



Pure Sine Wave Value Series Line Interactive UPS

UPSV Models (lead acid batteries): UPSV-700, UPSV-1000, UPSV-1500, UPSV-2000

UPSVLI Models (lithium batteries): UPSVLI-700 (-1,-2,-3,-4), UPSVLI-1000 (-1,-2), UPSVLI-1500 (-1,-2)

User & Installation Manual

Table of Contents

Important Safety Warning . . . . .	.3
Transportation . . . . .	.3
Preparation . . . . .	.3
Installation . . . . .	.3
Hardware Installation Guide . . . . .	.3
Maintenance, Service, and Faults . . . . .	.4
Storage . . . . .	.4
Battery Installation and Replacement . . . . .	.5
Basic Operation . . . . .	.6
Front and Rear Panel Description . . . . .	.6
LCD Indicators . . . . .	.7
Troubleshooting . . . . .	.9
Fault Reference Codes . . . . .	.9
Specifications . . . . .	.11
Obtaining Service . . . . .	.12
Limited Warranty . . . . .	.13

Important Safety Warning

This device complies with part 15 of the FCC rules, operation is subject to the following two conditions:

- (1) This device may not cause harmful interference and
 - (2) this device must accept any interference received, including interference that may cause undesired operation.
- The lead acid battery may cause chemical hazard, the battery presents a risk of energy hazard.

This manual contains important safety instructions. Please read and follow all instructions carefully during installation and operation of the unit. Read this manual thoroughly before attempting to unpack, install, or operate your UPS.

- To prevent the risk of fire or electric shock, install in a temperature and humidity controlled indoor area free of conductive contaminants. (See the specifications for the acceptable temperature and humidity range.)
- To reduce the risk of overheating the UPS, do not cover the UPS' cooling vents and avoid exposing the unit to direct sunlight or installing the unit near heat emitting appliances such as space heaters or furnaces.
- Do not attach non-computer-related items, such as medical equipment, life-support equipment, microwave ovens, or vacuum cleaners to UPS.
- Do not plug the UPS input into its own output.
- Do not allow liquids or any foreign object to enter the UPS. Do not place beverages or any other liquid-containing vessels on or near the unit.
- In the event of an emergency, press the OFF button and disconnect the power cord from the AC power

Transportation

- Please transport the UPS system only in the original package to protect against shock and impact.

Preparation

- Condensation may occur if the UPS system is moved directly from cold to warm environment. The UPS system must be absolutely dry before being installed. Please allow at least two hours for the UPS system to acclimate the environment.
- Do not install the UPS system near water or in moist environments.
- Do not install the UPS system where it would be exposed to direct sunlight or near heater.
- Do not block ventilation holes in the UPS housing.

Installation

How to determine the power requirements of your equipment

1. Ensure that the equipment plugged into the battery power-supplied outlets does not exceed the UPS unit's rated capacity. If rated unit capacities are exceeded, an overload condition may occur and cause the UPS unit to shut down or the fuse blow.
2. There are many factors that can affect the amount of power that your computer system will require. For optimal system performance keep the load below 80% of the unit's rated capacity.

Hardware Installation Guide

1. Your new UPS may be used immediately upon receipt. However, recharging the battery for at least 8 hours is recommended to ensure that the battery's maximum charge capacity is achieved. Charge loss may occur during shipping and storage. To recharge the battery, simply leave the unit plugged into an AC outlet. The unit will charge in both the on and off position.
2. With the UPS unit off and unplugged, connect the computer, monitor, and any externally powered data storage device.
3. Plug the UPS into a 2 pole, 3 wire grounded receptacle (wall outlet). Make sure the wall branch outlet is protected by a fuse or circuit breaker and does not service equipment with large electrical demands.

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4. Depress the power switch to turn the unit on. The LCD indicator light will illuminate and the unit will “beep”.
 5. To maintain optimal battery charge, leave the UPS plugged into an AC outlet at all times.
 6. To store your UPS for an extended period, cover it and store with the battery fully charged. Recharge the battery every three months to ensure battery life.

