SOLAR INVERTER

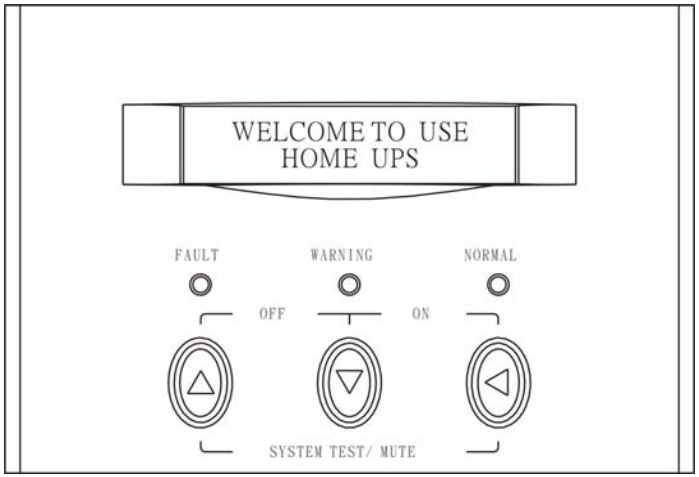
LCD DISPLAY
PURE SINE WAVE INVERTER

LC Series: Inverter + Battery Charger + UPS (ATS)

SLU Series: Inverter + Solar Charge Controller + Battery Charger + UPS

USER'S MANUAL

800W / 1600W / 2400W / 4000W / 6000W / 8000W



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1. INTRODUCTION

1.1 General Description

The Solar Inverter, a powerful all-in-one solution, delivers unsurpassed clean true sine wave output power and combines this with a selectable multistage battery charging current. Applicable for any kind of loads such as air conditioner, home appliances, consumer electronic and office equipments. This series features a durable&continuous 24 operation.

The built-in 5-stage intelligent charger automatically charges any type of batteries without the risk of overcharge. The compact&modular design makes utility interactive installations easier and more cost effective. It is a high quality product that offers the best price/performance ratio in the industry.

1.2 Key features

1. Multiple microprocessor design base.
2. Compatible with both linear&non-linear load.
3. Stronger charger to support batteries of 500AH up.
4. 24 hours operation on the inverter.
5. DC start and automatic self-diagnostic function.
6. THD less than 3%.
7. High efficiency design to save electricity.
8. Low heat dissipation in long time operation
9. Design to operate under harsh environment

10 3U 19” Rack Mount or WALL Mounted design

1.3 Important Notices

1. Read instructions carefully before operating the Solar Inverter.
2. Solar Inverter power connect instruction should be followed.
3. Please don‘t open the case to prevent danger.
5. Retain the load within the rating of Solar Inverter to prevent faults.
6. Keep the Solar Inverter clean and dry.

2. SAFTY INSTRUCTION

2.1 Transporting

1. Disconnect all power cables if necessary.
2. Be careful not to damage the Solar Inverter while transporting.
3. Don‘t move the Solar Inverter upside down.
4. Please transport the Solar Inverter system only in the original packaging (to protect against shock and impact).

2.2 Positioning

1. Do not put the Solar Inverter on rugged or declined surface.
2. Do not install the Solar Inverter system near water or in damp environments.
3. Do not install the Solar Inverter system where it would be exposed to direct sunlight or near heat.
4. Do not block off ventilation openings in the Solar Inverter system’s housing and don’t leave objects on the top of the Solar Inverter.
5. Keep the Solar Inverter far away from heat emitting sources.
6. Do not expose it to corrosive gas.
7. Ambient temperature : 0℃ - 40℃

2.3 Installation

1. Connect the Solar Inverter system only to an earthed shockproof socket outlet.
2. Place cables in such a way that no one can step on or trip over them.

2.4 Operation

1. Do not disconnect the mains cable on the Solar Inverter system or the building wiring socket outlet during operations since this would cancel the protective earthing of the Solar Inverter system and of all connected loads.
2. The Solar Inverter has its own internal power source (batteries). The output terminals may be live even when the Solar Inverter is not connected to the AC supply.
3. Ensure that no fluids or other foreign objects can enter the Solar Inverter system.

2.5 Maintenance and Service

1. Caution - risk of electric shock.
   Even after the unit is disconnected from the mains power supply (building wiring socket outlet), components inside the Solar Inverter system are still connected to the battery and are still electrically live and dangerous. Before carrying out any kind of servicing and/or maintenance, disconnect the batteries and verify that no current is present.
2. 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.

