



## Centurion LiFePO<sub>4</sub>

### Long Run UPS

PSLCERT1000L / PSLCERT2000L / PSLCERT3000L  
PSLCERTBB50

## USER MANUAL



### INTRODUCTION

Thank you for purchasing the PSLCERT1000L/PSLCERT2000L/PSLCERT3000L and External Battery Module (EBM) PSLCERTBB50. It is designed to provide safe and reliable power protection to your precious electronics equipment. Before you start using the product, please read this user manual. It contains instructions relating to safety, installation, operation maintenance and warranty. Please keep this manual in a safe place for future use.



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## 1 IMPORTANT SAFETY WARNING

All safety instructions in this document must be read, understood, and followed.

### 1.1 Transportation and Storage

- Please transport the UPS system only in the original packaging to protect against shock and damage.
- The UPS must be stored in a facility where the temperature is well regulated. Ambient temperatures should be between 0–50°C and relative humidity shall be 0–95% non-condensing. Any storage of greater than 30 days refer to section 8 for more detail.
- The external battery modules are certified under UN38.3 for transport.

### 1.2 Preparation

- Condensation may form if the UPS system is moved immediately from cold to warm environment. The UPS system must be dry before being installed. Please allow at least two hours for the UPS system to acclimatise to the environment prior to energisation.
- If the UPS might be exposed to temperatures over 50C. Please contact PowerShield for further advise.

- Do not install the UPS where the relative humidity exceeds 95%, and it must also be non-condensing.
- Do not install the UPS near bodies of water or salt water. (conformal coating may be required to protect your UPS)
- Do not install the UPS in high dust, conductive dust environments (conformal coating may be required to protect your UPS)
- Do not install the UPS system where it would be exposed to direct sunlight or nearby heat source.
- Do not block ventilation holes on the UPS housing.
- Do not connect appliances or devices which would overload the UPS. Care needs to be taken with laser printers, or other loads with high inrush current to size the UPS accordingly.
- The UPS and any supplied external battery modules come with earth connections. Please ensure all earth connections are installed.
- All electrical work shall be undertaken by a qualified electrician (in your local jurisdiction)

Please use only VDE-tested, CE-marked power cables to connect the loads to the UPS system.

Pluggable equipment includes a protective earth conductor that carries the leakage current from the load devices (computer equipment). Total leakage current must not exceed 3.5mA.

Use of this UPS in medical application of any life-sustaining equipment where failure of the equipment can reasonably be expected to cause the failure of the life-sustaining equipment or to significantly affect its safety or effectiveness is not recommended. Do not use this equipment in the presence of a flammable mixture with air, oxygen or nitrous oxide.

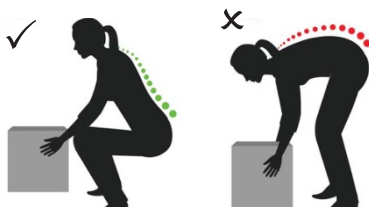
**WARNING:** This is a category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures.

### 1.3 Safety instruction

Please read carefully all warnings and operating instructions in this manual before installing the unit.

#### Handling Safety

As UPS can weigh over 10kgs and the external battery modules can weigh over 40kgs please lift correctly.



### 1.4 Operation

- Do not disconnect the mains cable on the UPS system as this will cancel the protective earthing of the UPS system and of all connected loads.
- The UPS system features its own, internal current source (batteries). The UPS output sockets or output terminals block may be electrically live even if the UPS system is not connected to the building wiring outlet.
- In order to fully disconnect the UPS system, first press the OFF/Enter button then disconnect the mains.
- Prevent fluid or foreign objects from entering the UPS system

### 1.5 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 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!
- **Caution:** Do not dispose of batteries in a fire. The batteries may explode.
- **Caution:** Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- 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:
  - a) Remove watches, rings, or other metal objects.
  - b) Use tools with insulated handles.
  - c) Wear rubber gloves and boots.
  - d) Do not lay tools or metal parts on top of batteries.
  - e) Disconnect charging source and load prior to installing or maintaining the battery.
  - f) Remove battery grounds during installation and maintenance to reduce likelihood of shock.

Remove the connection from ground if any part of the battery is determined to be grounded.

When changing batteries, please only use approved PowerShield batteries.

## 2 INSTALLATION AND SETUP

### 2.1 Package Contents

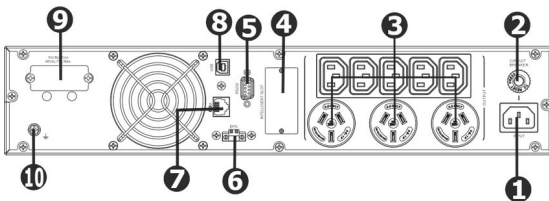
Before installation, please inspect the unit for any damage that may have occurred during transit. If any damage is found, please notify your dealer. Please keep the packaging in the event the product needs to be returned to a repair centre for service.