Maintenance, Service, and Faults

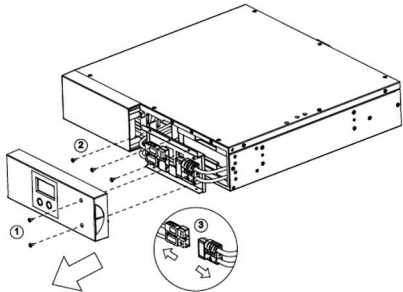
- The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.
- **Caution** - risk of electric shock. Even after the unit is disconnected from the mains (building wiring outlet), components inside the UPS system are still connected to the battery and electrically live and dangerous.
- Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists in the terminals of high capability capacitor such as BUS-capacitors.
- To avoid electrical shock, turn off the unit and unplug it from the AC power source before servicing the battery.
- Only persons who are adequately familiar with batteries and with the required precautionary measures may replace batteries and supervise operations. Unauthorized persons must be kept well away from the batteries.
- **Caution** - risk of electric shock. The battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground. Before touching, please verify that no voltage is present!
- Batteries may cause electric shock and have a high short-circuit current. Please take the precautionary measures specified below and any other measures necessary when working with batteries:
 - » Remove wristwatches, rings and other metal objects
 - » Use only tools with insulated grips and handles.
- When changing batteries, install the same number and same type of batteries.
- Do not attempt to dispose of batteries by burning them. This could cause battery explosion.
- Do not open or destroy batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.
- When replacing batteries, replace with the same type and number of batteries or battery packs.
- Do not dismantle the UPS system.
- A battery can present a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on batteries:
 - » Remove watches, rings, or other metal objects.
 - » Use tools with insulated handles.
 - » Wear rubber gloves and boots.
 - » Do not lay tools or metal parts on top of batteries.
 - » Disconnect charging source prior to connecting or disconnecting battery terminals.
 - » Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance.

Storage

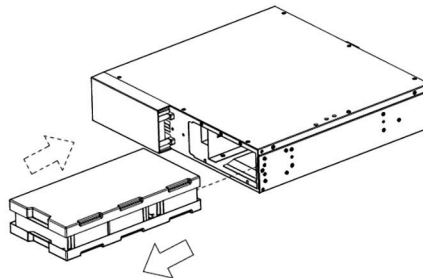
1. First turn off your UPS and disconnect its power cord from the wall outlet. Disconnect all cables connected to the UPS to avoid battery drain.
2. The UPS should be stored in a cool dry location.
3. Make sure the battery is fully charged before the UPS is stored.
4. For extended storage in moderate climates, the battery should be charged for 12 hours every 3 months by plugging the power cord into the wall receptacle and turning on the main switch. Repeat it every 2 months in high temperature locations.

Battery Installation and Replacement

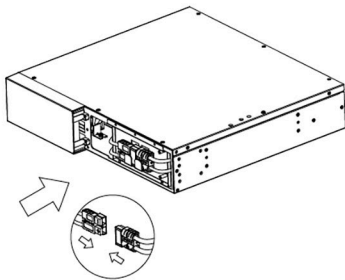
Step 1: Remove the front panel. Remove the retaining screws from the battery bracket and then remove the cover itself. Undraw the connectors.



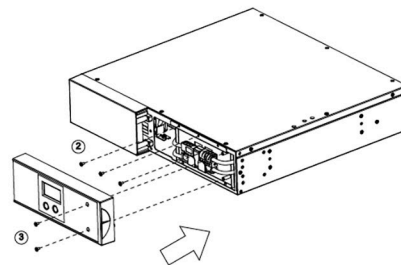
Step 2: Pull the battery tray out slowly. Put the new battery tray back into the compartment after that.



Step 3: Fasten the battery bracket and then insert the connectors. Place the connectors in the bracket.

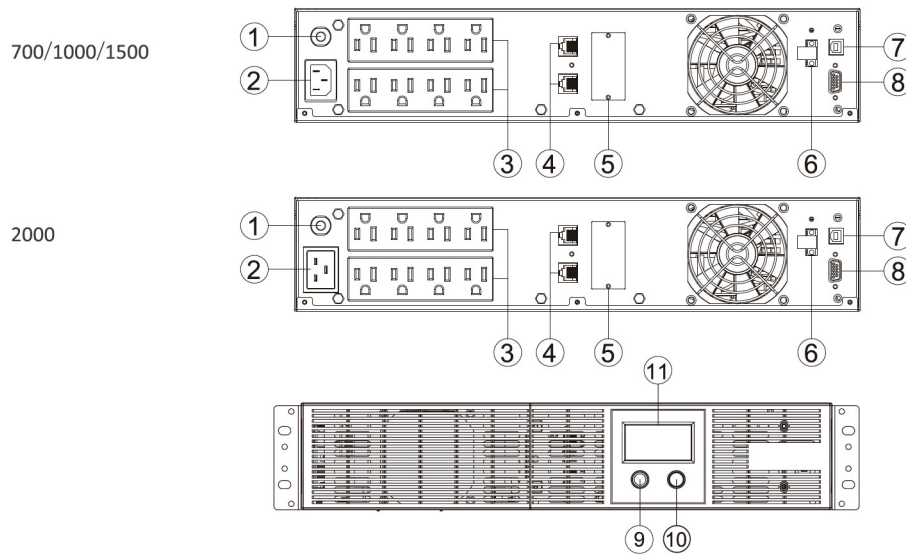


Step 4: Tighten the screws of the battery bracket and front panel .