3. CABLE CONNECTION

3.1 Inspection

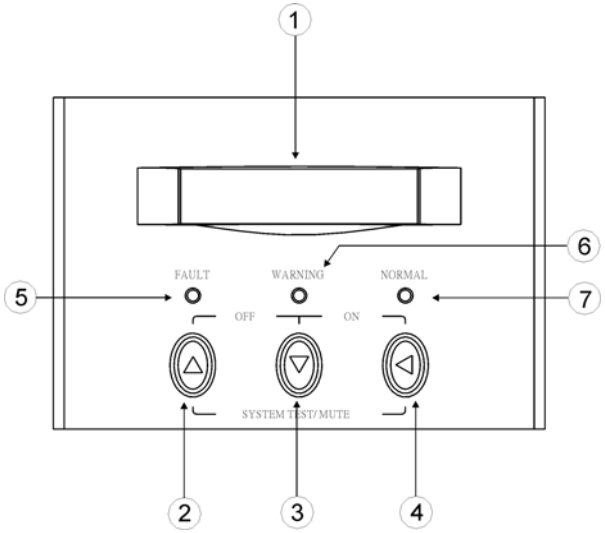
1. The system may be installed and wired only by qualified electricians in accordance with applicable safety regulations.
2. When installing the electrical wiring, please note the nominal amperage of your incoming feeder.
3. Inspect the packaging carton and its contents for damage. Please inform the transport agency immediately should you find signs of damage. Please keep the packaging in a safe place for future use.
4. Please ensure that the incoming feeder is isolated and secured to prevent it from being switched back on again.

3.2 Connection

1. Solar Inverter Input Connection
   If the Solar Inverter is connected via the power cord, please use a proper socket with protection against electric current, and pay attention to the capacity of the socket.
2. Solar Inverter Output Connection
   The output of this model is with socket-types only (NEMA or IEC). Simply plug the load power cord to the output sockets to complete connection.

4. SYSTEM DESCRIPTION

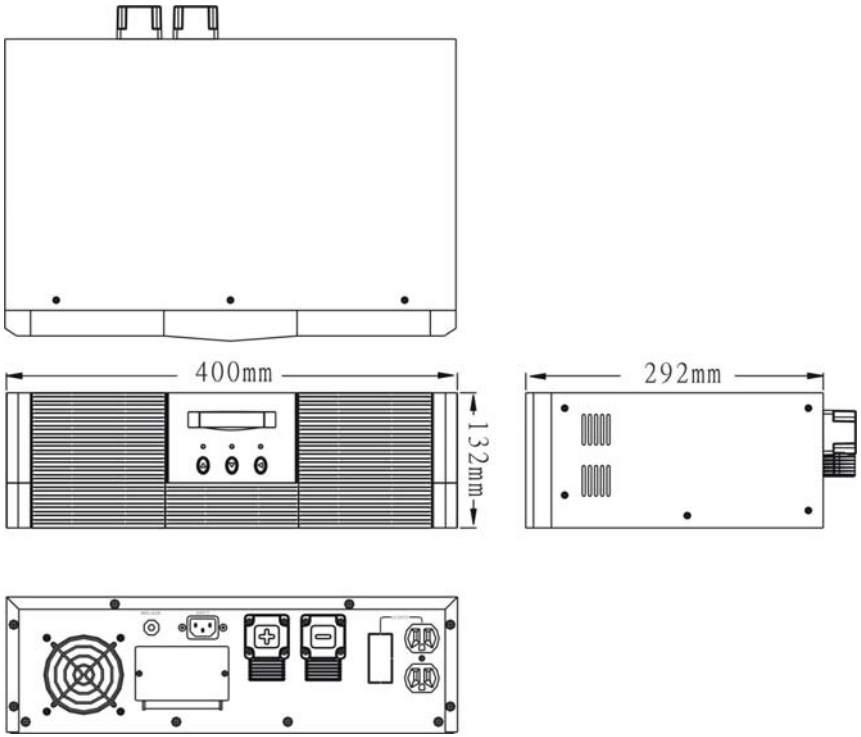
4.1 Front Panel Description for LCD Model



