

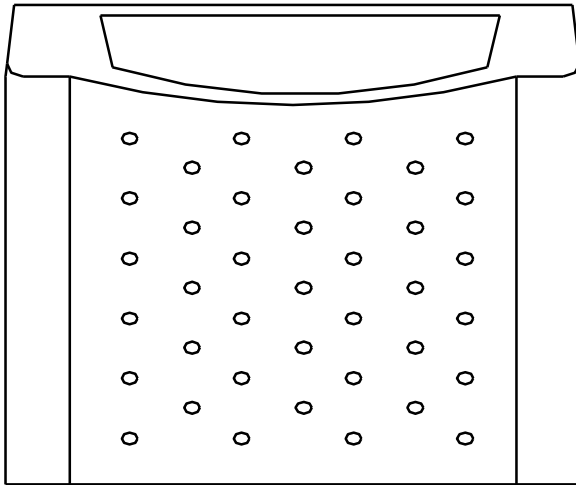


## COMMANDER

### Sine Wave Line-Interactive

(Standard models: PSC1000/1500/2000/3000)

(Long run models: PSC2500L)

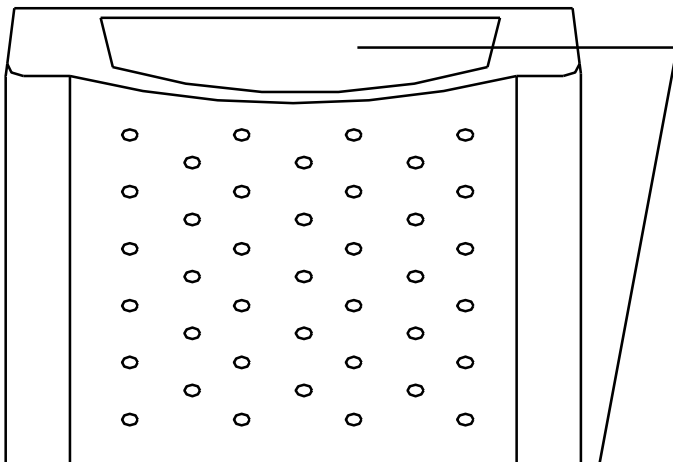


10% or 5% / 8% for AVR

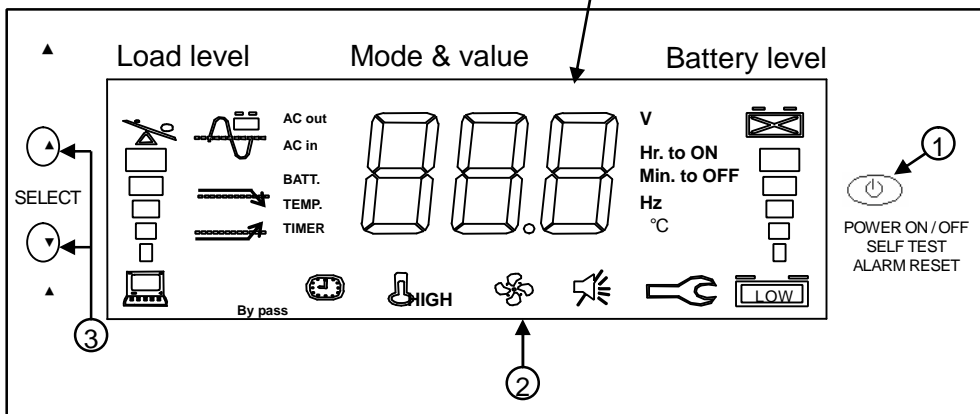
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## FRONT PANEL FOR ALL MODELS



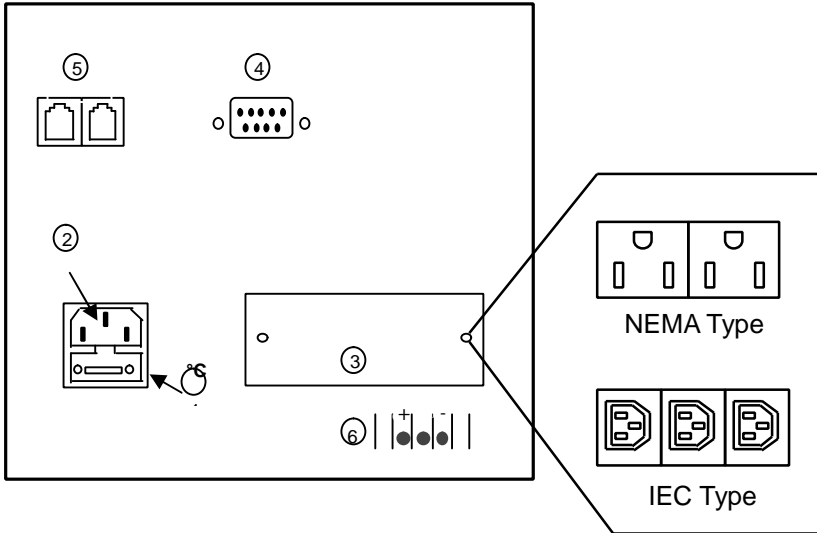
## B. Introduction of LCD display



- ① Main control button.
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- ③ Selection button for mode & value.

