innovative energies

LC Series 800W~8000W
SLU Series 800W~8000W

LCD Display Pure Sine Wave Inverter / Charger
(Solar charge controller–Option)

USER MANUAL

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CONTENTS

1. INTRODUCTION

1.1 General Description

The Inverter/ Charger (solar charge controller as optional), 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
11. DC priority or AC priority selectable

1.3 Important Notices

1. Read instructions carefully before operating the Inverter/ Charger.
2. Inverter/ Charger power connect instruction should be followed.
3. Please don‘t open the case to prevent danger.
4. Maximum solar charging current: 50AMP
5. Retain the load within the rating of Inverter/ Charger to prevent faults.
6. Keep the Inverter/ Charger clean and dry.

2. SAFTY INSTRUCTION

2.1 Transporting

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

2.2 Positioning

1. Do not put the Inverter/ Charger on rugged or declined surface.
2. Do not install the Inverter/ Charger near water or in damp environments.
3. Do not install the Inverter/ Charger where it would be exposed to direct sunlight or near heat.
4. Do not block off ventilation openings in the Inverter/ Charger system’s housing and don’t leave objects on the top of the Inverter/ Charger.
5. Keep the Inverter/ Charger 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 Inverter/ Charger 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 Inverter/ Charger or the building wiring socket outlet during operations since this would cancel the protective earthing of the Inverter/ Charger and of all connected loads.
2. Ensure that no fluids or other foreign objects can enter the Inverter/ Charger 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 Inverter/ Charger 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.

3.2 Connection

1. Inverter/ Charger Input Connection

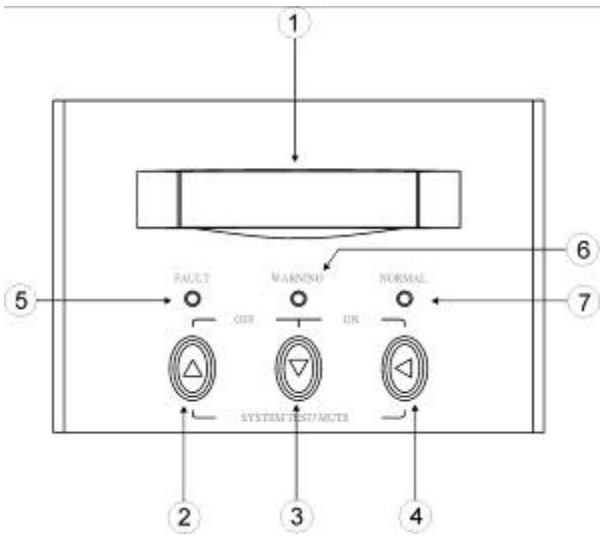
   If the Inverter/ Charger is connected via the power cord, please use a proper socket with protection against electric current, and pay attention to the capacity of the socket.

2. Inverter/ Charger Output Connection

   The output of this model is with terminal block. Simply wire the load power cord to the output terminal to complete connection.

4. SYSTEM DESCRIPTION

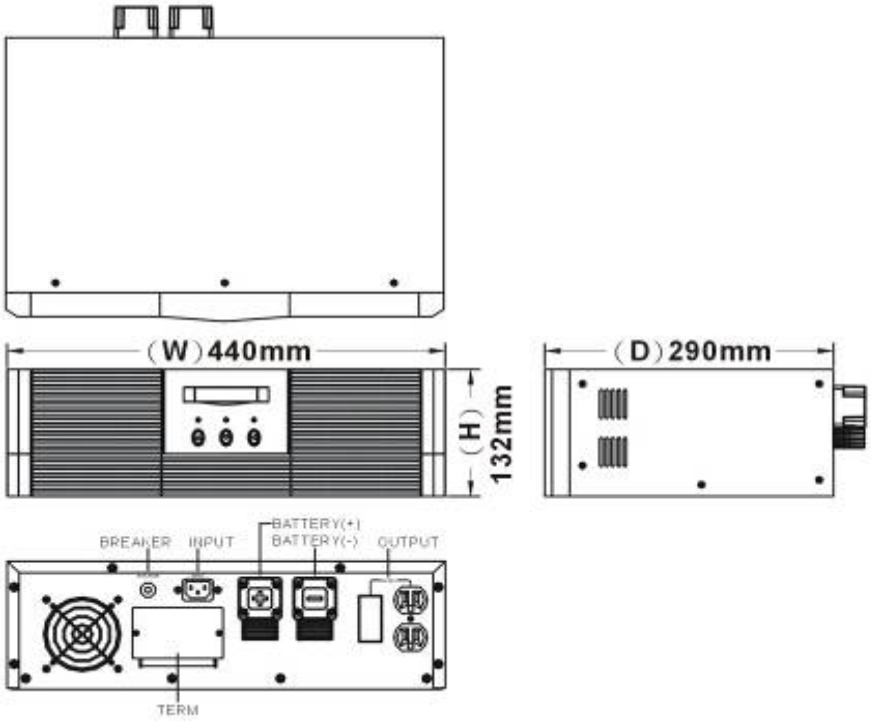
4.1Front Panel Description for LCD Model