Included in the box:

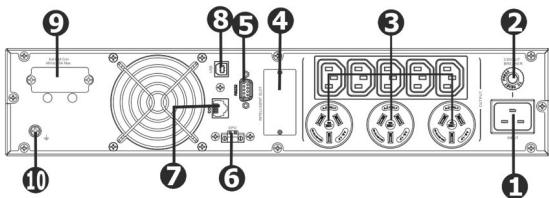
- UPS unit
- User manual
- Signal cable (RJ11)
- BMS communication cable (RJ45)

### 2.2 Rear panel view of UPS

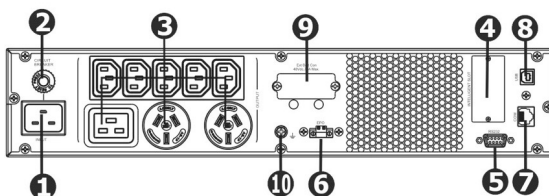
- 1 AC input
- 2 Input breaker
- 3 AC output receptacles
- 4 Intelligent slot
- 5 RS-232 port
- 6 EPO port
- 7 BMS communication port (RJ45)
- 8 USB port
- 9 External battery connector
- 10 Grounding screw



PSLCERT1000L



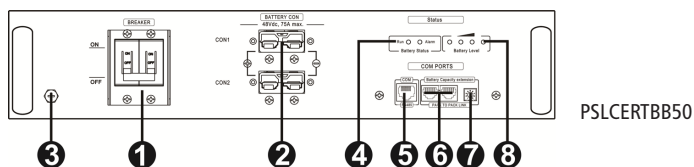
PSLCERT2000L



PSLCERT3000L

### 2.3 Rear panel view of battery pack

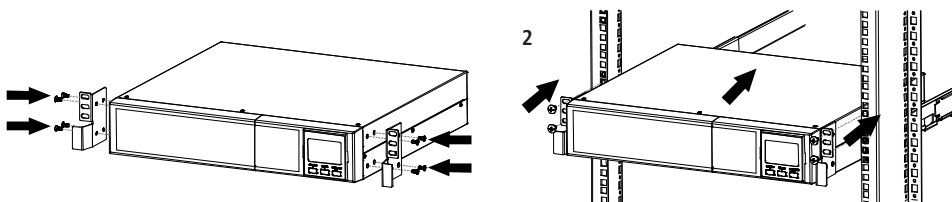
- 1 Breaker
- 2 Battery connectors
- 3 Grounding screw
- 4 Battery pack status LED
- 5 BMS COM port (to UPS) RJ45
- 6 Extension ports (to next battery pack) RJ11
- 7 ID switch
- 8 Battery level LED



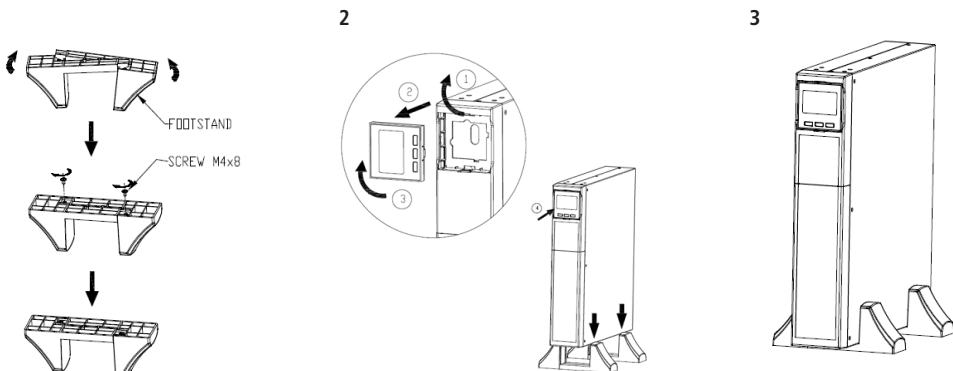
### 2.4 Install the UPS

This UPS can be installed in either tower or rack orientation. Please choose proper installation to position this UPS.

#### Rack-mount Installation



#### Tower Installation

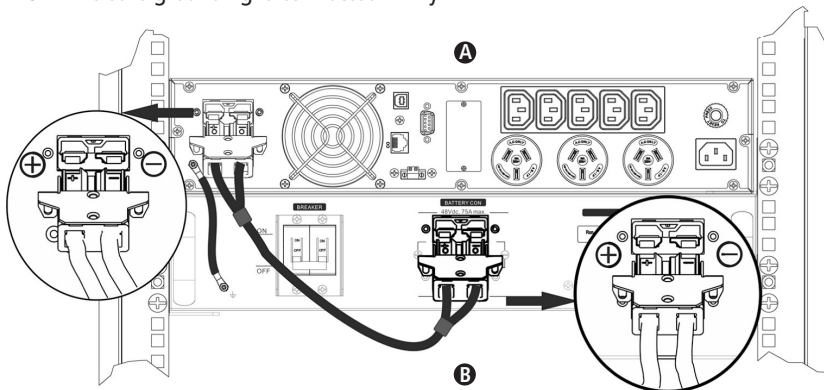


### 2.5 Connecting to Battery Pack

**Step 0:** Connect all Earth cables

**Step 1:** Connect **A** UPS to **B** external battery module (PSLCERTBB50 with a battery cable.

**NOTE:** Be sure grounding is connected firmly.

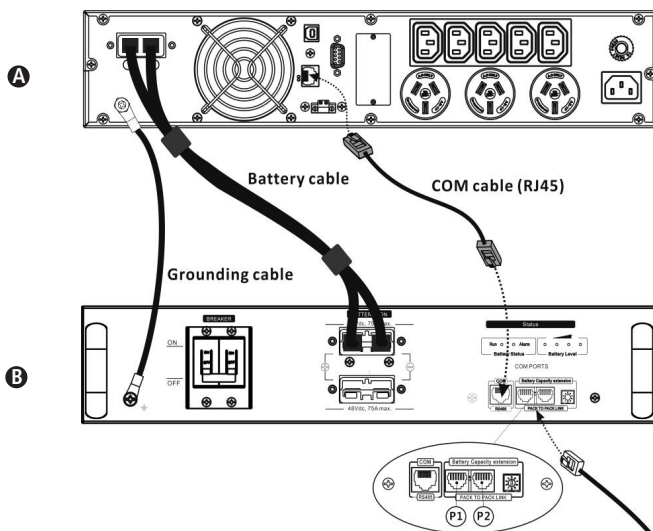


**Step 2:** Insert the communication cable (RJ45 cable supplied in the UPS package) into the BMS communication port on the external battery module and into the BMS communication port of the UPS.