# Part A. for Standard models: PSC1000

## Rear Panel



- ① Fuse.
- ② Inlet of city power.
- ③ Outlet(s) (NEMA or IEC).
- ④ RS-232 Interface.
- ⑤ Phone jacks (RJ-11) for fax machine / modem.

# 1. INTRODUCTION for standard models: PSC1000

## 1.1 Overview:

The series UPS is an advanced Line-Interactive Uninterruptible Power System which produces pure sine wave power to your equipment; unlike the traditional off-line UPS, the series provides very short transference when blackouts happen, and zero transference from AC mode to battery mode and vice versa. The voltage regulation of the series is similar to an On-line UPS; however, the series provide efficiency over 98% under normal power condition. Two charge modes, quick charge and trickle charge, are provided to maintain the batteries in the best condition.

## 1.2 Battery replacement warning

The self-test function (by pushing the button) will inform you with an alarm when the batteries are weak and require replacement.

## 1.3 Communication interface

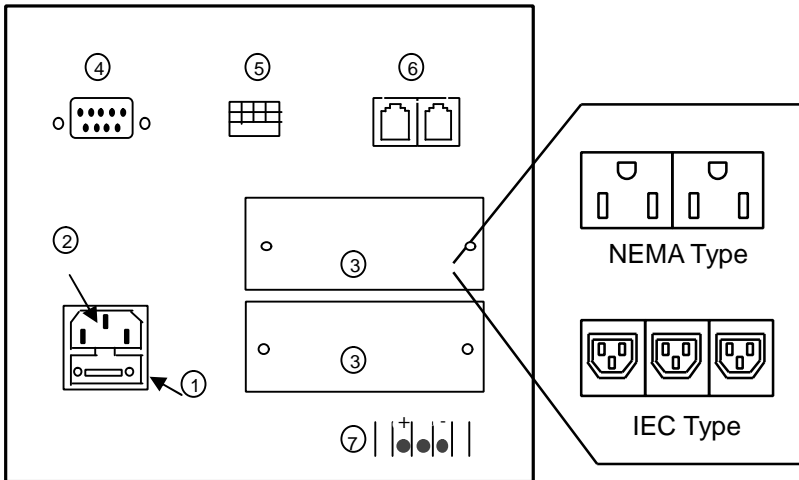
A communication interface port for sensing input voltage, output voltage, battery capacity, output power level, and UPS statuses are provided; through this port, you can remote control the UPS for turning on and off by customized schedule and setting the auto-test procedure.

## 1.4 Extra wide voltage of AVR (option)

The standard design of AVR is for input  $\pm 25\%$  with output  $\pm 10\%$ . While an extra wide range of AVR is also available; which is input  $\pm 35\%$  with output  $\pm 8\%$ , or input  $\pm 22\%$  with output  $\pm 5\%$ .

## Part B. for Standard models: PSC1500/2000/3000

### Rear Panel



- ① Fuse.
- ② Inlet of city power.
- ③ Outlet(s) (NEMA/IEC).
- ④ RS-232 Interface.
- ⑤ DIP switch
- ⑥ Phone jacks (RJ-11) for fax machine/modem.

## 1. INTRODUCTION for standard models: PSC1500/2000/3000

### 1.1 Overview:

The series UPS is an advanced Line-Interactive Uninterruptible Power System which produces pure sine wave power to your equipment; unlike the traditional off-line UPS, the series provide very short transference when blackouts happen, and zero transference from AC mode to battery mode or from battery mode to AC mode. The voltage regulation performance of series is similar to an On-line UPS; however, the series provide efficiency over 98% under normal power condition. Two charge modes, quick charge and trickle charge, are provided to maintain the batteries in the best condition.

### 1.2 Battery replacement warning

The self-test function (by pushing the button) will inform you with an alarm when the batteries are weak and require replacement.

### 1.3 DIP Switches

DIP switches allow you to adjust the UPS for different line voltages and frequencies in different areas. It also allows you to enable the green power function to shut down the UPS automatically if the load is less than 25W, and then to extend the battery life.