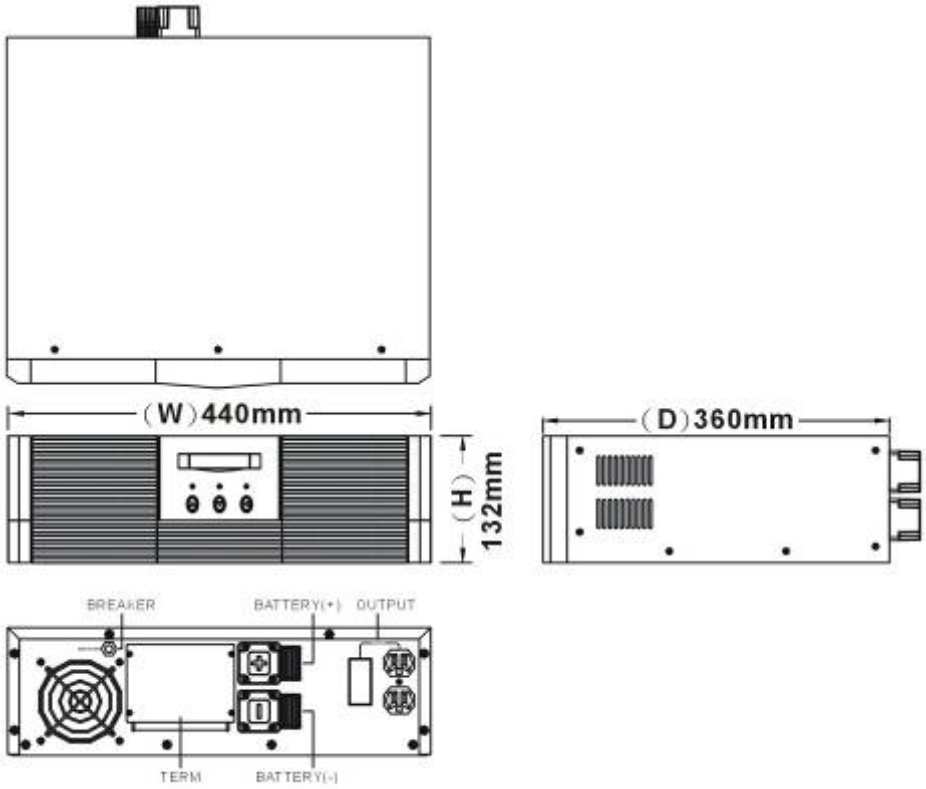
1. LCD Display: This indicates the Inverter/ Charger operation information, including UPS status, input/output voltage, input/output frequency, battery voltage, battery capacity left, output load, inside temperature, and the times of history events.
2. Up-key: Use to select upward the Inverter/ Charger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

