailer. THE FOREGOING WARRANTY IS THE ONLY WARRANTY GIVEN AND NO OTHER WARRANTY IS PROVIDED, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Certain aspects of disclaimers are not applicable to consumer products acquired by individuals and used for personal, family, or household purposes (as distinguished from industrial or other purposes). Local laws may not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary according to local law.

Certain repairs or services are the responsibility of the Purchaser and the Purchaser is expected to pay for them. This warranty does not extend either to products with removed or altered serial numbers or to any losses or damages due to act of God or source external to the product, misuse, accident, abuse, neglect, negligence, unauthorized modification, alteration, or repair, use beyond rated capacity, or improper installation, maintenance, application or use, including, without limitation, use in a manner contrary to the accompanying instructions or applicable codes. **WARNING:** Warranty is void if the battery is allowed to discharge below the minimum battery cutoff point. To prevent such discharge DO NOT leave the unit power switch "ON" for more than two (2) days without AC power being supplied to the UPS. The battery must be recharged every four (4) to six (6) months when not in use.

If the UPS fails to conform with the above warranty within the two year warranty period, Liebert will repair or replace the UPS, at Liebert's option. Repairs or replacements are warranted for the remainder of the original warranty period. Purchaser, to make a warranty claim, should call +44 (0)1793 553355 to obtain a Returned Goods Authorization number and shipping instructions. Return transportation costs to Liebert are the responsibility of the Purchaser.

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