### 1.4 Communication interface

A communication interface port for sensing input voltage, output voltage, battery capacity, output power level, and UPS statuses are provided; through this port, you can remote control the UPS for turning on and off by customized schedule and setting the auto-test procedure.

### 1.5 Extra wide voltage of AVR (option)

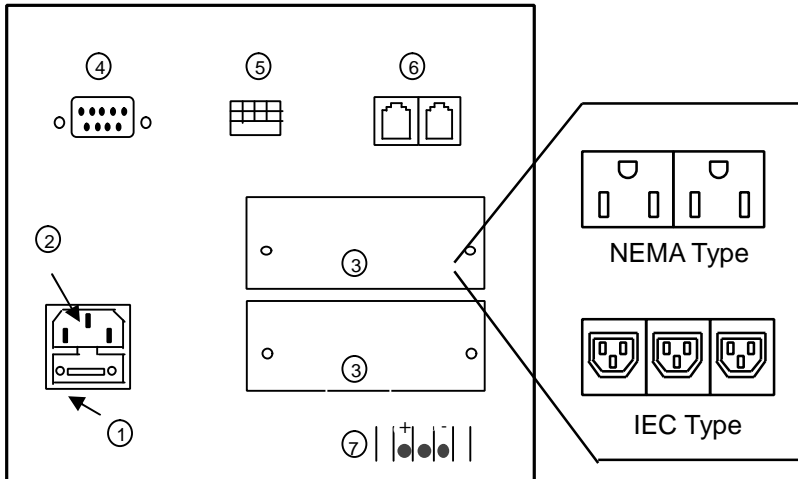
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### 1.6 Warning for failed battery (Real-time detection)

The battery self-detect function will run every 20 minutes (no need to push the button by user). The "Battery replacement" symbol on LCD panel will show up when battery failed or is in open circuit, and the word "Battery Bad" will be displayed when you check the main screen of the monitoring software.

## Part C. for Long Run models: PSC2500L

### Rear Panel



- ① Fuse.
- ② Inlet of city power.
- ③ Outlet(s) (NEMA/IEC).
- ④ RS-232 Interface.
- ⑤ DIP switch
- ⑥ Phone jacks (RJ-11) for fax machine/modem.
- ⑦ Battery connector.

# 1. INTRODUCTION for long run models: PSC2500L

## 1.1 Overview:

The series UPS is an advanced Line-Interactive Uninterruptible Power System which produces pure sine wave power to your equipment; unlike the traditional off-line UPS, the series provide very short transference when blackouts happen, and zero transference from AC mode to battery mode or from battery mode to AC mode. The voltage regulation performance of the series is similar to an On-line UPS; however, the series provide efficiency over 98% under normal power condition. Two charge modes, quick charge and trickle charge, are provided to maintain the batteries in the best condition.

## 1.2 Battery replacement warning

The self-test function (by pushing the button) will inform you with an alarm when the batteries are weak and require replacement.

## 1.3 DIP switches

DIP switches allow you to adjust the UPS for different line voltages and frequencies in different areas. It also allows you to enable the green power function to shut down the UPS automatically if the load is less than 25W, and then to extend the battery life.

## 1.4 Communication interface

A communication interface port for sensing input voltage, output voltage, battery capacity, output power level, and UPS statuses are provided; through this port, you can remote control the UPS for turning on and off by customized schedule and setting the auto-test procedure.

## 1.5 Extra wide voltage of AVR (option)

The standard design of AVR is for input  $\pm 25\%$  with output  $\pm 10\%$ . While an extra wide range of AVR is also available; which is input  $\pm 35\%$  with output  $\pm 8\%$ , or input  $\pm 22\%$  with output  $\pm 5\%$ .

## 1.6 Warning for failed battery (Real-time detection)

The battery self-detect function will run every 20 minutes (no need to push the button by user). The "Battery replacement" symbol on LCD panel will show up when battery failed or is in open circuit, and the word "Battery Bad" will be displayed when you check the main screen of the monitoring software.

## FOR ALL MODELS

### 2. MAIN FEATURES :

- \* Pure sine wave output.
- \* Microprocessor based design.
- \* True Line-Interactive structure.
- \* Smartest charging, fast & stable.
- \* Zero Transference.
- \* Real time auto-detection for battery condition.
- \* Remaining backup time indication (LCD version).
- \* RS-232 interface for communication, compatible with all major O.S., including Windows, Linux, SCO UNIX, & DOS.
- \* Protection for overload, short circuit, & over heat.
- \* “Green Power” design with auto on/off function.



