
User's Manual
INVERTER/CHARGER

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300W/600W/800W/1000W

Appliances-----



PC



TV



Light



Electric fan

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SPECIFICATIONS

CAPACITY	300W/600W/800W/1000W							
INPUT								
Voltage Range	140~280VAC +/-5%							
Frequency Range	50Hz+/-5Hz or 60Hz+/-5Hz							
OUTPUT								
Voltage Regulation	Battery mode				Line mode			
	230VAC +/-5%				200 VAC ~ 240 VAC			
Transfer Time	6 ms (typical), 10 ms (max)							
Waveform	sine wave							
BATTERY								
Battery Voltage	12Vdc				24Vdc			
Min battery voltage for power on	Shutdown voltage + 0.5V				Shutdown voltage + 1V			
Maximum Charge Current	300W	600W	800W	1000W	300W	600W	800W	1000W
	10A	20A	25A	30A	5A	10A	15A	15A
PHYSICAL								
Dimension (D*W*H) mm	420 x 280 x 225							
Net Weight (kg)	300W		600W		800W		1000W	
	7.5		10.7		12.5		13.5	
OTHER								
Storage temperature	-15°C to 55°C							
Ambient temperature	0°C~40°C							
Noise	≦ 60dB							
Communication	RS232 or USB							

GENERAL PRECAUTIONS

- Before using it, read all instructions and markings: (1) inverter (2) the batteries (3) this manual
- CAUTION --To reduce risk of injury, charge only lead-acid rechargeable batteries. If customer use flooded batteries, they must maintain them. Other types of batteries may cause damage and injury.
- Do not expose it to rain, snow or liquids of any type. It is designed for indoor.
- Do not disassemble it. Take it to a qualified service center when service or repair is required.
- To prevent the risk of electric shock, disconnect all wiring before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
- WARNING: Provide ventilation to outdoors from the battery compartment. The battery enclosure should be designed to prevent accumulation and concentration of hydrogen gas at the top of the compartment.
- NEVER charge a frozen battery and connect the inverter with 12V to 24V battery.
- Input/output AC wiring must be no less than 16 AWG gauge copper wire and rated for 75 °C or higher. Battery cable must be rated for 75°C or higher and should be no less than 6AWG gauge.
- Be extra cautious when working with metal tools around batteries. Short-circuiting the batteries could cause an explosion.
- Read the battery manufacturer's installation and maintenance instructions prior to operating.

PERSONNEL PRECAUTIONS

- Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.
- Avoid touching eyes while working near batteries.
- NEVER smoke or allow a spark or flame in vicinity of a battery.
- Remove personal metal items such as rings, bracelets, necklaces, and watches when working with batteries. Batteries can provide heavy short-circuit current, enough to make metal melt and causes severe burn.
- If a remote or automatic generator start system is used, disable the automatic starting circuit or disconnect the generator to prevent accident during servicing.

FOLLOW STANDARD.

EN 60950-1:2006+A2:2013+A11:2009+A1:2010+A12:2011
EN 55022:2010. EN 55024:2010. EN 61000-3-3:2008

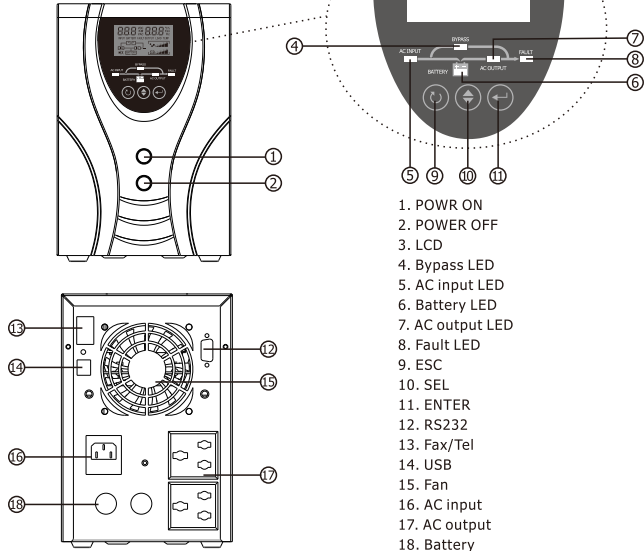
INSTALLATION

It is a cost effective, intelligent inverter with UPS function. The comprehensive LCD offers user-configurable and easy-accessible button adjustment such as battery charge current, battery charge Voltage, frequency, buzzer etc.