Set the ID switch position at "0".

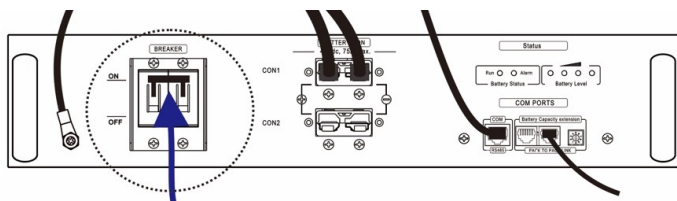
**NOTE:** For a single external battery module there is a spare signal cable required.

If the UPS is only connected to one battery pack, it's not necessary to insert the signal cable into extension port (RJ11).

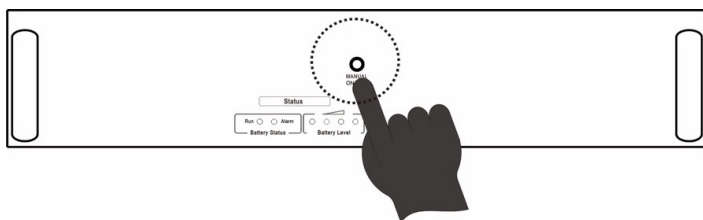




**Step 3:** Switch ON breaker.

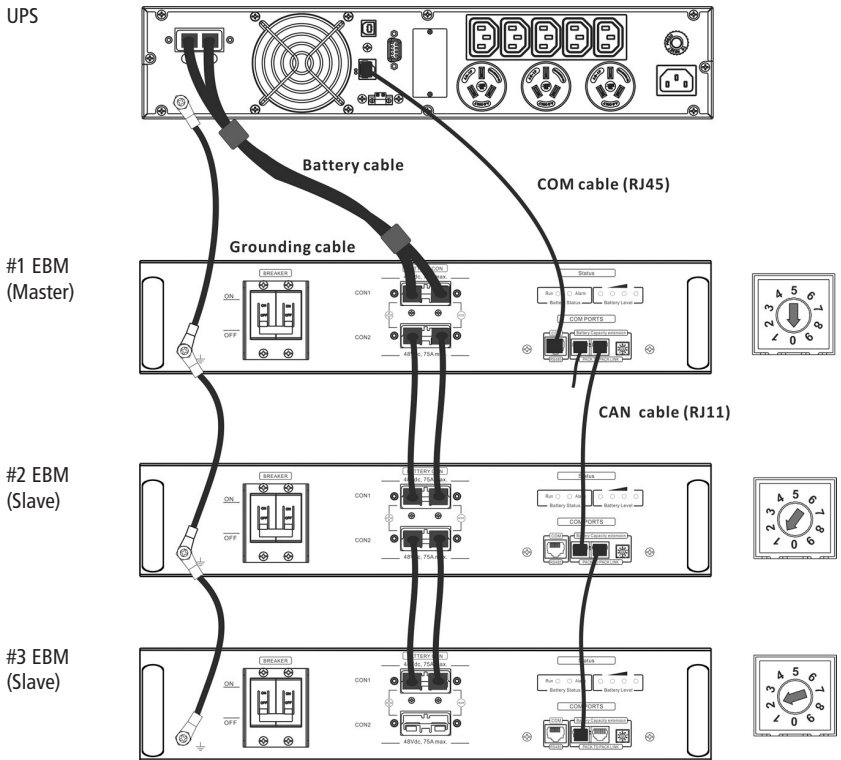


**Step 4:** Turn on the external battery module by pressing the MANUAL ON/OFF button for 5 sec and release. After 20 sec, the external battery module is ready for output and the LED on front panel is illuminated.



### 2.6 Battery Capacity Extension

To extend the backup time, connect more external battery modules.



If more than one external battery module is connected to the UPS, the first external battery module is deemed Master and must be set with ID of "0"

The second and subsequent external battery modules are deemed Slaves and must be set to unique IDs of 1,2,3,4,5,6,7,8,9

#### For addition External Battery Modules

**Step 0:** Connect Earth cables from the UPS to all external battery modules.

**Step 1:** Set up the ID code for slave external battery modules by rotating the PIN number on the ID switch. from number 1 to 9. it is a requirement to assign a unique ID to each external battery module for parallel operation.

**Step 2:** Use the battery cables supplied to connect the external battery modules.

**Step 3:** Using the supplied RJ11 cable connect the extension port of the current EBM to the extension port of the next EBM. You will need to connect the EBMs from P1 to P2, or P2 to P1 respectively.

Install the terminator cable in the RJ11 socket of either the first EBM

**Step 4:** Turn all breaker switches on the connected external battery modules to "ON" position.

**Step 5:** Press manual ON/OFF button for 5 secs on each external battery module and all external battery modules will start up and front panel LEDs will illuminate.