### **3. CAUTION:**

- \* The UPS is designed to power computer loads and the associated peripheral devices, such as monitors, modems, external H-Disk drivers, etc. To ensure the performance of the UPS, Do Not load the UPS with laser printer (if the UPS capacity lower than 2KVA), motor, or any type of inductive load.
- \* Connecting the UPS to a two-pole, three-wire grounding mains receptacle. Connection with any other type of receptacle may result in a shock hazard and may violate local electrical codes.
- \* Do not allow water or any foreign object to get inside the UPS. And do not put objects containing liquid on or near the unit.
- \* Keep UPS away from fire or heating sources.
- \* The standard models, PSC1000/1500/2000/3000, are shipped from the factory with fully charged internal batteries; however, the batteries may lose some energy during delivery and storage. To ensure that the UPS will provide the expected run-time during a blackout, the UPS must be left in charging for at least 5 hours before your first use. The batteries will be charged automatically by the UPS whenever the UPS is connected with city power (No need to turn on the UPS).

### **4. INSTALLATION & OPERATION:**

#### **4.1 Installation**

- \* Inspecting the packing carton for damage that may have occurred while in transit. Immediately notify the carrier and place of purchase if any damage is found. Retain the package for future use.
- \* Plugging the power cord to a 3-wire grounding receptacle. If an extension cord must be used between the UPS and the nearest wall outlet, use a 3-wire grounding type with rating, at least, for full load of input current as stated in item 8, Specifications.
- \* Connecting your equipment to the UPS. To ensure that your computer equipment will be protected during a utility failure, it is important to make sure that the maximum power needed by the equipment is not over the rated capacity of the UPS. The "Over load" symbol will show up, and alarm will beep if the load is over the rated value. Meantime, if the overload is severe, the UPS will shut down immediately for protecting UPS itself.

## 4.2 Operation

4.2.1 After installation with normal city power, the UPS will charge the battery automatically, and the battery symbol and battery level will blink every second during charging. If AC auto turn-on function (Ref. 5.5) is enabled, the UPS will turn on automatically when city power is green. If auto turn on is disabled, please push the button about one second on the front panel, then the UPS will give power to the outlets after a short-time of self-test

4.2.2 Pushing the button for 4 seconds, the UPS will turn off the power on the outlets. But, the UPS will keep charging if city power is normal. To stop the charging, please pull out the power cord to shut down the UPS completely.

4.2.3 During a blackout, push the button for entering idle mode (Ref. Indication Table of 5.3), then push again for one second, and the UPS will be turned on and enter into backup mode. To turn off the power from UPS; please push the button for 4 seconds, then LCD display will show "OFF" ; then, wait for 5 seconds, and UPS will turn off the power automatically.

4.2.4 In idle mode, UPS will turn off power automatically within 12 seconds during a utility failure; while UPS will keep charging the batteries if the utility power is normal. When utility power is normal, please pull out the power cord if you want to turn off the UPS completely.

### 4.3 Green mode setting:

When "Green Power" function is enabled, the UPS will turn off the power within 30 seconds after blackout occurs with the power consumption lower than 25W.

### 4.4 Connecting the FAX machine:

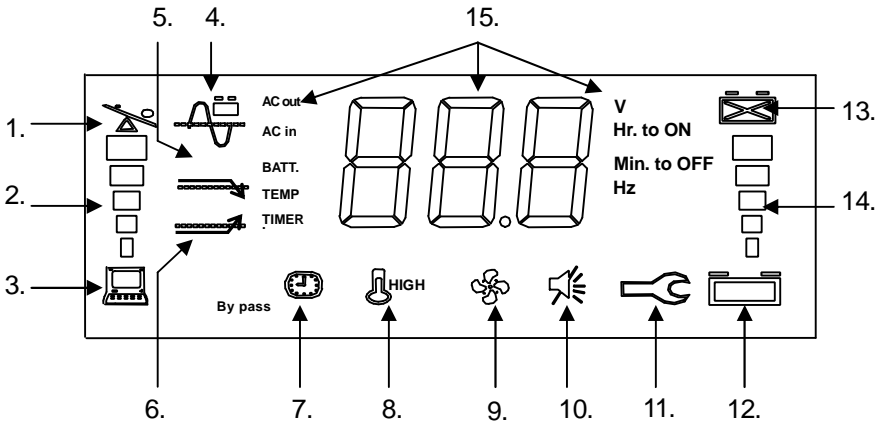
When you are connecting a FAX machine or modem with the UPS, please also connect the phone line through the UPS. The UPS may offer protection against damaging power fluctuations and surges that travel through the phone line. The UPS also offers a ring on function when the power is off. UPS power will be turned on automatically when a ringing signal exists in the phone line, and the UPS will keep power on until the FAX machine finishes receiving work; then, the UPS will be turned off by the green power function. During a long-time blackout situation, you won't miss any FAX data with this function.