Features:

- Sine wave inverter
- Friendly HMI
- 3 steps charging algorithm
- MFD (multi-function display)
- Overload and short-circuit protection
- Battery reverse polarity protection
- Deep discharge protection
- Adjustable utility charging current
- Automatic voltage regulation
- Communication with PC

PRODUCT OVERVIEW



1. POWR ON
2. POWER OFF
3. LCD
4. Bypass LED
5. AC input LED
6. Battery LED
7. AC output LED
8. Fault LED
9. ESC
10. SEL
11. ENTER
12. RS232
13. Fax/Tel
14. USB
15. Fan
16. AC input
17. AC output
18. Battery

COMMUNICATION

Refer to User Guide of PowerMonitor.

TROUBLE SHOOTING

If machine enters into fault mode, please remove input power. And according to the table, deal with the following problems.

LED/Buzzer	LCD	Explanation / Possible cause	What to do
Buzzer beeps And red LED is off	Blink battery ICON	Battery voltage is too Low.	Charge the unit at least 8 hours.
	Blink load ICON	Over load.	Decrease your load.
Buzzer beeps continuously and red LED is on.	Fault code 02	Temperature of machine is too high.	Power off and waiting for minutes.
	Fault code 03	battery voltage is too high.	Check the battery specifications.
	Fault code 04	battery voltage is too low.	Check the battery specifications.
	Fault code 05	Output short circuited.	Remove your load and restart.
	Fault code 06	Inverter output voltage is high.	Return to repair center.
	Fault code 07	Over load.	Decrease your load.
	Fault code 11	Main relay fault.	Restart the machine. If it still can't work, please return to repair center.
	Fault code 41	Input voltage too low.	Check input power.
	Fault code 42	Input voltage too high.	
	Fault code 42	Input frequency too low.	
	Fault code 44	Input frequency too high.	
Fault code 45	AVR fault.	Restart the machine. If it still can't work, please return to repair center.	
Fault code 51	Output short circuited.	Check if wiring is connected well and remove abnormal load.	
Fault code 58	Output voltage is too low.	Decrease your load.	

Fault Reference Code

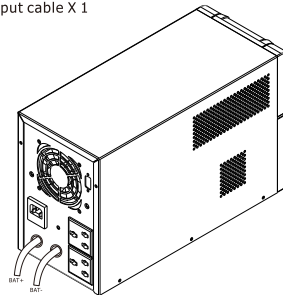
Fault Code	Fault Event	Icon on
02	Over Temperature	02
03	Battery voltage is too high	03
04	Battery voltage is too low	04
05	Output short circuited	05
06	Inverter output voltage is high	06
07	Over load	07
11	Main relay fault	11
41	Input voltage too low	41
42	Input voltage too high	42
43	Input frequency too low	43
44	Input frequency too high	44
45	AVR fault	45
51	Over current	51
58	Inverter output voltage is low	58

INSTALLATION**Unpacking and inspection**

Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package.

The unit X 1
Software CD X 1
AC input cable X 1

User manual X 1
Communication cable X 1

**Battery connection**

Step1: Aways the cover of external battery terminal.

Step2: Following battery polarity guide printed near the battery terminal.

RED cable to the positive terminal(+);

BLACK cable to the negative terminal (-);

WARNING! Please use the appropriate battery cable. Please refer to the following table.