4.2Outline Description

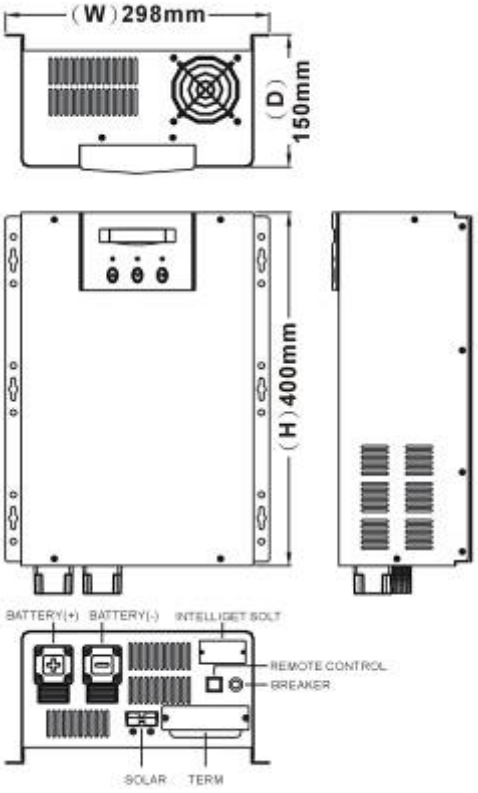
800W Rack Mount Type



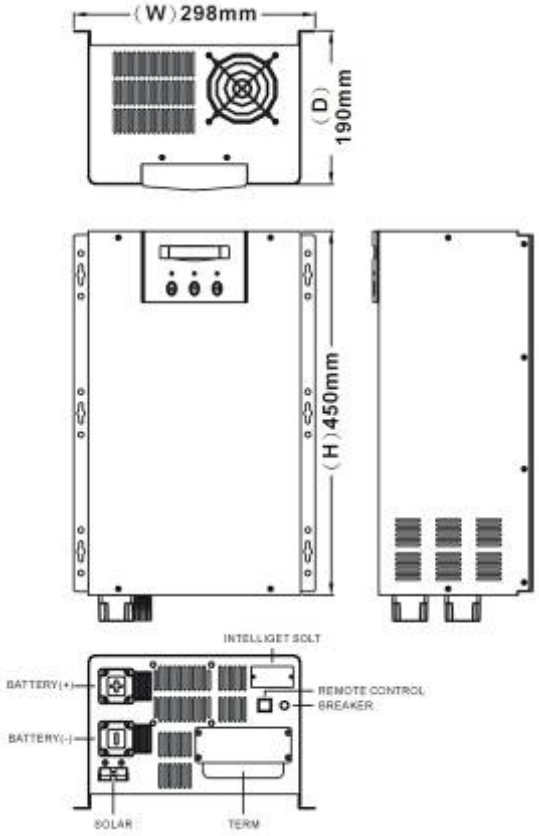
1600W / 2400W Rack Mount Type



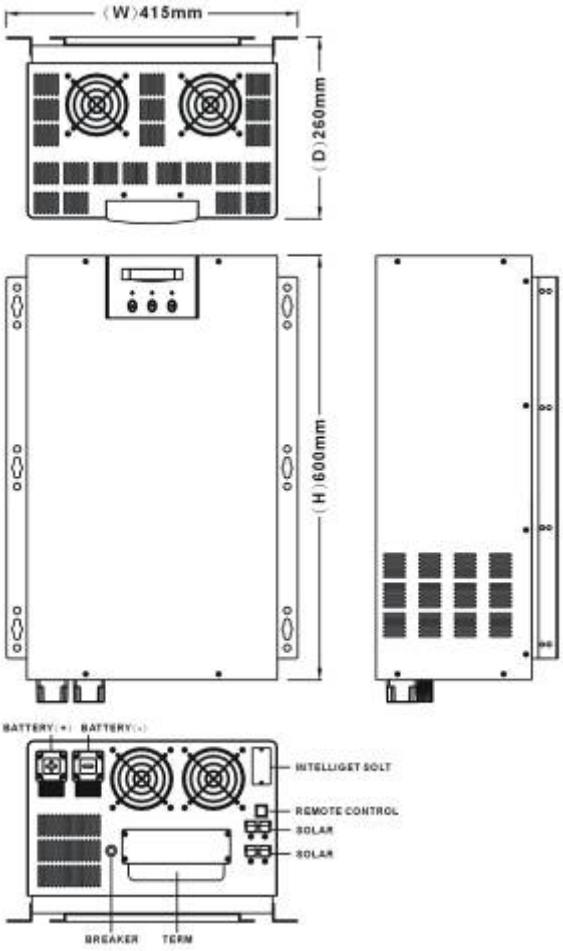
800W Wall Mounted Type



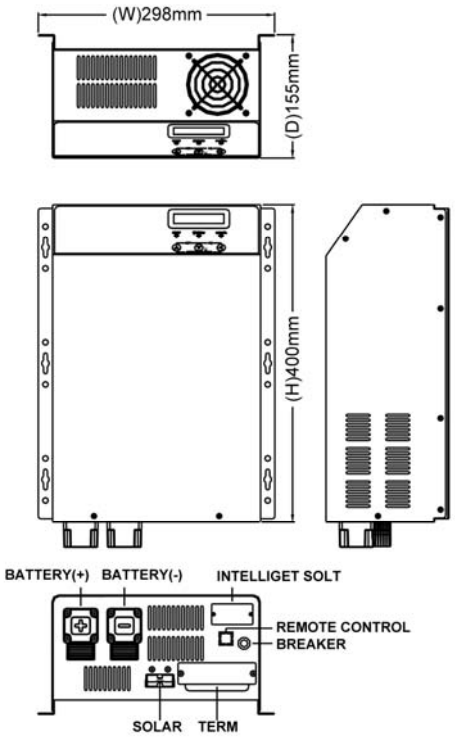
1600W / 2400W Wall Mounted Type



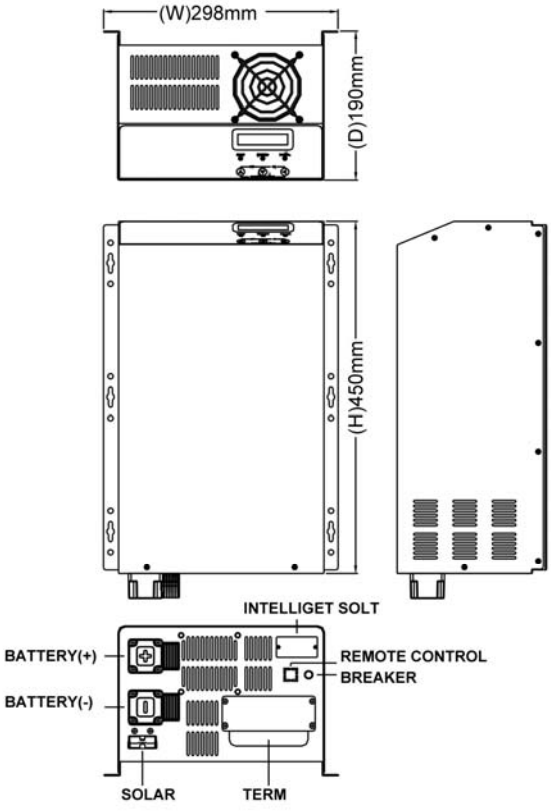
4000W / 6000W / 8000W Wall Mounted Type



800W Wall Mounted Type (Black case)



1600W / 2400W Wall Mounted Type (Black Case)



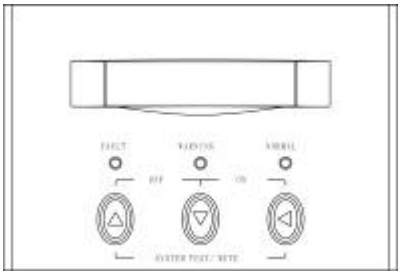
5. OPERATION

5.1 Check Prior to Start Up

1. Ensure the Inverter/ Charger 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 Inverter/ Charger rating required.

5.2 Storage Instruction

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



5.3 Operation Procedure for LCD Model

Please follow the instructions below for Inverter/ Charger 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 Inverter/ Charger 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 Inverter/ Charger is on the standby status (LCD display illuminates and Normal LED is blinking) until AC source is disconnected.