## 5. INDICATION AND CONTROL

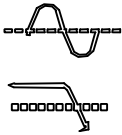
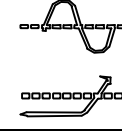









### 5.1 LCD display

5.1.1 Main control button: Please refer to point 4 & 5 (4.2.1-4.2.3 & 5.3-5.4).

### 5.1.2 LCD screen



No.	Symbol	Indication	Description
1.		Over load	The loading exceeds the rating of UPS.
2.		Load level	The higher the loading, the more bars will illuminate.
3.		UPS is loaded	When "Green Mode" is enabled, this symbol will display if the loading is over 30W (approximately), and disappears when it's under 25W (approximately). Please refer to User's Manual 4.3. If "Green Mode" is disabled, the symbol will always display.
4.		Normal mode	1) The sine wave symbol will display steadily without battery symbol when UPS is in the normal mode.
		Battery mode	2) The sine wave symbol and battery symbol will blink when the UPS is in back-up (inverter) mode.
		Test mode	3) The sine wave symbol will display steadily with blinking battery symbol when the UPS is in testing mode.

5.		Buck mode	The AVR (Auto Voltage Regulator) is reducing the output voltage of the UPS (when the input voltage is too high), and the sine wave symbol, as mentioned in item 4, will also display steadily to indicate that the output is in the normal mode.
6.		Boost mode	The AVR is increasing the output voltage of the UPS (when the input voltage is too low), and the sine wave symbol, as mentioned in item 4, will display to indicate it's in the normal mode
7.		Timer is enabled	This symbol will show up in the following situations: 1) A turn-on / turn-off schedule has been set using the monitoring software. Refer to User's Manual 5.6 and the "Readme" file or "Help" function of the monitoring software. 2) The Green Mode is enabled and the loading is under 25W (approximately). The UPS will turn itself off automatically in 30 seconds. Refer to 4.3 of User's Manual.
8.	 <b>HIGH</b>	Thermal alarm	The temperature inside the UPS is over 55°C. If the user does not reduce the load, the temperature will continue to rise and the UPS will shut down automatically at 60°C.
9.		Fan is in "High speed"	This symbol is used only for long run series and the 5000VA model. The symbol will display whenever the cooling fan is running in high speed, and will disappear at low speed.
10.		Silence mode	The audible alarm has been silenced. To reset the alarm in Back-up mode, push the control button (not available during low battery level or abnormal condition).
11.		UPS fault	The UPS has failed and must be repaired. Contact a qualified service person.
12.		Battery normal	1) In normal operation, this symbol indicates a charged battery.
		Battery low	2) When the battery charge level is low, the word "LOW" will be added to the symbol.
13.		Battery replacement	The battery has failed and must be replaced. The battery is checked each time the Test Function is executed.
14.		Battery voltage level	1) The higher the battery voltage, the more bars will illuminate. 2) When the UPS is charging the battery, the battery symbol and the level indicator will blink together.

15.	Mode	Value	Description
	AC out	V	AC output voltage.
	AC in	V	AC input voltage.
	AC out	Hz	AC output frequency.
	BATT.	V	DC battery voltage.
	TEMP.	°C	UPS internal temperature.
	TIMER	Min. to off	The UPS will turn off when the displayed value reaches zero. For example, if the timer shows 0.5 Min to off, the UPS will shut down in 30 seconds.
	TIMER	Hr. to on	The UPS will turn on when the displayed value reaches zero. For example, if the timer shows 48 Hr to on, the UPS will turn on in 2 days.
	BATT.	Min. to off	The estimated remaining run time in Back-up mode. The accuracy of the value is influenced by the loading type, ambient temperature and battery condition (old or new).
Selection Button for mode & value.			
All the operation data will be displayed on LCD screen. By selecting the required mode (upward or downward), the related value will be displayed.			

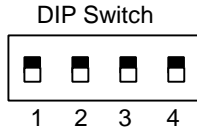
## 5.2 Audible alarm

During a utility failure or fault operation, the UPS emits beep for warning. In back-up mode, the alarm can be silenced by pushing the button. However, the warning of low battery will still sound for urging user to leave computer without any data loss.

## 5.3 Auto self-test Function:

In normal mode of UPS, turn on your computer and push the button on the front panel for self-test. The UPS will simulate a power outage and transfer to battery mode. If low battery warning sounds during the test, it means that the battery set is weak and requires extended recharge. If the warning of failed battery sounds, it means that the battery set is damaged and requires replacement.