Model	Battery voltage	Wire size
300W	12V	1*8AWG
	24V	1*10AWG
600W	12V	1*6AWG
	24V	1*8AWG
800W	12V	1*4AWG/2*8AWG
	24V	1*6AWG/2*10AWG
1000W	12V	1*4AWG/2*8AWG
	24V	1*6AWG/2*10AWG

Step3: Install a DC breaker in a positive line.

The rating of the DC breaker must be according to the inverter's battery current (75 A for 24V battery, 150 A for 12V battery).

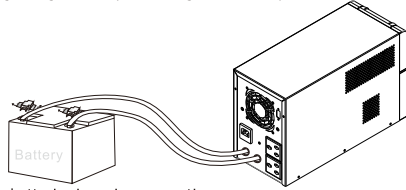
Note: you must keep the DC breaker off.

Step4: Connect battery cable to the external batteries.

Note: For the user operation safety. We strongly recommend that you should use tape to isolate the battery terminals before you start to operate the unit.

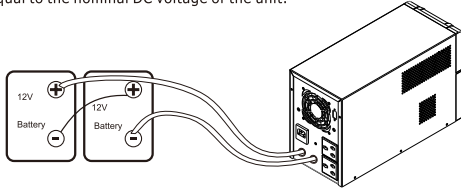
1) Single battery connection

When using a single battery, its voltage must be equal to the Nominal DC voltage of the unit.



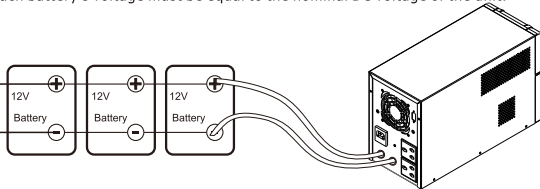
2) Multiple batteries in series connection

All batteries must be equal in voltage and amp hour capacity. The sum of their voltages must be equal to the nominal DC voltage of the unit.



3) Multiple batteries in parallel connection

Each battery's voltage must be equal to the nominal DC voltage of the unit.



Step 5: Make sure to connect the polarity of battery side and unit correctly.

Connect positive pole (Red) of battery to the positive terminal (+) of the unit.

Connect Negative pole (Black) of battery to the negative terminal (-) of the unit.

Step 6: Put the covers back to the external battery terminals.

Step 7: Take the DC breaker on.

WARNING! Wiring must be performed by a qualified person.

Connect to utility and charge battery

WARNING! Please do not misconnect input and output connector.

Plug the AC input cord into the wall outlet. Battery of the machine will be charged automatically.

25	Enable key sound	ON (default)
		25 boN
29	Grid charge enable	OFF
		25 boF
		29 UCE
	Disable grid charge	29 UCd

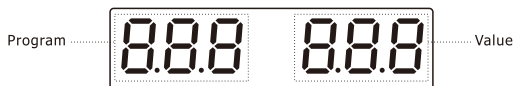
If you want to reset all the parameters, pressing "SEL" button for 2 seconds will enter into reset settings dialog. Please select "DEF" through "SEL" button. Press "ESC" button for 2 seconds to exit and all parameters will be default state. Reset machine and all the parameters will take effect.

Operating Mode Description

Operation mode	Description	LCD display
Fault mode	If any fault has happened, the machine will enter to the mode. And fault code is displayed on the LCD.	07 FAULT
Charger Mode	In this mode, the battery will be charged through grid power. When input power is abnormal, the machine will power off or switch to fault mode.	
Line Mode	Input power will provide energy to load directly. And it will charge the battery at the same time. If voltage of input power is outside of section, [200v, 240v], AVR will work. When input power is abnormal, the machine will switch to battery mode.	
Battery Mode	The unit will get energy from battery and provide to load.	

LCD Setting

After pressing and holding "ENTER" button for 2 seconds, the unit will enter setting mode. Press "ENTER" button to select setting programs. Press "SEL" button to change parameter. Press "ESC" button for 2 seconds to exit. All the parameters will take effect, after resetting machine.