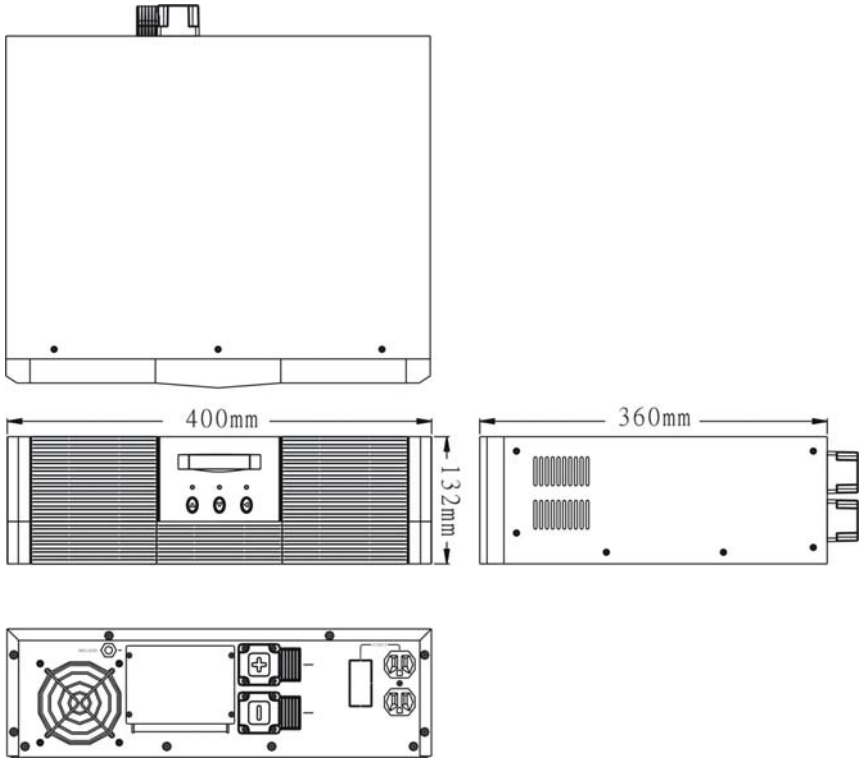
1. LCD Display: This indicates the Solar Inverter operation information, including Solar Inverter status, input/output voltage, input/output frequency, battery voltage, battery capacity left, output load, inside temperature, and the times of history events.
2. Up-key: Use to select upward the Solar Inverter status on LCD Display.
3. Down-key: Use to select downward the Solar Inverter status on LCD Display. Beside, press it simultaneously with the Up-key to switch off the Solar Inverter.
4. Enter-Key: It is pressed with the Down-key to turn on the Solar Inverter. In battery operation mode, press it with Up-key at the same time to disable the buzzer. Beside, it is pressed to confirm and enter the item selected.
5. Fault LED (red): To indicate the Solar Inverter is in fault condition because of inverter shutdown or over-temperature.
6. Warning LED (yellow): To indicate the Solar Inverter is in the status of overload, bypass and battery back-up.
7. Normal LED (green): To indicate the Solar Inverter is operating normally.
8. ON/TEST/MUTE key: It should be pressed with the control key simultaneously to switch on Solar Inverter, do Solar Inverter auto-test in normal AC mode and turn off the buzzer in battery operation.