Basic Operation

Front and Rear Panel Description



1. Input Circuit Breaker

The circuit breaker provides optimal overload protection.

2. AC Inlet

Connect to utility power through the input power cord.
(IEC320 C14 for 700/1000/1500, IEC 320 C20 for 2000)

3. AC outlet

The UPS provides outlets for connected equipment to insure temporary uninterrupted operation during a power failure and against surges and spikes.

4. RJ45/11 Communication Protection Ports

Communication protection ports will protect any standard modem, fax, telephone line, or network cable.

5. SNMP Network Port

The SNMP port provides remote monitoring and management of your UPS over a network.

6. EPO Port

Enable an emergency UPS Power-Off from a remote location. EPO terminal open, the UPS will turn off and the output shutdown immediately.

7. USB Port

This port allows connection and communication from the USB port on the computer to the UPS unit.

8. Serial Port

This port allows connection and communication from the DB9 serial on the computer to the UPS unit. The UPS communicates its status to the software.

9. Power On/Off Button

Press the power Button to turn the UPS ON or OFF, and can also confirm the selection in setting mode.

10. Mute Button

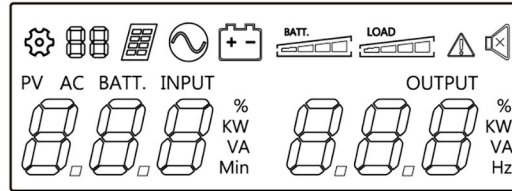
It can be enter/exit the setting mode by pressing this button for 5 seconds, can show page flipping by pressing this button for 1 second, and can also turn off/on by pressing this button 2 times.

11. LCD Display

The LCD will display the UPS status.

Definitions for Illuminated LCD Indicators

LCD Indicators




	Setting Item		Number of batteries
	LiFePO4 Battery		Line mode
	Bat-mode		Fault
	BATT. 	Bat mode: battery capacity Line mode: 1. Battery charging: cycle lighting 2. Battery full charged: lighting 3. Line mode without charger: battery capacity	
	Load capacity:		
	Sound disable (Press the MUTE key 2 times to disable and enable the buzzer sound)		

LCD Setting

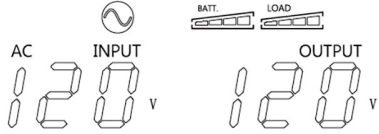
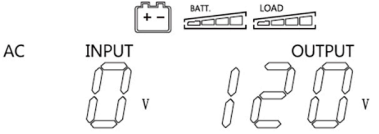
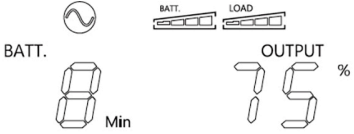
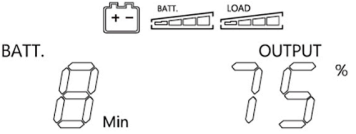
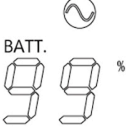
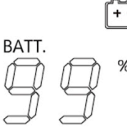
When the UPS is in Standby Mode, press and hold [MUTE] button for 5 seconds, the unit will enter setting mode. Press [MUTE] button to select setting programs. Press [POWER] button to confirm the selection. If you want to exit the setting mode, press and hold the [MUTE] button for 5 seconds.

The unit will exit setting mode if not operating for 1 minute.

Setting item	Configure Submenu	Available Settings	Default Setting	LCD Display
01	[PbS]: Number of batteries	-700: [1] [2] [3] [4] -1000/ -1500/ -2000: [1] [2]	[1]	
02	[bAt]: Battery Type	[LEd]: Lead Acid Battery [Li]: LiFePO4 Battery	[Led]	

03	[Cch]: Charging Current	[1A] [3A][6A]	[1A] for [LEd] [6A] for [Li]	
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Line mode & Batt.Mode