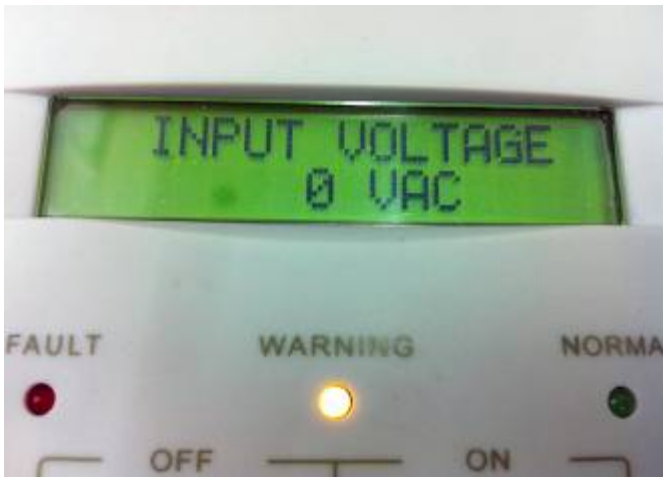
5.4 LCD Display Menu

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

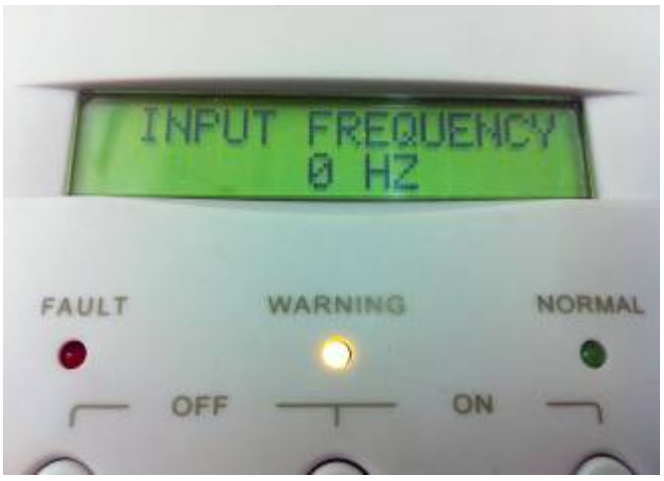
Rated Spec

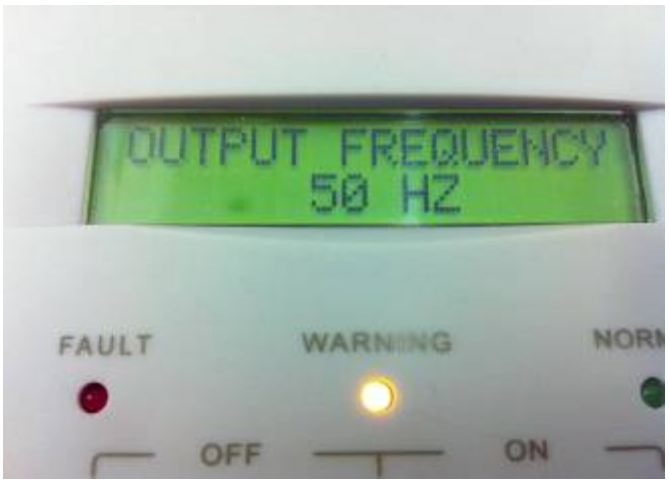
Status

Voltage



Frequency





Battery Status

Output Power

Temperature

History Record

5.5 GREEN POWER SETTING

		After the startup screen, the LCD will display the main menu as shown in the photo.
		Press the ▼ key in the middle continuously until seeing the same display as shown in the photo.
		Then press the enter key at right, and there will be a cursor (→) shown between SETTING and AC TO AC
		Press enter key again so the cursor will move down to the position between GREEN and OFF.

		Press the ▼ key in the middle once, the LCD Display shall now display GREEN →ON 30sec
		Press the enter key at right again, and the cursor shall move to the right and now pointing 30sec. There are 4 options (15sec, 30sec, 45sec, 60sec) for how often to run the detection.
		After completing the setting, press the enter key at right. The LCD Display shall display “FUNCTION SETTING SAVE? NO” as shown in photo.
		Press the ▼ key in the middle, the text “NO” shall now become “YES”, then press the enter key again to confirm the setting.

		The same screen as shown in the photo shall be displaying, and the inverter will automatically run the detection on GREEN POWER every 30 sec.

◆ Remark:

When AC IN source is connected, the Normal LED will light up; when AC IN source is not connected, the Warning LED will light up.

5.6 DC TO AC SETTING

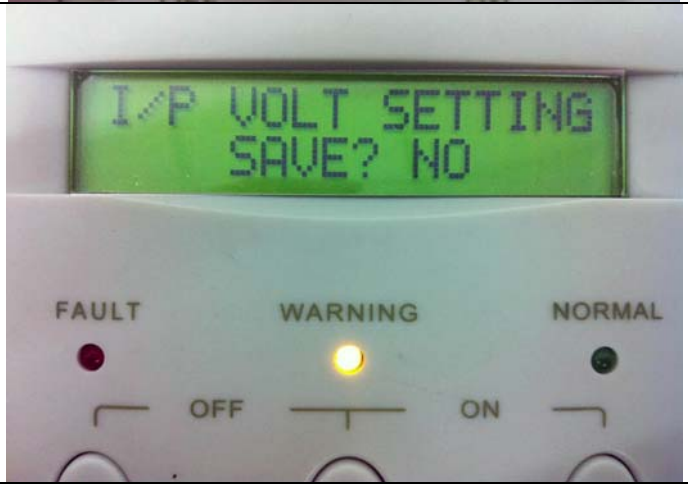
	After startup, we can change the LCD display by the ▲ & ▼ key
	Press the ▼ key till you see the display shown in the picture.
	Press the “Enter” key ＜ at right, and then you will be able to see an arrow between SETTING and AC TO AC
	Press the ▼ key, and switch AC TO AC to DC TO AC

		After finishing setting, press the ENTER key "＜" and move to save option.
		Press the ▼ key and switch NO to YES at save function, and then press the ENTER key "＜" again to save
		Now we complete the setting for DC TO AC mode

◆ Remark:

In DC TO AC mode, AC will not be operated until the DC IN is shut down. in other words, AC will not start working such as charging or outputting until switching back to AC IN. When the system detects that the AC IN is gone, it will switch back to DC TO AC automatically. It is running as loop.

5.7 AC INPUT VOLTAGE SETTING

	After startup, press the ▼ in the middle, and stop at "I/P VOLT SETTING"
	Press the ENTER key "＜" at right, the arrow will appear at bottom before LO. Press the ▼ & ▲ key to adjust the AC input value for low voltage
	Press the ENTER key "＜" again, the arrow will switch the position before HI. Press the ▼ & ▲ key to adjust the AC input value for high voltage
	After finishing setting, press the ENTER key "＜" and move to save option.