4.2 Outline Description

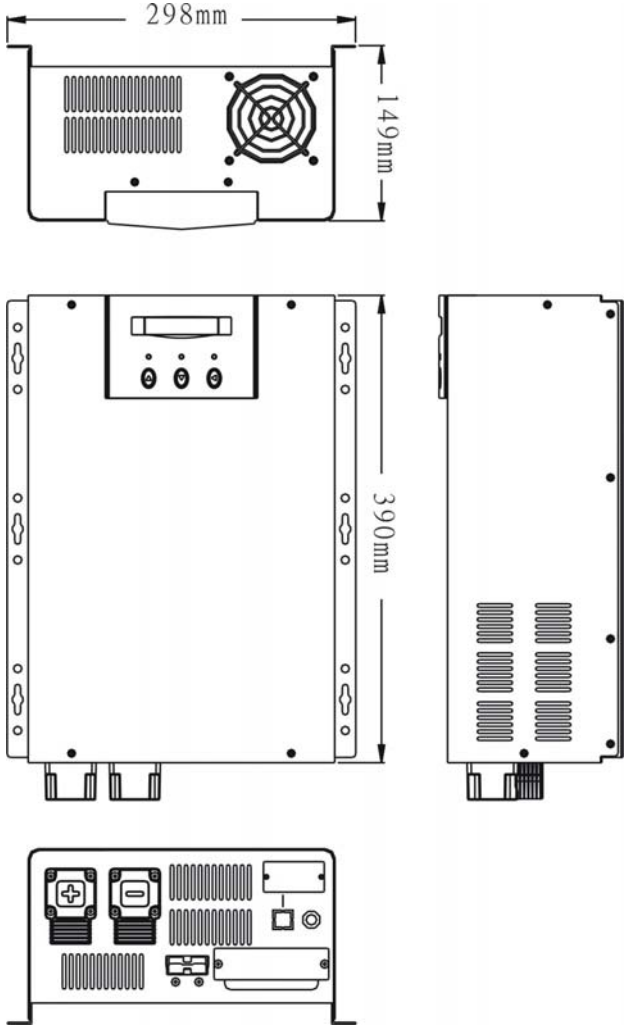
800W Rack Mount Type



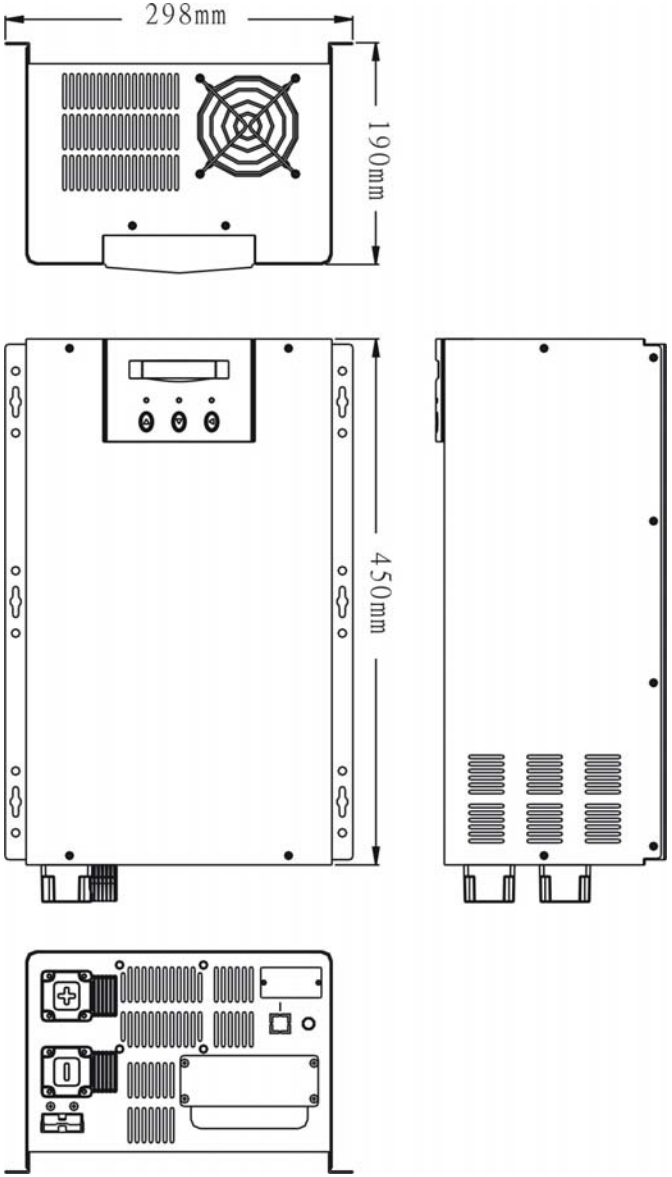
1600W / 2400W Rack Mount Type



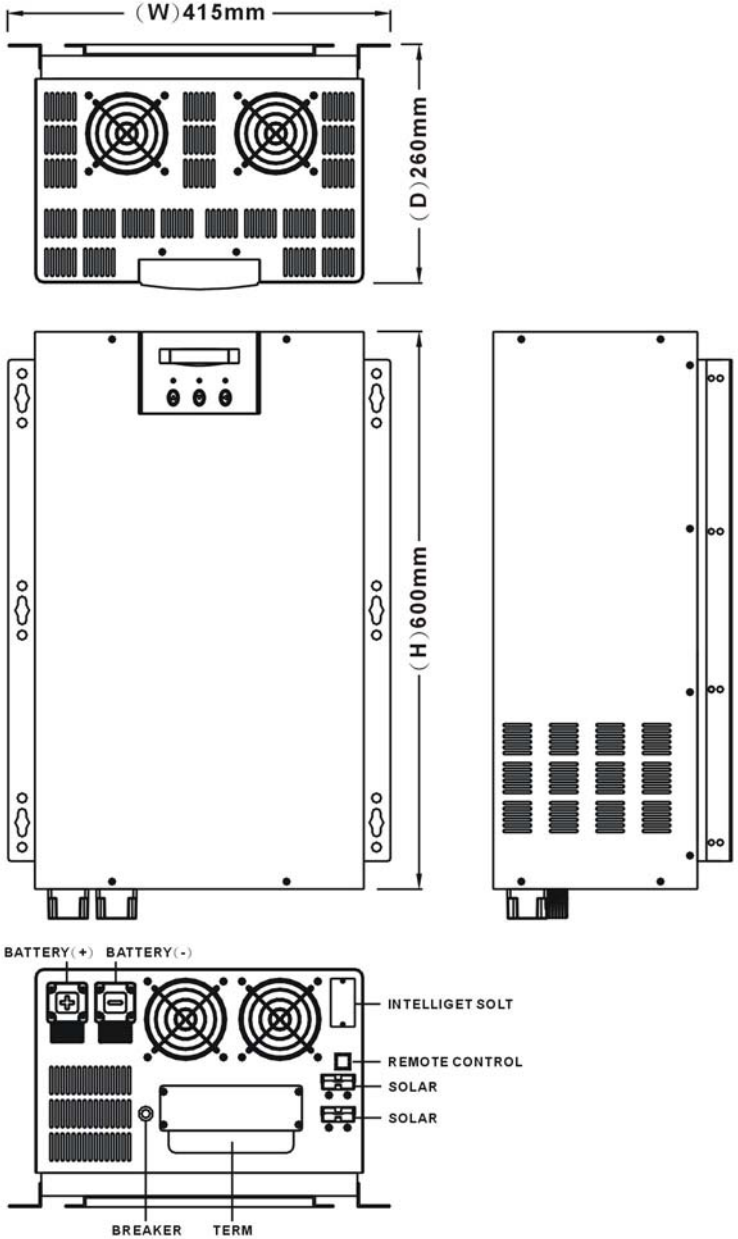
800W Wall Mounted Type



1600W / 2400W Wall Mounted Type



4000W / 6000W / 8000W Wall Mounted Type



5. Solar Inverter OPERATION

5.1 Check Prior to Start Up

1. Ensure the Solar Inverter is in a suitable positioning.
2. Check input cord is secured.
3. Make sure the load is disconnected or in the “OFF” position.
4. Check if input voltage meets the Solar Inverter rating required.