**NOTE 1:** When first energising EBMs they may be at different states of charge. The BMS requires all EBMS to be fully charged (or at the same state of charge) for successful operation of the UPS. Please allow sufficient time for the EBMs to fully charge.

**NOTE 2:** Based on the UPS charging rating, the maximum external battery module for extension is 6pcs.

### 2.7 Setup the UPS

#### Step 1: UPS input connection

Using the power cord supplied plug the UPS into a two-pole, three-wire, grounded GPO. Avoid using extension cords.

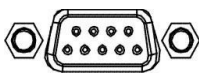
#### Step 2: UPS output connection

Please connect devices to the outlets, and pay attention not to overload the UPS.

#### Step 3: Communication connection



USB Port



RS-232 Port



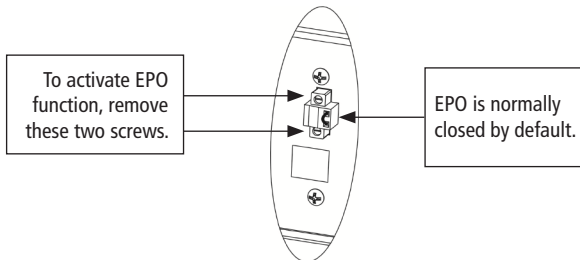
Intelligent Slot

To allow for unattended UPS shutdown/start-up and status monitoring, connect the communication cable with either the USB or RS-232 port and your PC. With the monitoring software installed, you can schedule UPS shutdown/start-up and monitor UPS status.

The UPS is equipped with an intelligent slot to support either a SNMP or AS400 card for advanced communication and monitoring options.

### Step 4: Disable and enable EPO function

This UPS is equipped with an EPO function (NC). By default, the UPS is delivered from factory with Pin 1 and pin 2 closed. To enable a remote EPO button, remove the two screws on the EPO port and remove plate and then wire up the EPO button.



### Step 5: Turn on the UPS

Press the ON/Mute button on the front panel for two seconds to power on the UPS.

**Note:** The battery typically takes five hours to achieve full charge. Do not expect full battery run capability during this initial charge period.



### Step 6: Install software

If you wish to use NetGuard monitoring Software please follow the instructions below:

- 1 Please download the latest NetGuard Monitoring software from [www.powershield.com.au/index.php/downloads](http://www.powershield.com.au/index.php/downloads)
- 2 When the installation is completed, the NetGuard agent icon will appear in the Task bar. Click the plug icon found on the Task bar to start the program

If using USB then the usb driver is required to be installed from the following link:  
[powershield.com.au/download/usb-driver-installation-for-lifepo4-centurion-long-run-ups-pslcert1-3kl/](http://powershield.com.au/download/usb-driver-installation-for-lifepo4-centurion-long-run-ups-pslcert1-3kl/)

## 2.8 Battery Replacement

When the icons of  and  are flashing in LCD display and alarm is sounding every 3 seconds, the batteries are required to be replaced. Contact your service representative to replace batteries.

**CAUTION:** Consider all warnings, cautions, and notes before replacing batteries.

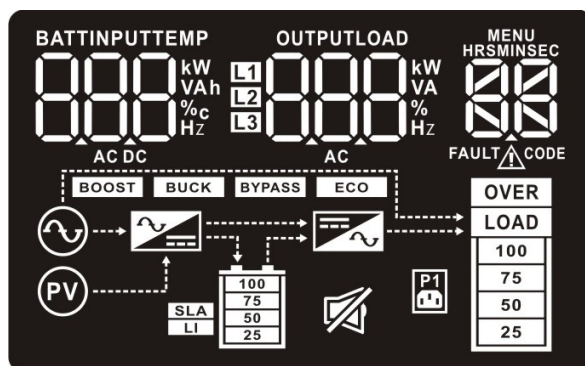
**NOTE:** Be aware of EBMs with mixed dates of Manufacture

## 3 OPERATIONS

### 3.1 Button operation

Button	Function
ON/Mute Button	<ul style="list-style-type: none"> <li>Turn on the UPS: Press and hold ON/Mute button for at least 2 seconds to turn on the UPS.</li> <li>Mute the alarm: After the UPS is turned on in battery mode, press and hold this button for at least 5 seconds to disable or enable the alarm system. But it's not applied to the situations when warnings or errors occur.</li> <li>Up key: Press this button to display previous selection in UPS setting mode.</li> <li>Switch to UPS self-test mode: Press ON/Mute buttons for 5 seconds to enter UPS self-testing while in AC mode, ECO mode, or converter mode.</li> </ul>
OFF/Enter Button	<ul style="list-style-type: none"> <li>Turn off the UPS: Press and hold this button at least 2 seconds to turn off the UPS. UPS will be in standby mode under power normal or transfer to Bypass mode if the Bypass enable setting by pressing this button.</li> <li>Confirm selection key: Press this button to confirm selection in UPS setting mode.</li> </ul>
Select Button	<ul style="list-style-type: none"> <li>Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, battery voltage, battery current, battery capacity, ambient temperature, output voltage, output frequency, output current, load percent, load VA, battery SOH.</li> <li>Setting mode: Press and hold this button for 5 seconds to enter UPS setting mode when Standby and Bypass mode.</li> <li>Down key: Press this button to display next selection in UPS setting mode.</li> </ul>
ON/Mute + Select Button	<ul style="list-style-type: none"> <li>Switch to bypass mode: When the main power is normal, press ON/Mute and Select buttons simultaneously for 5 seconds. Then UPS will enter to bypass mode. This action will be ineffective when the input voltage is out of acceptable range.</li> <li>Exit setting mode or return to the upper menu: When working in setting mode, press ON/Mute and Select buttons simultaneously for 0.5 seconds to return to the upper menu. If it's already in top menu, press these two buttons at the same time to exit the setting mode.</li> </ul>