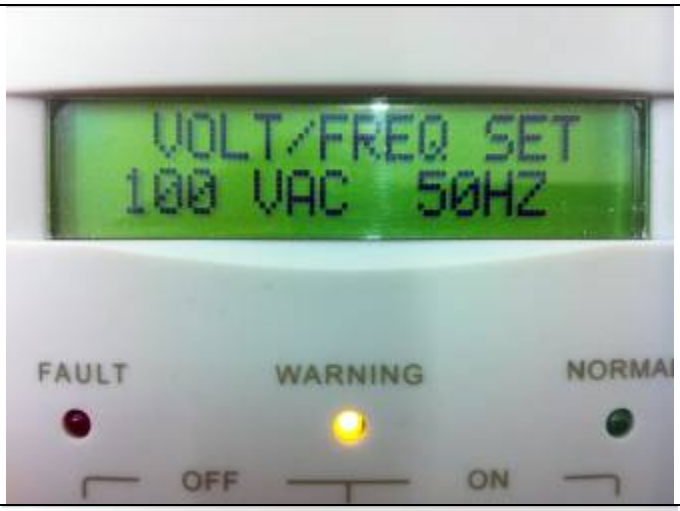
		Press the ▼ key, switch NO to YES at save function, and then press the ENTER key “＜” again to save
		Now we complete the setting for adjusting the value to AC INPUT HIGH/LOW VOLTAGE

◆ Remark:

Low voltage
110V system – Range: 60V~100V
220V system – Range 120V~200V

High voltage
110V system –Range: 125V~140V
220V system –Range 250V~280V

5.8 OUTPUT VOLTAGE AND FREQUENCY ADJUSTMENT SETTING

	After startup, press the ▼ in the middle, and stop at "VOLT/FREQ SET"
	Press the ENTER key "＜" at right, the arrow will appear at bottom before 100 VAC. Press the ▼ & ▲ key to adjust the output voltage
	Press the ENTER key "＜" again, the arrow will switch the position before 50HZ(or 60HZ). Press the ▼ & ▲ key to adjust the output frequency
	After finishing setting, press the ENTER key "＜" and move to save option.

		Press the ▼ key and switch NO to YES at save function, and then press the ENTER key “＜” again to save
		Now we complete the setting for OUTPUT VOLTAGE AND FREQUENCY ADJUSTMENT

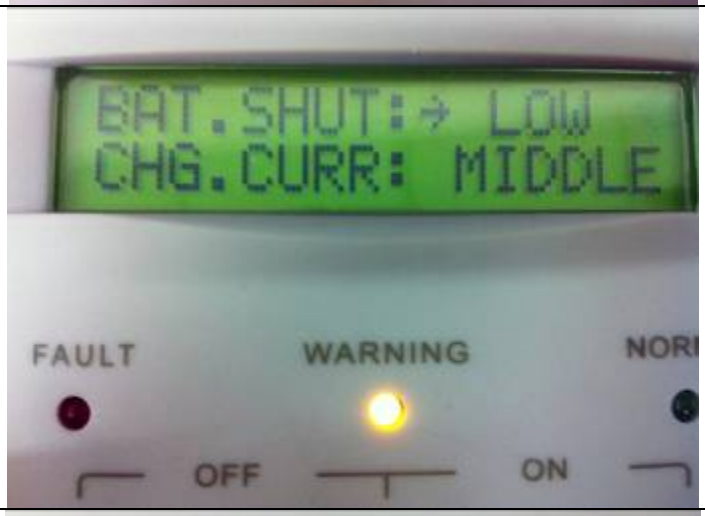
◆ Remark:

Four setup values for 110V–
100V、110V、115V、120V

Four setup values for 220V–
200V、220V、230V、240V

Two options for frequency change:
- 50HZ
- 60HZ

5.9 LOW VOLTAGE SHUTDOWN SETTING

	After startup, press the ▼ in the middle, and stop at "BAT.SHUT"
	Press the ENTER key "＜" at right, the arrow will then appear between BAT.SHUT and MIDDLE
	Press the ▼ & ▲ key to set up the voltage value for shutdown protection
	After finishing setting, press the ENTER key "＜" and move to save option.

		Press the ▼ key, switch NO to YES at save function, and then press the ENTER key “＜” again to save
		Now we complete the setting for setup value to BATTERY LOW VOLTAGE SHUTDOWN

◆ Remark:

Three different setup values for low voltage shutdown protection.
HIGH: 42V.
MIDDLE: 40V
LOW: 38V
Default Value: MIDDLE - 40V

5.10 BATTERY CHARGE CURRENT SETTING

	After startup, press the ▼ in the middle, and stop at the “CHG.. CURR” display
	Press the ENTER key “＜” at right, the arrow will then appear between BAT.SHUT and MIDDLE
	Press the ENTER key “＜” again, the arrow will switch to bottom between CHG. CURR and MIDDLE
	Press the ▼ & ▲ key to set up the charging current

		After finishing setting, press the ENTER key "＜" and move to save option.
		Press the ▼ key, switch NO to YES at save function, and then press the Enter key "＜" again to save
		Now we complete the setup value for BATTERY CHARGING CURRENT

◆ Remark:

Three different setup values for battery charging current.

