User Manual

intelligent inverter power supply

11、Error code and solution

Error code and solution		
Error code	**Faulty**	**Solution**
E01	Overcurrent of MOSFETS board	Kindly contact sales if still having this issue after restarting
E02	Output short circuit	Check whether it's overloaded seriously or short circuit inside appliances loaded
E03	Appliance Overloaded	Check whether it's overloaded, and remove some loads not important
E04	Inner Over-temperature	Check whether fan is working well or the air dust for cooling be blocked
E05	Overvoltage of battery	Check whether battery connection and configuration correct
E06	Battery's voltage is lower than shutdown voltage	Make sure battery be fully charged, or replace new battery
E07	Reverse connected cables between transformer with heatsink on power board	Fix the two cables after they are interchanged
E08	Start Protection when low output voltage	Kindly contact sales if still having this issue after restarting
E09	Reserved	----------
E10	Undervoltage of battery	Check the system voltage of inverter and use same data for the battery pack.

10、Technical parameter：

Model：		SOLAR -1096	SOLAR -10192	SOLAR -15192	SOLAR -20192
Rated power		10KW	10KW	15KW	20KW
Battery	Rated voltage	96VDC	192VDC	192VDC	192VDC
	Charge current	10A-20A			
	Low-voltage protection	84VDC	168VDC		
	Restart voltage after low battery	104VDC	208VDC		
Input	Voltage range	88-132VAC/176-264VAC			
	Frequency	45-65Hz			
Output	Frequency	50/60Hz±1%(Inversion mode)			
	Voltage range	110VAC/220VAC；±5%(Inversion mode)			
	Output waveform	Pure sine wave			
	Switching time	＜10ms(Typical load)			
	Efficiency	＞85%（100% resistive load）	＞90%（100% resistive load）		
	Overload	110-120%/30S；＞160%/300ms；			
	Protection function	Battery overvoltage protection, battery undervoltage protection, overload protection, short circuit protection, overtemperature protection,etc.			
Ambient temperature for operation		0-40℃			
Ambient temperature for storage		-15 - +50℃			
Operation/storage conditions		0-90% (no condensation)			
External dimensions: D*W*H（mm）		555*368*695 mm			655*383*795 mm
G.W.(KG)		112		120	165

P.S.: We have right of changing without information

Dear users：

Thank you for choosing our products! Please read this manual carefully before you use the product. This manual is including some important information and recommendations of installation, using method, troubleshooting,etc. Please keep this manual.

Content

1. MAIN FEATURES

● Excellent performance because of double CPU intelligent control.

●Settable the mains supply preferred mode and battery preferred mode.

● Controlled by intelligent fan which is more safe and reliable.

● Pure sine wave AC output, which is able to adapt to various types of load.

● LCD display device parameters in real time, showing you the running state.

● All kinds of automatic protection and alarm of output overload and short circuit.

● Intelligent monitor the device status because of the RS232 communication interface design.

2. Installation and Storage

1. Unpack inspection

1.1 Please open the package and check the products which including a host and a manual.

1.2 Check whether the device is damaged during transportation. Please do not start if the damage is found or parts are missing, and notice the shippers and distributors.

2. Installation and Storage

2.1 The equipment should be installed by professional or with the assisted of local dealer.

2.2 The product needs protective measures when transport. The droplets will occur when the equipment was moved from a low temperature environment to a high temperature environment. To ensure your safety, you must allow it to be dry completely before using it.

2.3 Device should not be exposed to moisture, flammable dust or harsh environments. In order to have a good cooling, do not overwrite or block the vents and reserving over 10CM space around the equipment .

2.4 The battery switch on the rear panel must be placed in a closed state, if the equipment is not using for a long time.

9.Judgment and Treatment of Simple Fault

Warning: the high voltage inside machine! Do not attempt to open it to try to do the repairs or maintenance without professional technology, so as not to be in danger of electric shock!

When you contact the maintenance personnel, please provide the follow information: machine type, date of issue, the complete description of the problem (including the state of indicators display, battery equipped state, connections, and so on).