### 3.2 LCD Panel



Display	Function
	Indicates the remaining backup time in numbers or digits. HRS: hours, MIN: minutes, SEC: seconds
<b>Warning &amp; Fault information</b>	
	Indicates that a warning and fault occurs.
 FAULT CODE	Indicates the warning and fault codes as listed in detail in section 3-7 and 3-8.
<b>Setting Operation</b>	
	Indicates the setting operation.
<b>Battery, Input, Temperature, Output and Load information</b>	
	Indicates the input voltage, input frequency, battery voltage, battery capacity and ambient temperature. k: kilo, W: watt, V: voltage, A: ampere, %: percent, °: centigrade degree, Hz: frequency, AC: alternating current, DC: direct current
	Indicate the output voltage, output frequency, load current and load percentage. k: kilo, W: watt, V: voltage, A: ampere, %: percent, Hz: frequency, AC: alternating current
<b>Load information</b>	
	Indicates the load level by 0-24%, 25-49%, 50-74%, and 75-100%.
	Indicates overload.
<b>UPS status</b>	
	Indicates that programmable management outlets are working.
	Indicates the UPS alarm is disabled.
	Indicates the UPS is working in bypass mode.
	Indicates the UPS powers the output directly from the mains
	Indicates the UPS connects to the mains.
	Indicates the UPS connects to the PV
	Indicates the AC to DC circuit is working
	Indicates the inverter circuit is working
	Battery information

### 3.3 Audible Alarm

Battery Mode	Sounding every 5 seconds
Low Battery	Sounding every 2 seconds
Overload	Sounding every 1 second
Fault	Continuously sounding
Bypass Mode	Sounding every 11 seconds

### 3.4 LCD display wordings index

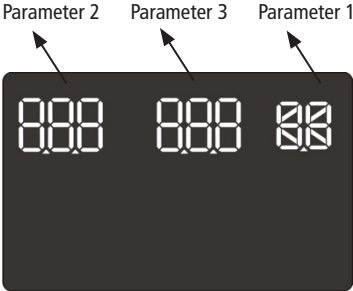
Abbreviation	Display content	Meaning
ENA	ENA	Enable
DIS	DIS	Disable
CF	CF	Constant Frequency Constant Voltage
BAT	BAT	Battery
HLS	HLS	High loss
LLS	LLS	Low loss
BAH	BAH	Battery AH
CHA	CHA	Charger current
CBV	CBV	Charger boost voltage
CBF	CBF	Charger float voltage
AUT	AUT	Automatic
AON	AON	Always on
ESC	ESC	Escape
ON	ON	ON
OK	OK	OK
EP	EP	EPO
TP	TP	Temperature
CH	CH	Charger
BF	BF	Battery Fault
FU	FU	Bypass frequency unstable
BR	BR	Battery Replace
EE	EE	EEPROM error

## 3.4 LCD display wordings index (continued)

Abbreviation	Display content	Meaning
NC	NC	Battery disconnected
BL	BL	Battery low
OC	OC	Overcharge
OL	OL	Overload
BV	BV	Bypass out range
BC	BC	Battery communication loss
BO	BO	Battery over temperature
NUL	NUL	Null
CLO	CLO	Shield lithium battery EOL warning for one week
EL	EL	The battery is nearing its complete life
RST	RST	RST Automatic restart
SD	SD	Shutdown
OI	OI	Over input current



3.5 UPS Setting

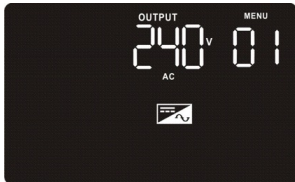


Three parameters need to be configured in order to set up the UPS. Refer to following diagram.

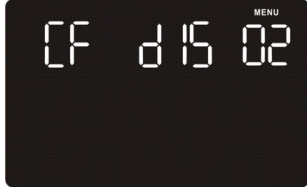
Parameter 1: It is for the program alternatives. Refer to the below table.

Parameter 2 and parameter 3 are the setting options or values of each program.


01: Output voltage setting

Interface	Setting
	<p><b>Parameter 2: Output voltage setting</b></p> <p>For 220/230/240 VAC models, you may choose the following output voltage.</p> <p><b>220:</b> presents output voltage is 220Vac</p> <p><b>230:</b> presents output voltage is 230Vac (Default)</p> <p><b>240:</b> presents output voltage is 240Vac</p>


02: Converter enable/disable

Interface	Setting
	<p><b>Parameter 2: Enable or disable converter mode.</b></p> <p>You may choose the following two options.</p> <p><b>CF ENA:</b> converter mode enable</p> <p><b>CF DIS:</b> converter mode disable (Default)</p>


### 03: Output frequency setting

Interface	Setting
	<p>The frequency may be set in battery mode:</p> <p><b>BAT 50:</b> sets output frequency to 50Hz</p> <p><b>BAT 60:</b> sets output frequency to 60Hz</p> <p>If converter mode is enabled, output frequency can be selected:</p> <p><b>CF 50:</b> sets output frequency to 50Hz</p> <p><b>CF 60:</b> sets output frequency to 60Hz</p>