5.4 **DIP Switch Settings** (Available for standard models: PSC1500/2000/3000, long run models: PSC2500L)



**DIP switch setting**

DIP 1	DIP 2	220V System
Down	Up	220V / 60Hz
Up	Up	220V / 50Hz
Up	Down	230V / 50Hz
<b>Down</b>	<b>Down</b>	<b>240V / 50Hz</b>

<b>DIP 3 for AC auto turn-on when city power returns</b> UP = Enable / Down = Disable		
<b>DIP 4 for Green Mode setting</b> UP = Enable / Down = Disable		

P.S.: Program setting active only after the UPS is re-started.

5.5 **Remote Control:**

The UPS can be set for daily shutdown/wake up. This command must be set through the RS-232 interface. When this function is set, the timer inside the UPS will begin to run, and the load will be turned off by the shutdown/wake up schedule. During the period of turn off to the next turn on, the time period to next turn-on will be shown on LCD panel by hour (Ref. item 15 of LCD description).

5.6 **Reset the UPS**

If any abnormal condition occurs, and the item 4.2.1 ~ 4.2.4 can not be executed, please push the button for at least 10 sec. until the status LCD becomes orange, then the UPS is reset.

## 6. COMMUNICATION INTERFACE:

The UPS provides both computer interfaces, smart software (RS-232) and dry contact (DB-9); by using different software and cable, the UPS shows different monitoring function.

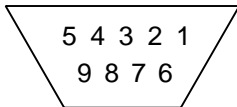
6.1 The definition and setup for RS-232 is as following:

Baud Rate : 2400 dps

Data Length : 8 bits

Stop Bit : 1 bit

Parity : None



Pin #6 : RS-232 data Tx out.

Pin #7 : Common of Pin #6 and Pin #9

Pin #9 : RS-232 data Rx In

6.2 The definition and setup for DB9 (optional) is as following:

Pin #2 : AC Power Failure

Pin #4 : Common GND of Pin #2 & Pin #5

Pin #5 : UPS Battery Low

Pin #6 : Turn off UPS

Pin #7 : GND of Pin6

The interface with computer is diagramed as above for your reference. Use Pin #4 as the common of Pin #2 and Pin #5, Pin #2 and Pin #4 will become close loop from open when the utility fails, Pin #5 and Pin #4 will become close loop from open when the battery level is low.

The UPS will shut down itself when the high level from RS-232, sustained for 3 seconds, which is applied between Pin #6 and Pin #7.

## 7. TROUBLE SHOOTING

Problem	Possible Cause	Action to Take
UPS no reaction while AC is connected	<ol style="list-style-type: none"> <li>1. Line cord plug is loose</li> <li>2. Fuse on rear panel blown (Inside the drawer of inlet)</li> <li>3. Dead wall socket</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the line cord plug</li> <li>2. Replace fuse</li> <li>3. Check wall socket with a table lamp.</li> </ol>
Power output is normal, UPS emits continuous beep, LCD shows "overload".	UPS is over loaded	Turn off UPS and unplug excessive loads from UPS.
No power on outlets, UPS emits continuous beep, LCD shows "over load".	UPS has shut down due to severe overload.	Unplug excessive loads from UPS, press button to reset the buzzer, and turn on the UPS again.
UPS does not provide expected run time	<ol style="list-style-type: none"> <li>1. Excessive loads connected at UPS's outlets.</li> <li>2. Battery is weak and can not provide enough capacity.</li> </ol>	Do not operate the UPS, and leave the UPS plugged in for 10 hours. Then, test it again, if UPS still can not provide expected run time, battery should be replaced.
Button on front panel doesn't work	<ol style="list-style-type: none"> <li>1. The CPU inside UPS is not running correctly.</li> <li>2. Button damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Push the button for 10 seconds to reset the UPS.</li> <li>2. Unplug line cord and all loads from the UPS to let it shut down automatically, and call for service.</li> </ol>
To push button for testing under AC mode, UPS emits urgent beep (8 beeps per sec.) and LCD display shows "battery replacement" at the same time.	Battery is weak and should be replaced	Replace batteries.
UPS can not be turned on.	<ol style="list-style-type: none"> <li>1. Battery polarity wrong</li> <li>2. UPS fault</li> </ol>	<ol style="list-style-type: none"> <li>1. Check battery connection.</li> <li>2. Call for service.</li> </ol>