Faults	Possible cause	Solutions
The mains frequently	Check whether the switch of AC input be closed, check whether having voltage display	Re-start the switch of AC input
Decreasing of load time	Insufficient battery charge	Ensure the battery is normally being charge fully
	Machine connection is overload	Remove non-critical load
	Battery aging and can not have full charge	Please contact a customer service representative,to get the battery replaced components
The device can not be turned on	Input line or battery cable connection is bad	Check and reconnect
Alarm when starting	Battery is low	Ensure that battery normal charge
	Load overload	Remove non-critical load
2 seconds buzzer stops 1 second	Internal temperature high alarm	Check that if the fan and cooling vents are blocked
Fan rotation fast and slow	Fan work when internal temperature above 45℃, but no working below 42℃	Normal

8. Care and Maintenance

（1）This series of products just need minimal maintenance. In order to obtain the expected life, battery need keeping charge. The mains always supply for battery when it connected, and regardless of power on or off. Meanwhile, overcharge and over discharge protection function are provided.

（2）Please charge the product every 4~6 months, if it is not be used for a long time. In the normal conditions, the battery can be used for 3~5 years. If any poor condition is found, it must be replaced earlier and operated by professionals. The battery should not be a single replacement. And the whole batteries' replacement should follow the instructions from battery suppliers.

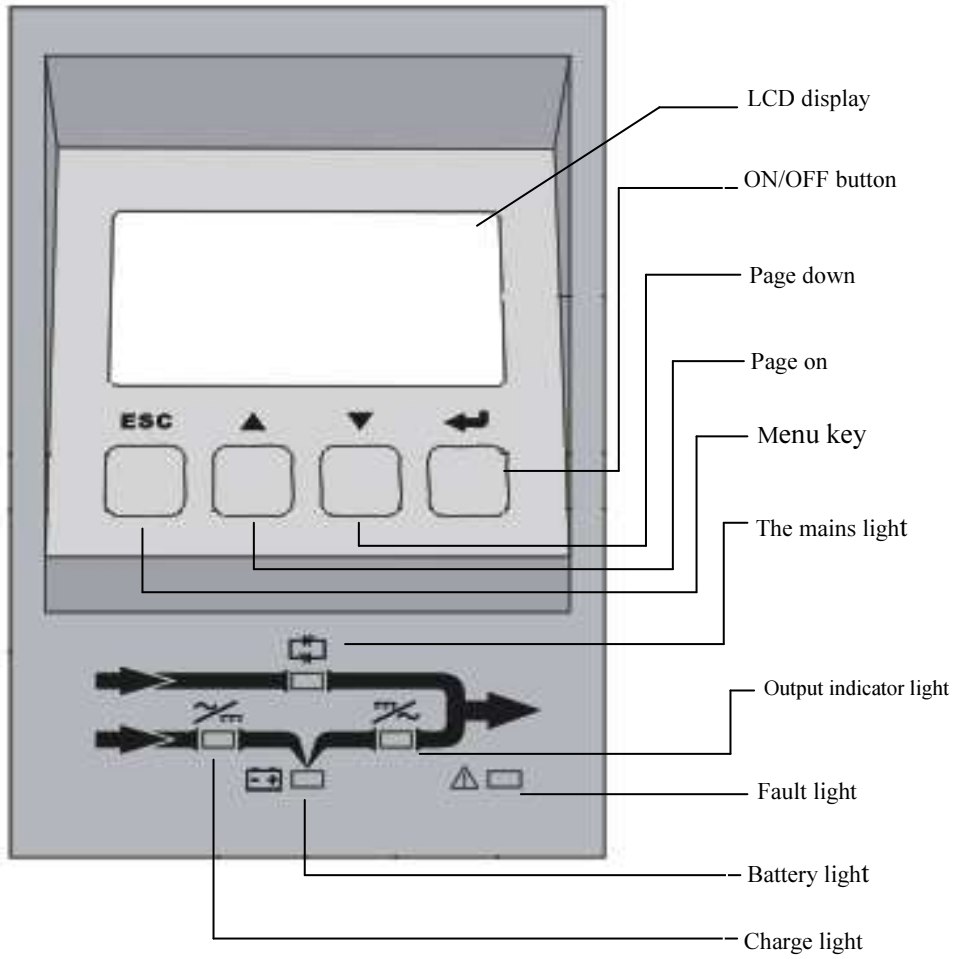
（3）In the normal using condition, the battery need be charged and discharged every 4~6 months, and recharge it when it discharge to shutdown. The standard charging time should not less than 12hours at a time. In high temperature areas, battery should be charged and discharged every twp months, and the standard charging time should not less than 12 hours at a time.