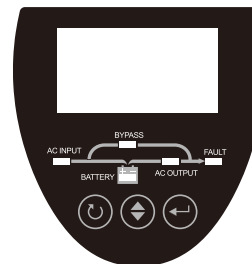
Setting program information

Program	Description		
04	Grid frequency type	50Hz (default)	
		04 50 Hz	
		60Hz	
		04 60 Hz	
13	Bulk current	Model: 12VDC	Model: 24VDC
		10~30A (default value is 10A)	5~15A (default value is 5A)
		13 10 A	13 5 A
17	Absorption charge voltage	Model: 12VDC	Model: 24VDC
		13.8~14.5V (default value is 14.1V)	27.6~29.0V (default value is 28.2V)
		17 14.1 v	17 28.2 v
18	Float charge voltage	Model: 12VDC	Model: 24VDC
		13.5~13.7V (default value is 13.5V)	27.0~27.4V (default value is 27.0V)
		18 13.5 v	18 27.0 v
19	Shutdown voltage	Model: 12VDC	Model: 24VDC
		10.0~12.0V (default value is 10.5V)	20.0~24.0V (default value is 21.0V)
		19 10.5 v	19 21.0 v
24	Alarm	ON (default)	
		24 AON	
		OFF	
		24 AOF	

OPERATION

Press "ON" for 2 seconds to turn on the unit. The unit will work automatically in line mode or inverter mode according to input utility status. When "OFF" is pressed and hold for 2 seconds, the unit will be turned off. When machine is working, buzzer can be controlled by pressing "ON".

The display panel, shown in below chart, is on the front panel of the inverter. It includes four front indicators, three function keys and a LCD display, indicating the operating status and input/output power information.

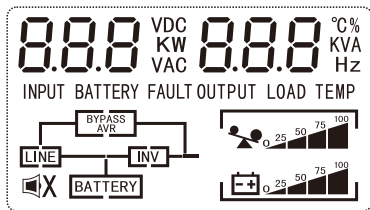


LED Indicators & Audible Alarms

There are four LED indicators in the front panel of the unit

LED Indicators	Messages
Backup Mode	BATTERY
Line Mode	AC INPUT
Charger Mode	AC OUTPUT
Warning of Low battery voltage	FAULT
110% overload warning	All of LEDs is off.
Fault mode	Buzzing every 2 seconds and red LED blinking
	Buzzing every 2 seconds and red LED blinking
	Buzzing continuously and red LED is on

LCD Display



Display	Function			
Battery information in AC mode, it will present battery charging status				
Status	Battery voltage	LCD display		
Constant Current mode/Constant Voltage mode	0%~25%	All bars will blink in turns.		
	25%~50%	Bottom bar will be on and the other three bars will blink in turns.		
	50%~75%	Bottom two bars will be on and other bars will blink in turns.		
	75%~100%	Bottom three bars will be on and the top bar will blink.		
Floating mode. Batteries are fully charged				
All bars will be on				
Battery information in battery mode, it will present battery capacity.				
Battery Voltage	LCD display			
0%~25%				
25%~50%				
50%~75%				
75%~100%				
Load information				
	Blinking load ICON Indicates overload.			
	Indicates the load level by 0-25%, 25-45%, 50-75% and 75-100%			
	0%~25%	25%~50%	50%~75%	75%~100%
Mode operation information	Refer to "Operating mode description"			
Buzzer information				
	Buzzer state is silence			
	Buzzer state is normal			
Selectable Information	Refer to "Display Select"			

Display Select

The LCD display information will be switched in turns by pressing "SEL" key. The selectable table information is as following table.

Selectable Information	LCD display
Input	Input voltage=230 V, input frequency=50Hz
Battery	Battery voltage=24.8 V, battery current = 1 A
Output	Output voltage=230 V, output frequency=50Hz
Load	Power = 879W, percent= 88%
Temperature	Temperature =30°C