## 8. SPECIFICATIONS:

### Part A. specifications for Standard models: PSC1000:

<b>CAPACITY</b>	<b>1000VA</b>	
	600W	
INPUT Voltage Frequency Current (110V/220V)	Selectable 200/220/230/240V 1 $\phi$ 50Hz/60Hz Auto detect 10A / 5A	
OUTPUT Voltage  Frequency Wave Form Current (110V/220V)	200/220/230/240V 1 $\phi$  50Hz or 60Hz $\pm$ 0.1Hz Pure Sine Wave 9.1A / 4.6A	$\pm$ 3% for Back-up Mode < $\pm$ 10% or 5%/8% for AVR
<b>TRANSFER TIME</b>	Transfer Time < 3 ms	
<b>BATTERY</b>	Lead-Acid, maintenance free	
Voltage/Capacity	12V 7Ah X 2pcs	
Level Ind.	YES	
Recharge Time	90% within 5 hrs	
<b>LED / ALARM INDICATION</b>	<u>LCD Symbol</u>	<u>Alarm</u>
Normal city power	Sine Wave	No beep
Back up Mode	Sine Wave+ Battery	B-B—B-B— (2 beeps/4sec.)
Abnormal Freq. of City power (Frequency > 65Hz or < 47Hz)	Sine Wave+ Battery	B-B—B-B— (2beeps/4sec.) (Transfer to backup mode)
Abnormal Voltage of City power (Out of AVR range)	Sine Wave+ Battery	B-B—B-B— (2beeps/4sec.) (Transfer to backup mode)
Abnormal Voltage of City power Too High Too Low	Sine Wave + Buck or + Boost	No beep (AVR in operation)
Low Battery Alarm	Sine Wave+ LOW+ Battery	B-B-B-B-B— (4 beeps/sec.)
Battery Fail Alarm	Battery replacement	B . B . B . B . B . B . . (8beeps/sec.)
Over load Alarm	Over load	B..... (Continuously)
Thermal Alarm	High Temp.	G . . . . . R . . . . . (G = 32beeps/2sec. R = silence / 2sec.)
<b>LOAD LEVEL INDICATION</b>	YES	
<b>DC START / ALARM RESET</b>	YES	
<b>RS-232 INTERFACE</b>	YES	
<b>ENVIRONMENT TEMP.</b>	0 - 37 °C	
<b>ENVIRONMENT HUMIDITY</b>	30-95% Non-Condensing	
<b>DIMENSIONS (L x H x W)</b>	38 x 20 x 18 (cm)	
<b>SHIPPING DIM. (L x H x W)</b>	48 x 33 x 30 (cm)	

WEIGHT (N.W./G.W.)	15 / 16 kgs
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### Part B. specifications for Standard models: PSC1500/2000/3000:

<b>CAPACITY</b>	<b>1500VA</b>	<b>2000VA</b>	<b>3000VA</b>	
	900W	1200W	1800W	
INPUT Voltage Frequency Current (110V/220V)	Selectable 200/220/230/240V 1 $\phi$ 50Hz/60Hz Auto detect			
	16A / 8A	20A / 10A	30A / 15A	
OUTPUT Voltage  Frequency Wave Form Current (110V/220V)	200/220/230/240V 1 $\phi$ <span style="float:right">±3% for Back-up Mode &lt; ±10% or 5%/8% for AVR</span>			
	50Hz or 60Hz ± 0.1Hz		Pure Sine Wave	
	13.6A / 6.8A	18.2A / 9.1A	27.2A / 13.6A	
TRANSFER TIME	Transfer Time < 3 ms			
BATTERY	Lead-Acid, maintenance free			
Voltage/Capacity	12V 7Ah X 3pcs	12V 7Ah X 4pcs	12V 7Ah X 6pcs	
Level Ind.	YES	YES	YES	
Recharge Time	90% within 2 hrs			
LED / ALARM INDICATION	LCD Symbol	Alarm		
Normal city power	Sine Wave	No beep		
Back up Mode	Sine Wave+ Battery	B-B—B-B— (2 beeps/4sec.)		
Abnormal Freq. of City power (Frequency > 65Hz or < 47Hz)	Sine Wave+ Battery	B-B—B-B— (2beeps/4sec.) (Transfer to backup mode)		
Abnormal Voltage of City power (Out of AVR range)	Sine Wave+ Battery	B-B—B-B— (2beeps/4sec.) (Transfer to backup mode)		
Abnormal Voltage of City power Too High Too Low	Sine Wave + Buck or + Boost	No beep (AVR in operation)		
Low Battery Alarm	Sine Wave+ LOW+ Battery	B-B-B-B-B— (4 beeps/sec.)		
Battery Fail Alarm	Battery replacement	B . B . B . B . B . B . B . . (8beeps/sec.)		
Over load Alarm	Over load	B..... (Continuously)		
Thermal Alarm	High Temp.	G . . . . . R . . . . . (G = 32beeps/2sec. R = silence / 2sec.)		
LOAD LEVEL INDICATION	YES	YES	YES	
DC START / ALARM RESET	YES	YES	YES	
RS-232 INTERFACE	YES	YES	YES	
ENVIRONMENT TEMP.	0 - 37 °C			
ENVIRONMENT HUMIDITY	30-95% Non-Condensing			
DIMENSIONS (L x H x W)	45 x 20 x 18 (cm)	51 x 20 x 18 (cm)	51 x 20 x 18 (cm)	