（4）Before the battery is replaced, turning off the battery and device, separate battery from the mains, take off the metal items like rings and watch. Using a screwdriver with an insulated handle. And do not put tools or other metal objects on the battery.

（5）Small sparks appears in joins is normal when you connect the battery cable. It will no pose a risk to personal safety and equipment. Battery's positive and negative must not be shorted or reversed.

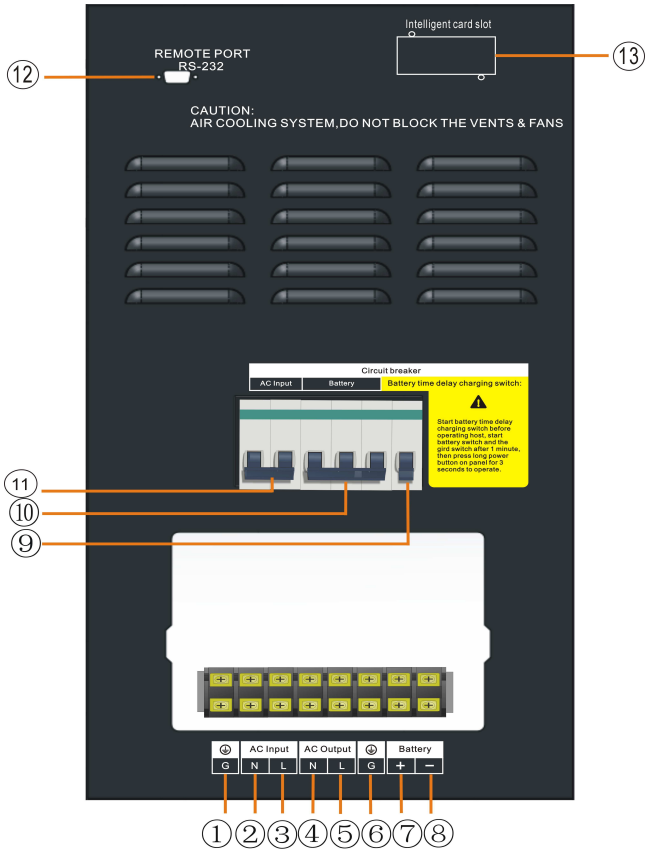
3. Equipment graphical diagram and instruction

(1) Front diagram



P1

(2) Icon instruction on right panel



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① --- The mains input ground wire
②---The Mains input zero line
③---The Mains input Fire Wire
④--- Output zero line
⑤ ---Fire wire output
⑥--- Output Ground
⑦ --- Battery positive input
⑧--- Battery negative input
⑨ --- Battery charging delay switch
⑩--- Battery input switch
⑪ --- The Mains input switch
⑫--- RS232 communication interface
⑬ ---SNMP communication card

（4）Sound alarm instructions

Normal operation	No buzzing	The default state, the buzzer does not call.
	Buzzing	Buzzer beep every 15 seconds 4 sounding to prompt that the device is operated under the condition of the battery pack inverter
Battery high voltage alarm	Buzzer beeped 4 sounding per second because of high voltage	
Battery low voltage alarm	Buzzer beeped 2 sounding per second because of low voltage	
Overtemperature alarm	Buzzer beep for 2 seconds and stop 1 second	

（5）Generator Link Precautions：

Linking the generator，please follow the steps.