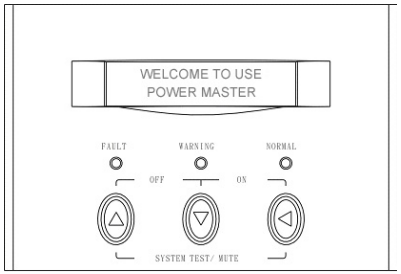
5.2 Storage Instruction

Disconnect input power in rear panel if you will not use it for long period. If the Solar Inverter is stored over 3 months, please keep supplying power to the Solar Inverter for at least 24 hours to ensure battery fully recharged.

5.3 Operation Procedure for LCD Model

Please follow the instructions below for Solar Inverter operation.

1. Once the AC source is connected, the LCD Display shall light up immediately to display first the main menu of greeting context and the Normal LED is blinking to indicate ready to switch on the inverter.



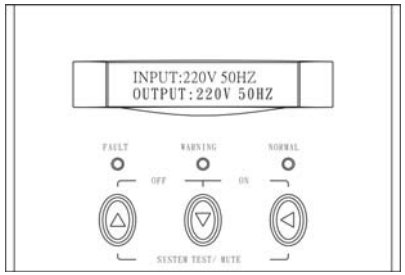
2. By pressing the Enter-key and the Down-key simultaneously for 3 seconds, the Solar Inverter will start up after two beeps and Normal LED lights up to indicate the power is from its inverter to the load.

3. When the Down-key and the Up-key are pressed simultaneously for 3 seconds, the inverter will be turned off after two beeps and the Solar Inverter is on the standby status (LCD display illuminates and Normal LED is blinking) until AC source is disconnected.

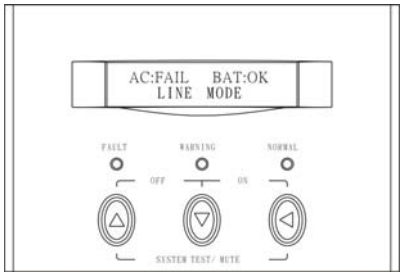
4. LCD Display Menu

Use Up/Down key to select menu-displays of the LCD described below. This screen will refresh once the system power is enabled.