SHIPPING DIM. (L x H x W)	54 x 33 x 30 (cm)	61 x 33 x 30 (cm)	61 x 33 x 30 (cm)
WEIGHT (N.W. / G.W.)	21/22 kgs	25/26 kgs	36/37 kgs

## Part C. specifications for Long Run models PSC2500L:

<b>CAPACITY</b>	<b>2500VA</b>	
<b>Continuous Loading</b>	<b>1500W</b>	
Max. Loading	2500W ( < 30 sec.)	
INPUT Voltage	Selectable 200/220/230/240V 1ø	
Frequency	50Hz/60Hz Auto detect	
Current (220V)	25A/ 12.5A	
OUTPUT Voltage	200/220/230/240V 1ø	±3% for Back-up Mode < ±10% or 5%/ 8% for AVR
Frequency	50Hz or 60Hz ± 0.1Hz	
Wave Form	Pure Sine Wave	
Current (110V/220V)	22.8A/ 11.4A	
<b>TRANSFER TIME</b>	Transfer Time < 3 ms	
BATTERY Voltage	72V	
Optional battery voltage	---	
Level Ind.	YES	
Protection for reversed batt. polarity	YES	
CHARGE Voltage	81.90V	
Maximum Current	10A	
LED / ALARM INDICATION	LCD Symbol	Alarm
Normal city power	Sine Wave	No beep
Back up Mode	Sine Wave+ Battery	B-B—B-B— (2 beeps/4sec.)
Abnormal Freq. of City power (Frequency > 65Hz or < 47Hz)	Sine Wave+ Battery	B-B—B-B— (2beeps/4sec.) (Transfer to backup mode)
Abnormal Voltage of City power (Out of AVR range)	Sine Wave+ Battery	B-B—B-B— (2beeps/4sec.) (Transfer to backup mode)
Abnormal Voltage of City power Too High Too Low	Sine Wave + Buck or + Boost	No beep (AVR in operation)
Low Battery Alarm	Sine Wave+ LOW+ Battery	B-B-B-B-B-B— (4 beeps/sec.)
Battery Fail Alarm	Battery replacement	B . B . B . B . B . B . B . . (8beeps/sec.)
Over load Alarm	Over load	B..... (Continuously)
Thermal Alarm	High Temp.	G . . . . . R . . . . . (G = 32beeps/2sec. R = silence / 2sec.)
LOAD LEVEL INDICATION	YES	
DC START / ALARM RESET	YES	
RS-232 INTERFACE	YES	
ENVIRONMENT TEMP.	0 - 37 °C	
ENVIRONMENT HUMIDITY	30-95% Non-Condensing	
DIMENSIONS (L x H x W)	45 x 20 x 18 (cm)	
SHIPPING DIM. (L x H x W)	54 x 33 x 30 (cm)	
WEIGHT (N.W. / G.W.) kgs	22.5/23.5	

## 9. IMPORTANT SAFETY INSTRUCTIONS

- When replacing the batteries, use the same number and the same type of batteries.
- Do not dispose of batteries in a fire; the battery may explode.
- Do not open or mutilate the battery or batteries, released electrolyte is harmful to the skin and eyes.
- A battery can present a risk of electric shock and high short circuit current. The following precaution should be observed when working on batteries.
  - \* Remove watches, rings or other metal objects.
  - \* Use tools with insulated handles.
- To prevent an overbalance of this unit, with the installation the additional stabilizer are to mount at the bottom side.
- This unit should be installed from service personnel.
- The equipment can be operated by any individuals with no previous experience.
- “The socket-outlet shall be installed near the equipment and easily accessible.”
- “With the installation of this equipment it should be prevented, that the sum of the leakage current of the UPS and the connected consumer does not exceed 3.5mA.”
- Attention, hazardous through electric shock. Also with disconnection of this unit from the main, hazardous voltage still may be accessible through supply from battery.
- The battery supply should be therefore disconnected in the plus and minus pole through the from the outer enclosure accessible battery fuses when maintenance or service work inside the UPS is considered.
- The lead acid battery may cause chemical hazard.
- The battery presents a risk of electric shock and energy hazard.
- Batteries will be disposed by the manufacturer or importer. Customers need to send them back with no charge for disposal.
- Electrical hazard, the discharge time is about 5 min.