1. Start the generator until it works stably, connect its output power to the input terminal of the equipment and determine the output of the device is idle state, and then turn on the device.
2. Link into load one by one.
3. It is recommended that the capacity of the generator is 2-3 times the capacity of the equipment.

（3）Work mode instruction

Icon	Working mode	Running state
01 SET	The grid preferred mode	After starting the inverter and the electricity input working well, inverter supply power to loads via the grid bypass regulated, and charge battery;When the grid happened abnormal such as overvoltage, low-voltage,massive distortion etc, inverter can supply high quality power via inner modules to loads
02 SET	Energy-saving mode	It has automatic load testing after started the equipment. When the load is greater than 5% of the rated power, the device opens the AC output to provide power to the load. When no load is detected, the device automatically returns to the search mode, and the battery pack energy consumption is reduced to a minimum. In this mode, the device detects a load at intervals every 10 seconds, in order to achieve the purpose of energy saving.
03 SET	Battery preferred mode	With the grid working well and battery be charged fully, the grid works standby, inverter supply power from battery to loads. When battery power drops too low to supply power, inverter supply power to loads via the grid bypass regulated but not charge battery. This mode is designed for new energy power system such as wind or solar power system.

4.Connection step instruction

Notice：First please confirm that the switch on the front panel is closed, then operate the following process.

4.1 External battery access instructions：

4.1.1 Connect the external storage battery with the proper wire diameter, then measure the voltage at both ends of the battery pack by the voltmeter and set as the rated voltage of the equipment;

4.1.2 Connect a suitable circuit breaker in series to the positive electrode connecting line between the external storage battery and the “Picture2、⑦-- Battery input positive terminal” of the equipment, please see sketch map of system connection；

4.1.3 Connect the battery pack into the equipment back panel “Picture 2、⑧---- Battery input negative terminal” and “Picture 2、⑧---- Battery input negative terminal” please pay attention to the battery connection in the process, its polarity cannot be wrong.

4.2 AC load connection instruction：

4.2.1 Connect the external storage battery with the proper wire diameter, in order not to damage the equipment, please notice that the phase sequence cannot be wrong of input null line and live line “Picture 2、②—the mains null line terminal”, “Picture 2、③--the mains firing line terminal”.

4.3 AC load Access Description:

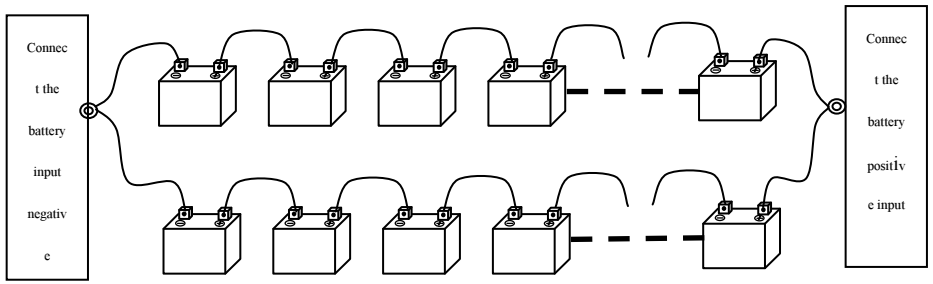
4.3.1 Ensure that the AC load operation of the device does not exceed the operating current of the rated current, if the power or the instantaneous starting current load derating use;

4.3.2 Connect "Figure 2, ④ AC output neutral terminal" zero line AC load / FireWire access device or "Figure 2, ⑤-- AC output terminals of the line of fire," pay attention to the process of access AC load zero line phase sequence / FireWire can not be wrong, so as not to damage the device.

5. Diagrams of the battery connecting wire

5．1 Battery connected in series and parallel:

Single battery capacity is satisfied backup time all batteries should be connected in series; when a single set of battery capacity can not meet used when you need the battery pack in parallel a plurality of series, in parallel battery bus voltage to be consistent, capacity equal to the parallel battery pack and capacity:



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When connect in series,connect the positive of first battery to the nagative of second battery.Connect the second battery positive and negative of third battery,connect the batteris one by one like this.