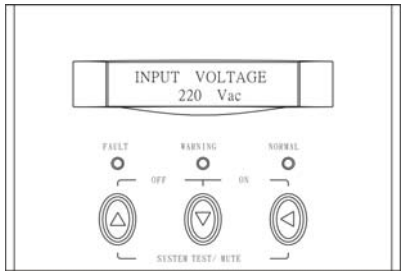
Rated Spec

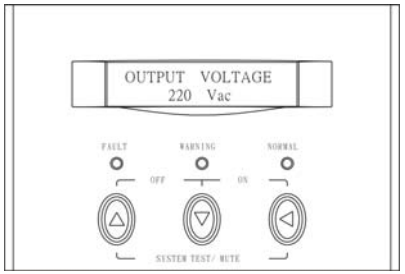


Status

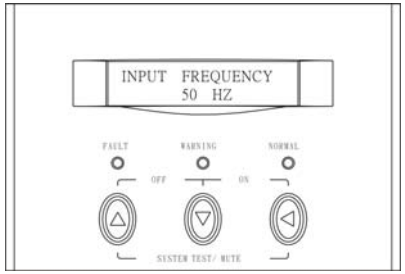


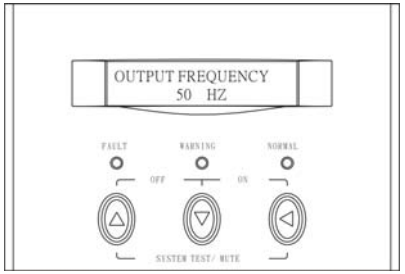
Voltage



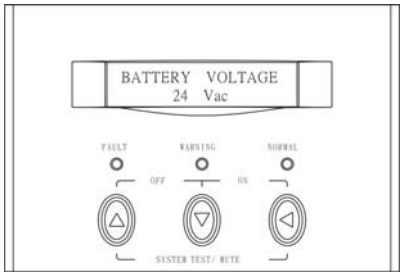


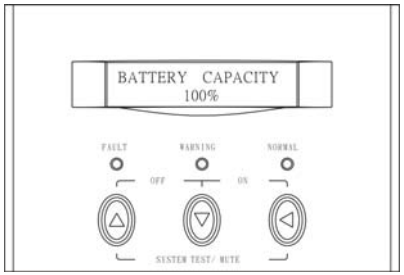
Frequency



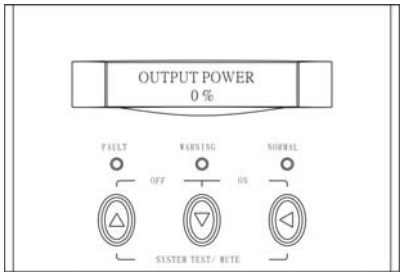


Battery Status

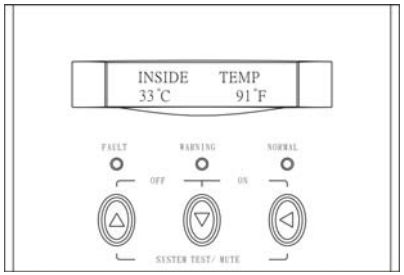




Output Power



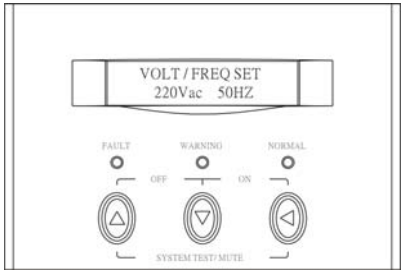
Temperature



History Record

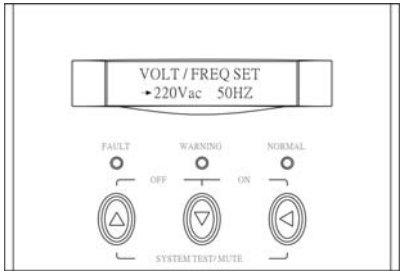
Output Voltage & Frequency Adjust

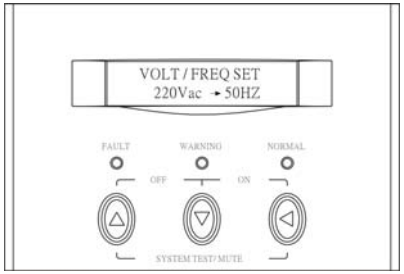
A. In this screen, press Enter-key to enter the following steps for output voltage and frequency adjustment.



B. The cursor (→) will pop up to indicate the output voltage and frequency newly selected.

C. Use Up or Down-key to adjust the output voltage (if 220V configure, 220V, 230V, and 240V is selectable; if 110V configure, 110V, 115V, and 120V is selectable). Press Enter-key to confirm voltage and then the cursor will move to frequency selection. The output frequency (50Hz or 60Hz) can be adjusted by the same key operation.

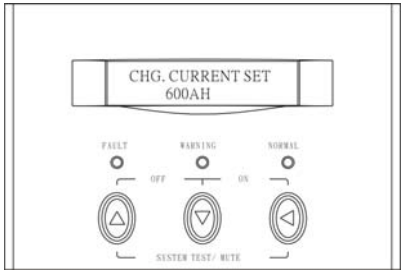




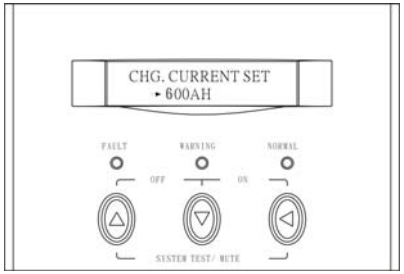
D. Once the correct voltage is selected, press Enter-key again to save the selection.

Charging Current Adjust

A. In this screen, press Enter-key to enter the following steps for general battery AH adjustment.

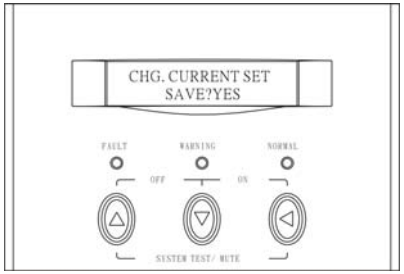


B. The cursor (→) will pop up to indicate the battery AH newly selected.



C. Use Up or Down-key to select the battery AH (100AH, 200AH, 300AH, 400AH, and 600AH selectable). Press Enter-key to confirm your battery AH.

D. Once the correct battery AH is selected, press Enter-key again to save the selection.



6. TROUBLE SHOOTING GUIDE

6.1 For LCD Model

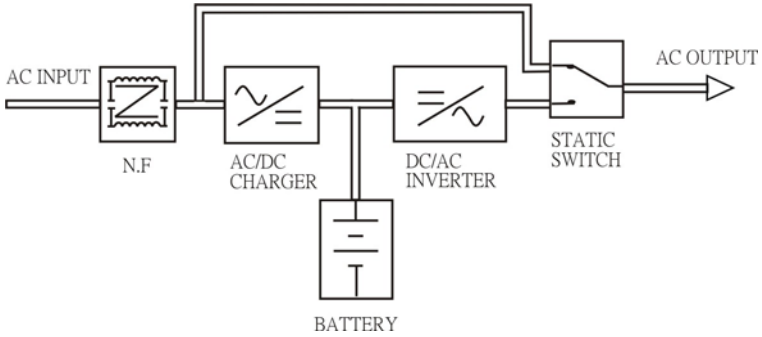
The following guideline may be helpful for basic problem solving.