HIGH: 100A.

MIDDLE: 80A

LOW: 60A

Default Value: MIDDLE - 80A

6. TROUBLE SHOOTING GUIDE

6.1 For LCD Model

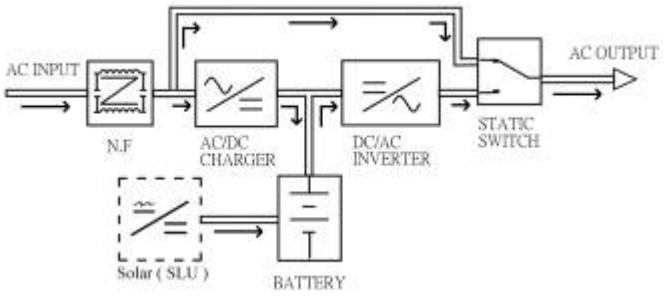
The following guideline may be helpful for basic problem solving.

No.	UPS STATUS	POSSIBLE CAUSE	ACTION
1	AC utility power is normal. Inverter/ Charger 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
2	AC utility power is normal but Inverter/ Charger is overloaded. Warning LED lits up and buzzer beeps per second.	Overload 100%< load< 125%	Please reduce the critical load to <100%.
3	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%.
4	AC utility power is normal. Warning LED lits up and buzzer beeps continuously.	Overload 150%< load	Please reduce the critical load to <100%.

No.	UPS STATUS	POSSIBLE CAUSE	ACTION
5	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.
6	AC utility fails. Inverter/ Charger is in battery backup mode. Buzzer alarm beeps every second.	Battery power is approaching low level.	Inverter/ Charger will shut down automatically. Please save data or turn off the loads soon.
7	AC utility power fails. Inverter/ Charger has shut down automatically.	Battery runs out	Inverter/ Charger will restart up when AC utility power is restored.

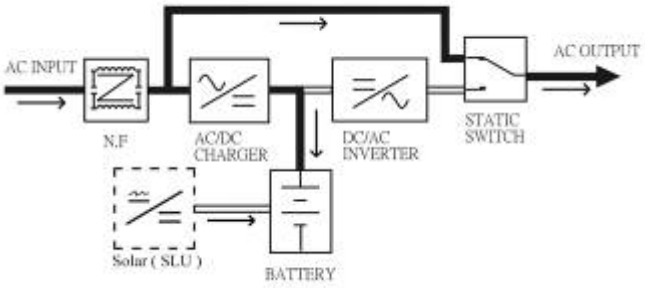
7. OPERATION MODES

7.1 Inverter/ Charger System Block Diagram



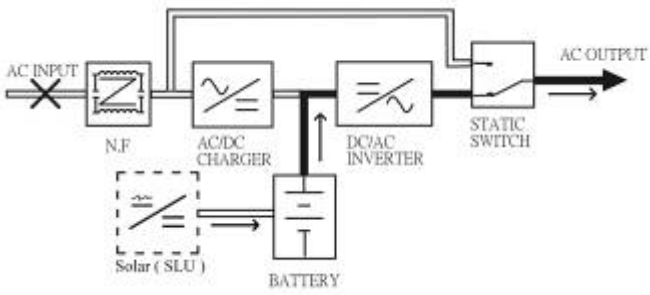
7.2 Normal Operation (AC Priority)

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.



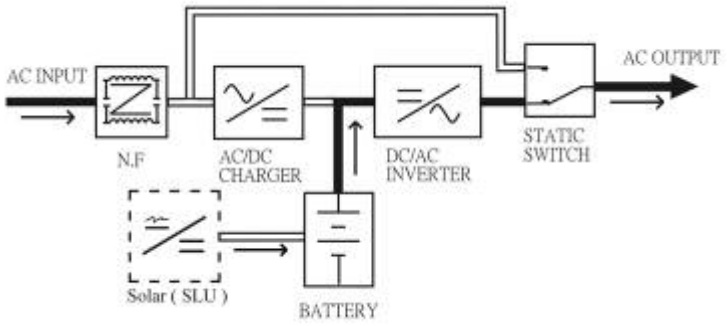
7.3 AC Utility Failure (Battery Mode)