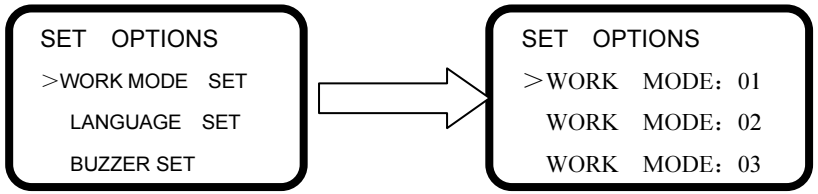
When the battery pack in parallel, the series good battery positive electrode and a positive electrode is connected to the anode and cathode is connected

- Open the battery box housing the connection according to the connection method aboved.
- Install battery connection method according to the above connect the battery cable in the corresponding position.
- The battery cable is connected to the machine's battery terminals rafts.

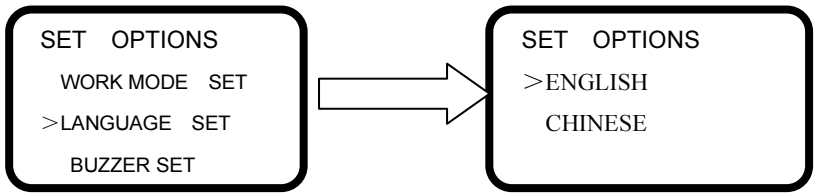
（2）Option of function setting

Press ESC key enter into setting

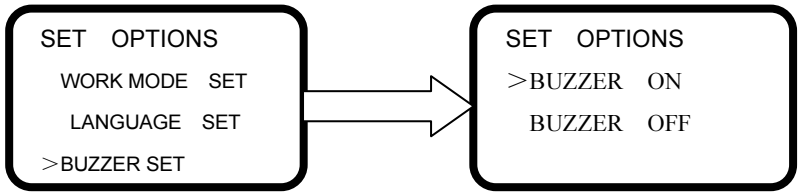
Working mode setting



Language setting



Buzzer setting



1.4 LCD display reminder

（1）Start on initialize display versions

System starting
Welcome to use

Input voltage, output voltage, working frequency when invertering

WORK STA: BATTERY
INPUT VOL : 230V
OUTPUT VOL: 220V
WORK FREQ : 50HZ

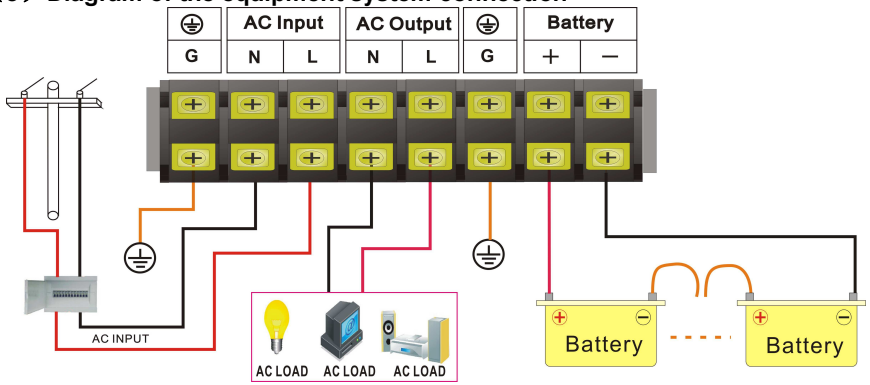
Battery capacity and loads capacity when invertering

WORK STA: BATTERY
BATT CAP :100%
LOAD CAP :75%

Working mode and language display

WORK STA: BATTERY
WORK MODE: 01
LANGUAGE : EN
BUZZER :OFF

（3）Diagram of the equipment system connection



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6. **Power-on/Operation/Power-off**

Power-on：

(1)Check the battery and polarity which accessed to the equipment is correct.