No.	SOLAR INVERTER STATUS	POSSIBLE CAUSE	ACTION
1	AC utility power is normal. Solar Inverter is running normally, but fault LED lits up. Buzzer beeps continuously.	1. Charger PCB is damaged. 2. Fan is damaged. 3. Unknown	1. Replace the charger PCB. 2. Replace the fan. 3. Restart UPS
3	AC utility power is normal but Solar Inverter is overloaded. Warning LED lits up and buzzer beeps per second.	Overload 100%< load< 125%	Please reduce the critical load to <100%.
4	AC utility power is normal. Warning LED does not fade out and buzzer beeps per 0.5 second.	Overload 125%< load<150%	Please reduce the critical load to <100%.
5	AC utility power is normal. Warning LED lits up and buzzer beeps continuously.	Overload 150%< load	Please reduce the critical load to <100%.

No.	SOLAR INVERTER STATUS	POSSIBLE CAUSE	ACTION
6	AC utility power fails .The load is supplied by battery power. Buzzer alarm sounds every 4 seconds.	1. AC utility power failure. 2. AC input connection may be not correct.	1. Reduce the less critical load in order to extend backup time. 2. Please check the rated input or connected line.
7	AC utility fails. Solar Inverter is in battery backup mode. Buzzer alarm beeps every second.	Battery power is approaching low level.	Solar Inverter will shut down automatically. Please save data or turn off the loads soon.
8	AC utility power fails. Solar Inverter has shut down automatically.	Battery runs out	Solar Inverter will restart up when AC utility power is restored.

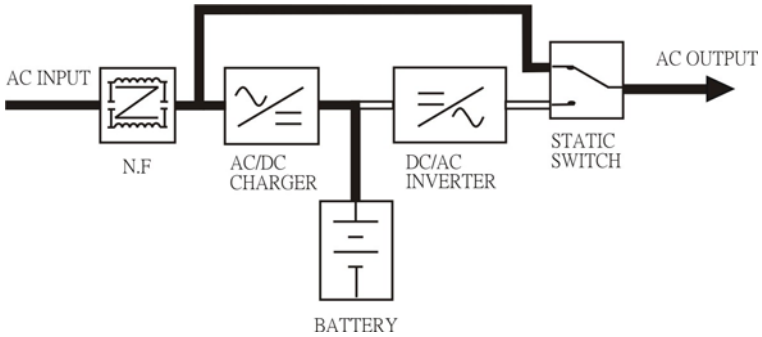
7. OPERATION MODES OF THE SOLAR INVERTER

7.1 Solar Inverter System Block Diagram



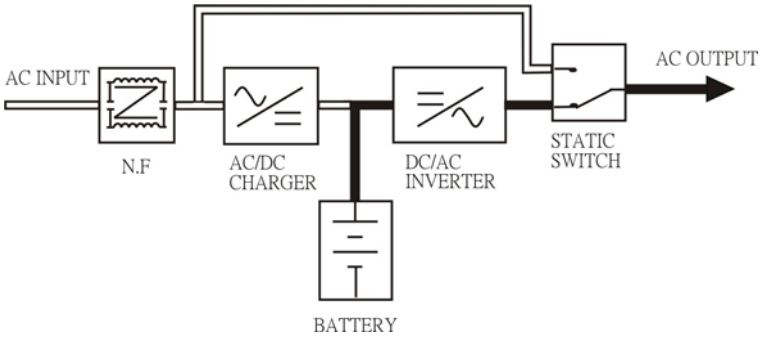
7.2 Normal Operation

There are two main loops when AC utility is normal: the AC loop and the battery charging loop. The AC output power comes from AC utility input and passes through static switch to support power to load. The battery charging voltage comes from AC utility input and converted by AC/DC charger to support battery-charging power.



7.3 AC Utility Failure (Battery Mode)

The AC output comes from battery, passing through DC/AC inverter and static switch within the battery backup time.



8. SPECIFICATION OF SOLAR INVERTER

Model			PM-0800LC PM-0800SLU	PM-1600LC PM-1600SLU	PM-2400LC PM-2400SLU
Capacity	**VA / Watt**		**1.2KVA / 800W**	**2.4KVA / 1600W**	**3.6KVA / 2400W**
Input	Nominal Voltage		220Vac ; 110Vac		
	Voltage Range	Acceptable Voltage Range	120-275Vac ; 60-135Vac		
		Frequency	50Hz / 60Hz (45Hz - 70Hz)		
		Line Low Transfer	120VAC ± 2% ; 60VAC ± 2%		
		Line Low Return	130VAC ± 2% ; 65VAC ± 2%		
		Line High Transfer	275VAC ± 2% ; 135VAC ± 2%		
		Line High Return	260VAC ± 2% ; 130VAC ± 2%		
Output	Voltage		220Vac (230V or 240VAC re-settable via LCD panel); 110Vac (115V or 120VAC re-settable via LCD panel)		
	Voltage Regulation (Batt. Mode)		< 3% RMS for entire battery voltage range		
	Frequency		50Hz or 60Hz		
	Frequency Regulation (Batt. Mode)		±0.1Hz		
	Power Factor		0.8		
	Waveform		Pure Sine Wave		
	Efficiency		> 75%	> 80%	
	Overload Protection	Line Mode	Circuit Breaker		
		Battery Mode	110% ~ 150% for 30 sec., > 150% for 200 ms		
Transfer Time	Typical *		< 8 ms.		