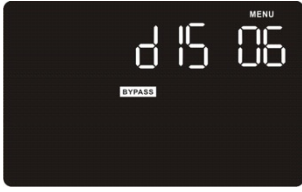
### 04: Output frequency setting

Interface	Setting
	<p><b>Parameter 2:</b> Enable or disable ECO function.</p> <p>You may choose the following two options.</p> <p><b>ENA:</b> ECO mode enable</p> <p><b>DIS:</b> ECO mode disable (Default)</p>

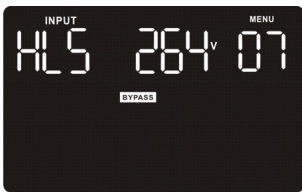
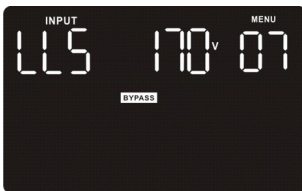
## 05: Buzzer enable/disable

Interface	Setting
	<p><b>Parameter 2:</b> Enable or disable buzzer function.</p> <p>You may choose the following two options.</p> <p><b>ENA:</b> buzzer enable(Default)</p> <p><b>DIS:</b> buzzer disable</p>

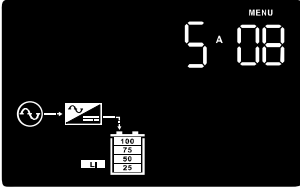
## 06: Bypass enable/disable when UPS is off

Interface	Setting
	<p><b>Parameter 2:</b> Enable or disable Bypass function.</p> <p>You may choose the following two options.</p> <p><b>ENA:</b> Bypass enable</p> <p><b>DIS:</b> Bypass disable (Default)</p>

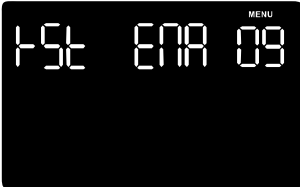
## 07: Bypass voltage range setting

Interface	Setting
 	<p><b>Parameter 2:</b> Set the acceptable high voltage point and acceptable low voltage point for Bypass mode by pressing the Down key or Up key.</p> <p><b>HLS:</b> Bypass high voltage point.</p> <p>For 220 VAC models, there are four options, 231V, 242V, 256V and 264V</p> <p>For 230 VAC models, there are four options, 242V, 253V, 265V and 276V</p> <p>For 240 VAC models, there are four options, 252V, 264V, 276V and 288V (Default: 276V)</p> <p><b>LLS:</b> Bypass low voltage point</p> <p>For 220 VAC models, there are four options, 187V, 176V, 165V and 154V</p> <p>For 230 VAC models, there are four options, 196V, 184V, 173V and 161V</p> <p>For 240 VAC models, there are four options, 204V, 192V, 180V and 168V (Default: 184V)</p>


### 08: Charging current setting

Interface	Setting
	<p><b>Parameter 2:</b> Set the charging current by pressing the Down key or Up key.</p> <p>For 1KVA model, there are four options, 2A, 3A, 4A and 5A. (Default: 5A)</p> <p>For 2KVA model, there are six options, 2A, 3A, 4A, 5A, 6A, 8A and 10A (Default: 10A)</p> <p>For 3KVA model, there are six options, 2A, 3A, 4A, 5A, 6A, 8A and 10A (Default: 10A)</p>

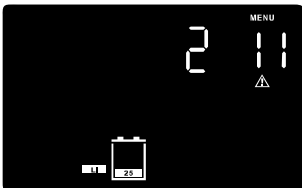
### 09: Auto restart enable/disable

Interface	Setting
	<p><b>Parameter 2:</b> Enable or disable auto restart function.</p> <p>You may choose the following two options.</p> <p><b>ENA:</b> auto restart enable(Default)</p> <p><b>DIS:</b> auto restart disable</p>


### 10: Minimum battery capacity to restart UPS again

Interface	Setting
	<p><b>Parameter 2:</b> Set the minimum battery capacity by pressing the Down key or Up key.</p> <p>There are four options: 0%, 15%, 50%, 90% (Default: 0%)</p> <p><b>15%:</b> When 15% is selected, the UPS is discharged until battery automatically shut down during power failure. After the utility power is restored, the UPS will automatically restart when battery capacity is greater than 15% again.</p>


## 11: Low battery state indication setting

Interface	Setting
 <p>The LCD display shows the number '2' on the left and '11' on the right. Above '11' is the word 'MENU'. Below '11' is a small triangle icon. At the bottom left, there is a battery icon with 'LI' and '25' next to it.</p>	<p><b>Parameter 2:</b> Set the remaining battery time to trigger the low battery warning by pressing the Down key or Up key. There are four options: 2 min, 5 min, 7min, 10min</p> <p><b>2min:</b> When 2min is selected and the remaining battery discharge time in battery mode is less than 2min, the UPS will activate "Battery Low" alarm. The alarm will continuously sound for 2 minutes.</p> <p><b>Note:</b> If "Battery Low" alarm is triggered, the alarm will continuously sound until the setting time is achieved.</p>

## 12: EOL alert setting

Interface	Setting
 <p>The LCD display shows 'NUL' on the left and '12' on the right. Above '12' is the word 'MENU'. Below '12' is a small triangle icon. At the bottom left, there is a battery icon with 'LI' and '25' next to it.</p>	<p><b>Parameter 2:</b> Shield EOL warning of lithium battery. You may choose the following two options:</p> <p><b>NUL:</b> Do nothing (Default)</p> <p><b>CLO:</b> Shield lithium battery EOL warning for one week.</p> <p><b>Note:</b> EOL means the end of life for a battery.</p>