(2)Battery power-on: **When start the equipment for the first time, please closed the battery delay charging switch for 1min**, then turn off battery switch be closed status, long press “panel ON/OFF button” for 2 seconds, buzzer one time to light on LCD display, then equipment start output.

(3)The mains power-on:**Battery power-on: When start the equipment for the first time, please closed the battery delay charging switch for 1min**, then turn off battery switch and the mains switch be closed status, long press “panel ON/OFF button” for 2 seconds, buzzer one time to light on LCD display, then equipment start output.

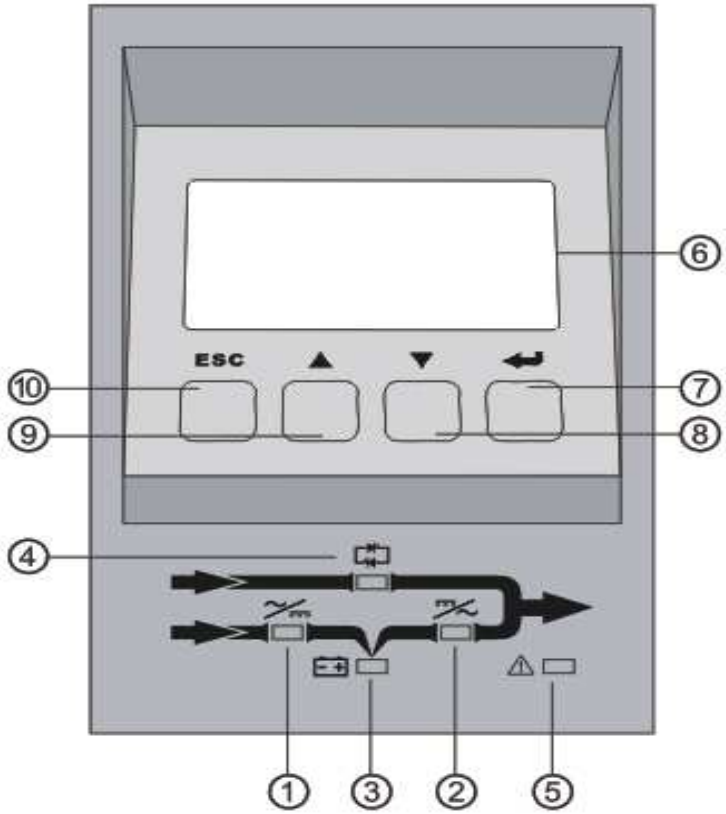
Power-off: First, turn off all the output load of the equipment, long press “panel ON/OFF button” for 2 seconds, stop pressing after the internal relay start, pull the series circuit-breaker which on the battery connecting wire to the off state, the equipment inverter off. And then cut off the mains supply, the equipment “LCD display” closed, it means the Equipment has been closed.

Notice: Before power-on, it must be closed for 1 min. of “ battery delay charge switch”, and keep battery switch being closed status, then press “ON” button to start

7、Operating instructions

（1）The panel LCD display diagram introduction

1.1 LCD display and function button operation interface show the working state of the equipment, such as input/output voltage, frequency, mains supply mode, inversion mode, battery capacity, load capacity, warning, etc.



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1.2 Pressing key instruction

Icon	Button	Item	Function
⑦	↵	ON/OFF	Power-on and power off of equipment
⑧	▼	Page down	turn to next display under the same item
⑨	▲	Page up	turn to last display under the same item
⑩	**ESC**	Function setting	Function setting, inverter mode, language, buzzer setting

1.3 Indicator lights

Icon	Lights item	Color	Status
①	Charging	Green	Lighted when inverter enter into the mains charging status
②	Inversion	Green	Lighted when inverter working and output
③	Battery	Yellow	Lighted when inverter under battery working
④	The mains	Green	Lighted when inverter under the mains working and voltage 220VAC±20%
⑤	Fault	Red	Lighted when inverter overload or inversion failure, and buzzer continuously or intermittently