Model		PM-0800LC PM-0800SLU	PM-1600LC PM-1600SLU	PM-2400LC PM-2400SLU
Capacity	**VA / Watt**	**1.2KVA / 800W**	**2.4KVA / 1600W**	**3.6KVA / 2400W**
Battery	Battery Voltage	12Vdc	24Vdc	24Vdc
	Backup Time (at full load) *	long time available		
	Max. Charging Current (5 steps selectable) *	> 40A	> 50A	
Display LCD	LCD	Solar Inverter status, I/P&O/P Voltage Frequency, Load%, Battery Voltage & %, Charge current *, Temperature, Model		
	LED	Normal (Green), Warning (Yellow), Fault (Red)		
Audible Alarm	Battery Mode	Beeping every 4 seconds		
	Low Battery	Beeping every second		
	Inverter Fault	Beeping Continuously		
	Overload	Beeping twice per second		
Environment	Operation Temperature	0-40 degree C; 32-104 degree F		
	Relative Humidity	0-95% non-dondensing		
	Audible Noise	Less than 55dBA (at 1M)		
Physical	Net Weigh (Kgs)	12.00	24.00	31.50
	(WxHxD)mm Rack Mount	440*132*290	440*132*360	440*132*360
	(WxHxD)mm Wall Mounted	298*400*150	298*450*190	298*450*190

* Feature on SLU models only.
Specifications are subjected to change without prior notice.

Model			PM-4000LC PM-4000SLU	PM-6000LC PM-6000SLU	PM-8000LC PM-8000SLU
Capacity	**VA / Watt**		**5KVA / 4000W**	**6KVA / 6000W**	**8KVA / 8000W**
Input	Nominal Voltage		220Vac ; 110Vac		220Vac only
	Voltage Range	Acceptable Voltage Range	120-275Vac ; 60-135Vac		120-275Vac
		Frequency	50Hz / 60Hz (45Hz - 70Hz)		
		Line Low Transfer	120VAC ± 2% ; 60VAC ± 2%		120VAC ± 2%
		Line Low Return	130VAC ± 2% ; 65VAC ± 2%		130VAC ± 2%
		Line High Transfer	275VAC ± 2% ; 135VAC ± 2%		275VAC ± 2%
		Line High Return	260VAC ± 2% ; 130VAC ± 2%		260VAC ± 2%
Output	Voltage		220Vac (230V or 240VAC re-settable via LCD panel); 110Vac (115V or 120VAC re-settable via LCD panel)		
	Voltage Regulation (Batt. Mode)		< 3% RMS for entire battery voltage range		
	Frequency		50Hz or 60Hz		
	Frequency Regulation (Batt. Mode)		±0.1Hz		
	Power Factor		0.8	1.0	
	Waveform		Pure Sine Wave		
	Efficiency		> 80%		
	Overload Protection	Line Mode	Circuit Breaker		
		Battery Mode	110% ~ 150% for 30 sec., > 150% for 200 ms		
Transfer Time	Typical *		< 8 ms.		

Model		PM-4000LC PM-4000SLU	PM-6000LC PM-6000SLU	PM-8000LC PM-8000SLU
Capacity	**VA / Watt**	**5KVA / 4000W**	**6KVA / 6000W**	**8KVA / 8000W**
Battery	Battery Voltage	24Vdc	48Vdc	
	Backup Time (at full load) *	long time available		
	Max. Charging Current (5 steps selectable) *	> 40A	> 60A	
Display LCD	LCD	Solar Inverter status, I/P&O/P Voltage Frequency, Load%, Battery Voltage & %, Charge current *, Temperature, Model		
	LED	Normal (Green), Warning (Yellow), Fault (Red)		
Audible Alarm	Battery Mode	Beeping every 4 seconds		
	Low Battery	Beeping every second		
	Inverter Fault	Beeping Continuously		
	Overload	Beeping twice per second		
Environment	Operation Temperature	0-40 degree C; 32-104 degree F		
	Relative Humidity	0-95% non-dondensing		
	Audible Noise	Less than 55dBA (at 1M)		
Physical	Net Weigh (Kgs)	49.20	51.40	55.00
	(WxHxD)mm Wall Mounted	415*600*260	415*600*260	415*600*260

* Feature on SLU models only.
Specifications are subjected to change without prior notice.