	Line mode	Bat mode
Initial		
2th		
3th		

Troubleshooting

Problem	Possible Causes	Remedy
Abnormal		
Mains normal but not Works in AC mode	1. AC Input missing	1. Check AC input connection.
	2. Input Breaker is tripped	2. Unplug the power cord of the UPS then press the circuit breaker knob.
The UPS will not turn on	The on/off Button is designed to prevent damage by rapidly turning it off and on.	Turn the UPS off. Wait 10 seconds and then turn the UPS on.
	The unit is not connected to an AC outlet.	The unit must be connected to a 100-127 50/60Hz outlet
	The battery is worn out.	Contact Technical Support.
	Mechanical problem.	
Outlets do not provide power to equipment	Circuit breaker is tripped due to overload	Turn the UPS off and unplug at least one piece connected equipment. Unplug the power cord of the UPS then press the circuit breaker knob.
	Batteries are discharged	Allow the unit to recharge for at least 4 hours.
	Unit has been damaged by a surge or spike.	Contact Technical Support.
Alarm		
Alarm code A06	Battery capacity is low	
Alarm code A09	Battery disconnected	
Alarm code A14	Over load occurs.	
Alarm code A16	EPO active	
Alarm code A18	Over temperature	
Fault		
Fault code F06	INV soft start fail	Restart the UPS, if the fault is still, contact Technical Support
Fault code F07	INV volt high	
Fault code F08	INV volt low	
Fault code F09	Output circuit short.	Your attached equipment may have problems, please remove them and check again.
Fault code F11	Battery voltage is too high.	1. Shut down the UPS 2. Check the counts of Battery 3. Check battery connector when use battery packages.
Fault code F12	Battery voltage is too low	
Fault code F13	Battery is overcharge	
Fault code F14	Over load occurs.	Shut off non essential equipment. If this solves the overload problem, the UPS will transfer to normal operation.
Fault code F15	load unbalance	
Fault code F18	Fan has been damaged.	Shut down the UPS, Replace the fan

Fault code F19	Over temperature	<ol style="list-style-type: none"> 1. Shut down the UPS. Restart the UPS to Check the fan for operation and if the ventilation hole has been covered 2. Contact Technical Support.
Other		
Software is inactive	The serial is not connected.	Connect the serial cable to the UPS unit and an open serial port on the back of the computer. You must use the cable that came with the unit.
	The unit is not providing battery power.	Shut down your computer and turn the UPS off. Wait 10 seconds and turn the UPS back on. This should reset the unit.

Specifications

UPS Series (lead acid batteries)

LOWELL MODEL NO.		UPS-700	UPS-1000	UPS-1500	UPS-2000
CAPACITY	Power rating	700VA (420W)	1000VA (600W)	1500VA (900W)	2000VA (1200W)
INPUT	Voltage nominal	120VAC			
	Voltage range	82–148VAC			
	Frequency	50/60Hz auto-sensing			
OUTPUT	Voltage	120VAC			
	Waveform	Pure sine wave			
	Transfer time (typical)	2–6ms			
	Efficiency	Up to 96% ECO mode, 93% buck and boost mode			
	Harmonic distortion	2% @ 100% linear load; 5% @ 100% non-linear load			
BATTERY	Battery type	Sealed, maintenance-free lead acid			
	Battery quantity/size	(1) 12V 9AH	(2) 12V 7AH	(2) 12V 9AH	
	Charging current	1A max			
	Typical recharge	4 hours to 90%			
PHYSICAL	Dimensions (W x D x H)	17.2" x 16.1" x 3.5"			
	Weight	24 lbs	27.3 lbs	29.3 lbs	31.3 lbs
	Line cord (detachable)	5 ft, 5-15P to C13			5 ft, 5-20P to C19
	Receptacles	(8) NEMA 5-15R			
ENVIRONMENT	Operating temperature	32–104°F (0–40°C)			
	Audible noise	< 40dBA		< 45dBA	
	Altitude	11,500 ft above sea level			
APPROVALS	UL, cUL, RoHS				
WARRANTY	3 years electronics, 3 years battery warranty (USA and Canada)				
COMMUNICATIONS INTERFACE	USB				
INCLUDED IN BOX	2 brackets, line cord, USB cable, software				

UPS-VLI Series (lithium batteries)