## 00: Exit setting

Interface	Setting
 <p>The LCD display shows 'NUL' on the left and '12' on the right. Above '12' is the word 'MENU'. Below '12' is a small triangle icon. At the bottom left, there is a battery icon with 'LI' and '25' next to it.</p>	<p>Exit the setting mode.</p>



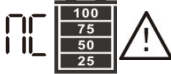
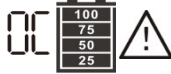

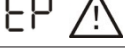
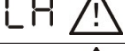
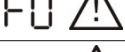
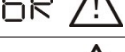



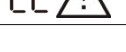
### 3.6 Operating Mode Description

Operating mode	Description	LCD display
Online mode	When the input voltage is within acceptable range, UPS will provide pure and stable AC power to output. The UPS will also charge the battery at online mode.	
ECO mode	Energy saving mode: When the input voltage is within voltage regulation range, UPS will bypass voltage to output for energy saving. The UPS will also charge the battery at ECO mode.	
Frequency Converter mode	When input frequency is within 40 Hz to 70 Hz, the UPS can be set at a constant output frequency, 50 Hz or 60 Hz. The UPS will still charge battery under this mode.	
Battery mode	When the input voltage is beyond the acceptable range or power failure, the UPS will backup power from battery and alarm is sounding every 5 seconds.	
Bypass mode	When input voltage is within acceptable range but UPS is overload, UPS will enter bypass mode or bypass mode can be set by front panel. Alarm is sounding every 11 seconds.	
Standby mode	UPS is powered off and no output supply power, but still can charge batteries.	
Fault mode	When a fault has occurred, the ERROR icon and the fault code will be displayed.	

## 3.7 Faults Reference Code







Fault event	Fault code	Icon	Fault event	Fault code	Icon
Bus start fail	01	x	Battery voltage too high	27	x
Bus over	02	x	Battery voltage too low	28	x
Bus under	03	x	Charger output short	2A	x
Inverter soft start fail	11	x	Over temperature	41	x
Inverter voltage high	12	x	Overload	43	
Inverter voltage Low	13	x	Charger failure	45	x
Inverter output short	14	x	Charger voltage over	4A	x

## 3.8 Warning indicator

Warning	Icon (flashing)	Alarm
Low Battery		Sounding every 2 seconds
Overload		Sounding every 1 second
Battery is not connected		Sounding every 2 seconds
Over Charge		Sounding every 2 seconds
EPO enable		Sounding every 2 seconds
Over temperature		Sounding every 2 seconds
Charger failure		Sounding every 2 seconds
Bypass frequency unstable		Sounding every 2 seconds
Battery replacement		Sounding every 3 seconds
EEPROM error		Sounding every 2 seconds
Lithium battery communication loss		Sounding every 2 seconds
Lithium battery over temperature		Sounding every 2 seconds
The battery is nearing its end of life		Sounding every 3 seconds

## 4 TROUBLESHOOTING

If the UPS system does not operate correctly, please solve the problem by using the table below.

Abbreviation	Display content	Meaning
No indication and alarm even though the mains is normal.	The AC input power is not connected well.	Check if input power cord firmly connected to the mains.
	The AC input is connected to the UPS output.	Plug AC input power cord to AC input correctly.
The icon  and the warning code <b>EP</b> flash on LCD display and alarm is sounding every 2 seconds.	EPO function is activated.	Be sure that the EPO terminal is connected securely.
The icons of  and the warning code  flash on LCD display. Alarm is sounding every 2 seconds.	The external or internal battery is incorrectly connected.	Check if all batteries are connected well.
Fault code is shown as 27 on LCD display and alarm is continuously sounding.	Battery voltage is too high or the charger is fault.	Contact your dealer.
Fault code is shown as 28 on LCD display and alarm is continuously sounding.	Battery voltage is too low or the charger is fault.	Contact your dealer.
The icons  and  flash on LCD display. Alarm is sounding every second.	UPS is overload	Remove excess loads from UPS output.
	UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the Bypass.	Remove excess loads from UPS output.
	After repetitive overloads, the UPS is locked in the Bypass mode. Connected devices are fed directly by the mains.	Remove excess loads from UPS output first. Then shut down the UPS and restart it.
Fault code is shown as 43 and the icon  is lighting on LCD display. Alarm is continuously sounding.	The UPS shut down automatically because of overload at the UPS output.	Remove excess loads from UPS output and restart it.
Fault code is shown as 14 on LCD display and alarm is continuously sounding.	The UPS shut down automatically because short circuit occurs on the UPS output.	Check output wiring and if connected devices are in short circuit status.



Fault code is shown as 01, 02, 03, 11, 12, 13 and 41 on LCD display and alarm is continuously sounding.	<p>A UPS internal fault has occurred. There are two possible results:</p> <ol style="list-style-type: none"> <li>1. The load is still supplied, but directly from AC power via bypass.</li> <li>2. The load is no longer supplied by power.</li> </ol>	Contact your dealer
Battery backup time is shorter than nominal value.	Batteries are not fully charged	Charge the batteries for at least 5 hours and then check capacity. If the problem still persists, consult your dealer.
	Batteries defect	Contact your dealer to replace the battery.
Fault code is shown as 2A on LCD display and alarm is continuously sounding.	The short circuit occurs on the charger output.	Check if battery wiring of connected external pack is in short circuit status.
Fault code is shown as 45 on LCD display. At the same time, alarm is continuously sounding.	The charger does not have output and battery voltage is less than 10V/PC.	Contact your dealer.