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



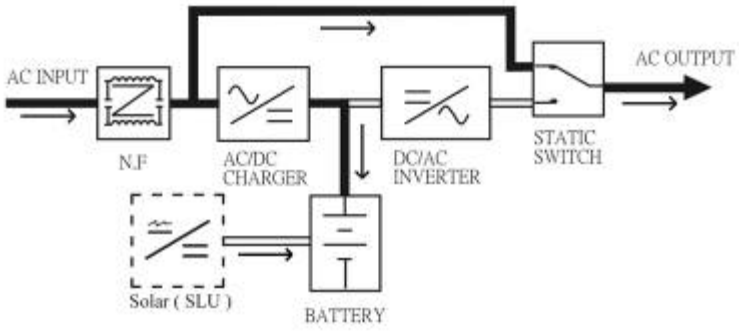
7.4 Normal Operation (DC Priority)

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



7.5 DC Utility Failure (Out-Of-Battery Mode)

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.



please refer to P.17 **-5.6 DC to AC SETTING

8. SPECIFICATION

Model			INVERTER 800W	INVERTER 1600W	INVERTER 2400W
Capacity	**VA / Watt**		**1.2KVA / 800W**	**2.4KVA / 1600W**	**3.6KVA / 2400W**
Input	Nominal Voltage		220Vac; 110Vac		
	Voltage Range	Acceptable Voltage Range	120-280Vac ; 60-140Vac		
		Frequency	50Hz / 60Hz (45Hz - 70Hz)		
		Line Low Transfer	120VAC ± 2% ; 60VAC ± 2%		
		Line Low Return	130VAC ± 2% ; 65VAC ± 2%		
		Line High Transfer	280VAC ± 2% ; 140VAC ± 2%		
		Line High Return	260VAC ± 2% ; 130VAC ± 2%		
Output	Voltage		200 / 220 / 230 / 240Vac re-settable via LCD panel) 100 / 110 / 115 / 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		0.67		
	Waveform		Pure Sinewave		
	Effiecincy		> 75%	> 80%	
	Overload Protection	Line Mode	Circuit Breaker		
		Battery Mode	110% ~ 150% for 30 sec. , >150% for 200ms		
Transfer Time	Typical		< 8 ms.		
Battery	Battery Voltage		24Vdc (20~32)		
	Backup Time (at full load)		long time available		
	Max. Charging Current (3 steps selectable)		60 / 80 / 100 Amp		

Model		INVERTER 800W	INVERTER 1600W	INVERTER 2400W
Solar Charge (SLU)	Battery Voltage	24V		
	Charge Vlotage	27.7V		
	Solar Maximum Peak Voltage	50.0V		
	Solar Charge Working Voltage	24.0V		
	Maximum Charging Current	50A		
	Polarity Protect	YES		
	Back Flow Protect	YES		
Display LCD	LCD	UPS 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		
	UPS 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)	14	21	23
	(WxHxD)mm Black Case	298*400*155	298*450*150	298*450*150
	(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

◆ **Specifications are subjected to change without prior notice.**

Model			INVERTER 4000W	INVERTER 6000W	INVERTER 8000W
Capacity	**VA / Watt**		**5KVA / 4000W**	**6KVA / 6000W**	**8KVA / 8000W**
Input	Nominal Voltage		220Vac; 110Vac		220Vac only
	Voltage Range	Acceptable Voltage Range	120-280Vac ; 60-140Vac		120-280Vac
		Frequency	50Hz / 60Hz (45Hz - 70Hz)		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	280VAC ± 2% ; 140VAC ± 2%		280VAC ± 2%
		Line High Return	260VAC ± 2% ; 130VAC ± 2%		260VAC ± 2%
Output	Voltage		200 / 220 / 230 / 240Vac re-settable via LCD panel) 100 / 110 / 115 / 120Vac re-settable via LCD panel)		200 / 220 / 230 / 240Vac 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 Sinewave		
	Effiecincy		> 80%		
	Overload Protection	Line Mode	Circuit Breaker		
		Battery Mode	110% ~ 150% for 30 sec. >150% for 200ms		
Transfer Time	Typical		< 8 ms.		
Battery	Battery Voltage		24Vdc (20~32)	48Vdc (42~62)	
	Backup Time (at full load)		long time available		
	Max. Charging Current (3 steps selectable)		60 / 80 / 100 Amp		

Model		INVERTER 4000W	INVERTER 6000W	INVERTER 8000W
Solar Charge (SLU)	Battery Voltage	24V	48V	
	Charge Vlotage	27.7V	55.2V	
	Solar Maximum Peak Voltage	50.0V	100V	
	Solar Charge Working Voltage	24.0V	44.0V	
	Maximum Charging Current	50A		
	Polarity Protect	YES		
	Back Flow Protect	YES		
Display LCD	LCD	UPS 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		
	UPS 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)	49.2Kg	51.4Kg	55Kg
	(WxHxD)mm Wall Mounted	415*600*260	415*600*260	415*600*260

◆ **Specifications are subjected to change without prior notice.**