LOWELL MODEL NO.		UPS-VLI-700 (-1,2,3,4)	UPS-VLI-1000 (-1,2)	UPS-VLI-1500 (-1,2)
CAPACITY	Power rating	700VA (420W)	1000VA (600W)	1500VA (900W)
INPUT	Voltage nominal	120VAC		
	Voltage range	82–148VAC		
	Frequency	50/60Hz auto-sensing		
OUTPUT	Voltage	120VAC		
	Waveform	Pure sine wave		
	Transfer time (typical)	2–6ms		
	Efficiency	Up to 96% ECO mode, 93% buck and boost mode		
	Harmonic distortion	2% @ 100% linear load; 5% @ 100% non-linear load		
BATTERY	Battery type	Lithium Iron Phosphate (LiFePO ₄) 12.8V 6AH		
	Internal Battery Strings	Li1, Li2, Li3, Li4	Li1, Li2	Li1, Li2
	Charging current	1, 3 and 6A selectable (6A default)		
	Recharge time to 95%	1 hour per string		
PHYSICAL	Dimensions (W x D x H)	17.2" x 16.1" x 3.5"		
	Weight	21.2, 23.4, 25.6, 27.8 lbs	24.2, 28.6 lbs	26, 30.4 lbs
	Line cord (detachable)	5 ft, 5-15P to C13		
	Receptacles	(8) NEMA 5-15R		
ENVIRONMENT	Operating temperature	32–113°F (0–45°C)		
	Audible noise	< 40dBA		< 45dBA
	Altitude	11,500 ft above sea level		
APPROVALS	UL, cUL, RoHS, TAA compliant			
WARRANTY	5 years electronics, 5 years battery warranty (USA and Canada)			
COMMUNICATIONS INTERFACE	USB, RS-232, EPO, Intelligent slot for optional cards (web/SNMP, relay/dry contact)			
INCLUDED IN BOX	2 brackets, line cord, USB cable, software			

OBTAINING SERVICE

If the UPS requires service:

1. Use the TROUBLESHOOTING section in this manual to eliminate obvious causes.
2. Verify there are no circuit breakers tripped.
3. Call your dealer for assistance. If you cannot reach the dealer or if they cannot resolve the problem, call Lowell Manufacturing Company at (800) 325-9660. Technical support inquiries can also be made by email to sales@lowellmfg.com. Please have the following information available BEFORE calling:
 - Your name and address.
 - The serial number of the unit.
 - Where and when the unit was purchased.
 - All of the model information about your UPS.
 - Any information on the failure, including LEDs that may or may not be illuminated.
 - A description of the protected equipment, including model numbers if possible.
 - A representative will ask you for the above information and, if possible, help solve the problem over the phone. In the event that the unit requires factory service, the representative will issue you a Return Material Authorization number (RMA).

If you are returning the UPS for service, please follow these procedures:

1. Pack the UPS in its original packaging. If the original packaging is no longer available, ask the Lowell representative about obtaining a replacement set of packaging material. It is important to pack the UPS properly in order to avoid damage in transit. Never use Styrofoam beads for a packing material.
2. Include a letter with your name, address, daytime phone number, RMA number, a copy of your original sales receipt, and a brief description of the problem.
3. Mark the RMA number on the outside of all packages. Lowell Manufacturing cannot accept any package without the RMA number marked on the outside of the boxes.
4. Return the UPS by insured, prepaid carrier to the address provided by the Lowell representative.
5. Refer to the Warranty statements in this manual for additional details on what is covered.

LIMITED WARRANTY

Lowell Manufacturing Company warrants Lowell UPS equipment, when properly applied and operated within specified conditions, against faulty materials or workmanship for a period of **three years for UPSV and UPSVLI Series products** from the date of purchase. Lowell Manufacturing Company warrants **internal batteries for a period of three years** from the date of purchase. For equipment sites within the United States and Canada, this warranty covers repair or replacement, at the sole discretion of Lowell Manufacturing Company. The customer is responsible for the costs of shipping the defective product to Lowell Manufacturing Company. Lowell Manufacturing Company will pay for ground shipment of the repaired or replacement product. This warranty applies only to the original purchaser.

If equipment provided by Lowell Manufacturing Company is found to be **Dead-on-Arrival (DOA)**, Lowell Manufacturing Company will be responsible for the costs of shipping product to and returning equipment from the customer in a timely manner as agreed to with the customer, once the customer has requested and received a **Return Material Authorization (RMA)** number. DOA equipment is defined as equipment that does not properly function according to user documentation when initially received and connected in conjunction with proper procedures as shown in the user documentation or via support provided by Lowell Manufacturing Company personnel or authorized agents.

This warranty shall be void if (a) the equipment is repaired or modified by anyone other than Lowell Manufacturing Company or a Lowell Manufacturing Company approved third party; (b) the equipment is damaged by the customer, is improperly used or stored, is subjected to an adverse operating environment, or is operated outside the limits of its electrical specifications; or (c) the equipment has been used or stored in a manner contrary to the equipment's operating manual, intended use or other written instructions. Any technical advice furnished by Lowell Manufacturing Company or a Lowell Manufacturing Company authorized representative before or after delivery with regard to the use or application of Lowell Manufacturing Company equipment is furnished on the basis that it represents Lowell Manufacturing Company's best judgment under the situation and circumstances, but it is used at the recipient's sole risk.

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