## 5 SERVICE

### Warranty Conditions

The standard warranty is two (2) years from the date of purchase. For Warranty Conditions please visit: [www.powershield.com.au/wp-content/uploads/Warranty/PowerShield-WARRANTY.pdf](http://www.powershield.com.au/wp-content/uploads/Warranty/PowerShield-WARRANTY.pdf)

### Warranty Claims

First please follow the troubleshooting procedure described above. If you are unable to solve your problem then please call 1300-305-393. You will be required to provide the following details:

The model number, serial number, and the date of purchase of the UPS. Be prepared to troubleshoot the problem over the telephone with technical support. If unsuccessful the technical support team will issue a Returned Material Authorization (RMA) Number & Warranty Procedure Document. Our technical support personnel will also guide you through the process.

### Warranty Registration

Please register your warranty by visiting: [www.powershield.com.au](http://www.powershield.com.au)

## 6 STORAGE AND MAINTENANCE

### Operation

The UPS system contains no user-serviceable parts. If the battery service life (3~5 years at 25°C ambient temperature) has been exceeded, the batteries must be replaced. In this case, please contact your dealer.



Be sure to deliver the spent  $\text{LiFePO}_4$  (Life) battery to a recycling facility or ship it to your dealer in the replacement battery packing material.

### Storage

Before storing, charge the UPS 5 hours. Store the UPS covered and upright in a cool, dry location. During storage, recharge the battery in accordance with the following table:

Storage Temperature	Recharge Frequency	Charging Duration
35°C ~ 45°C	Every month	1 hours @ 5 °C ~ 35 °C
25°C ~ 35°C	Every 1–3 months	1 hours @ 5 °C ~ 25 °C
–10°C ~ 25°C	Every 3–12 months	1 hours @ 5 °C ~ 25 °C

7 SPECIFICATIONS					
MODEL		1000VA		2000VA	3000VA
Model Number		PSLCERT1000L		PSLCERT2000L	PSLCERT3000L
Capacity		1000VA/900W		2000VA/1800W	3000VA / 2700W
Input					
Nominal Input Voltage		230 VAC			
Input Voltage Range		160 VAC–300 VAC @100% load 110 VAC @ 60% load (Derating)			
Frequency Range		40Hz ~ 70 Hz			
Phase		Single phase with ground			
Input Surge Energy Rating		945 Joules			
Power Factor		≥ 0.99 @ full load			
Input Connection		IEC 320 C14	IEC 320 C20	IEC 320 C20	
Output					
Nominal Output Voltage		230VAC			
Output voltage option		220VAC, 240VAC			
AC Voltage Regulation		± 1% (Batt. Mode)			
Charging current		5A	10A	10A (load>95%, derating to 6A)	
Output Connection		3 x Aus3Pin + IEC 320 C13 x 5	3 x Aust3Pin + IEC 320 C13 x 5	2 x Aus3Pin + IEC 320 C13 x 5 + C19 x 1	
Frequency Range (Synchronized Range)		47 ~ 53 Hz or 57 ~ 63 Hz			
Frequency Range		50 Hz ± 0.1 Hz or 60Hz ± 0.1 Hz (Batt. Mode)			
Current Crest Ratio		3:1			
Harmonic Distortion		≤ 3% THD (Linear Load) ; 6 % THD (Non-linear Load)			
Transfer Time	AC to DC mode	Zero			
	Inverter to Bypass	< 4 ms			
Waveform (Batt. Mode)		Pure Sinewave			
Overload	AC mode	105-125% 2min ; 125-140% 30s ; >140% 0s; (<35°C)			
Capacity	Battery Mode	105-120% 1min ; >120% 0s; (<35°C)			
EFFICIENCY					
AC Mode		90%	90%	91%	
ECO Mode			≥96%		
Battery Mode		85%	85%	86%	
PHYSICAL					
Dimension, D x W x H (mm)		450 x 438 x 86	500 x 438 x 86	500 x 438 x 86	
Net Weight (kgs)		8.0	8.8	9.7	
REGULATORY APPROVALS					
Operation Humidity		0–95 % RH @ 0–40°C (non-condensing)			
Noise Level		Less than 50dBA @ 1 Metre in AVG			
MANAGEMENT					
Smart RS-232 or USB		Supports Windows® 2000/2003/XP/Vista/2008/7/8/10, Linux, Unix and MAC			
Optional SNMP		Power management from SNMP manager and web browser			
REGULATORY APPROVALS					
Regulatory applying		CE			
OPTIONAL BATTERY PACK PARAMETERS					
Model		PSLCERTBB50			
Cell type		LiFePO <sub>4</sub>			
Nominal DC Voltage		48V			
Battery Capacity		50 Ah			
Recharge Time(90%)		8.5 hours			
Continuous discharge current		75A			
Dimensions, D X W X H, mm		630 x 438 x 86			
Net Weight(Kgs)		28.2			
Max charging current of pack		50A(1C)			
Charging Voltage		52.5V			
Humidity		0–95%(non-condensing)			
Regulatory Approvals		IEC 62619, UN38.3			
Load	PSLCERT1000L	PSLCERT2000L	PSLCERT3000L	Configuration	
25	440	231	181	1 x PSLCERTBB50	
50	260	136	85		
75	168	83	53		
100	135	60	40		



For more information, please visit [www.powershield.com.au](http://www.powershield.com.au) or phone 1300 305 393