GSI three-phases series off-grid Inverter User's Manual

CATALOGUE

1. PRODUCT INSTRUCTION……...2

2.OPERATION REQUIREMENT……..…3

3. ATTENTIONS……..3

4. WORKING PRINCIPLE……4

5. FRONT PANEL INSTRUCTION……..6

6. INSTALLATION……7

7. TECHNICAL DATA INSTRUCTION…… .10

8. INVERTER POWER ON PROCEDURES……..11

9. EMERGENCY SHUT DOWN PROCEDURES……..…11

10.INTERFACE INSTRUCTION……11

11.PACKING LIST……17

1．PRODUCT INSTRUCTION

The 360-200KW inverter is one kind of three phase inverter with full digitalization. It is a high intelligent product which is integrated with digitization, informatization and networking, it has the powerful information collection system, signal handling equipment, detection system and perfect protection system. The 360-200KW inverter is widely used in all kinds of electricity environment, personalized design, friendly man-machine conversation functions. The touch screen LCD display is the newest-developed power source display module by our company, which is using the most popular and the most intuitive graphical interface. Comparing with the normal LCD display module, this touch screen LCD display have no complicated operation steps, users can get the concerned information directly when press the simulation button on the display, the operation is easy to understand. And at the meantime the touch screen LCD display module has the real time clock and memorizer. It can record 256 event logs and other settings information.

2．OPERATION REQUIREMENT.

- Please read this handbook carefully before using this product
- This handbook must be read and kept by professional person.
- This handbook will be no detailed explanation for specific technology.
- This handbook is suit for the GSI series products.This handbook is for your reference when in the status of alarm or other important working status.

3．ATTENTIONS

3.1. Make sure the input, output, batteries and cables are not smaller than the concerned power degree.

3.2. Must be with the reliable earthing device

3.3. There is high voltage in the power source equipments, please do not open the boxes to check by yourself, Otherwise there will be the risk of electric shock. The operators must know the basic electrical knowledge and read the instruction carefully.

3.4. Do not dismantle any connected cable without allowance.

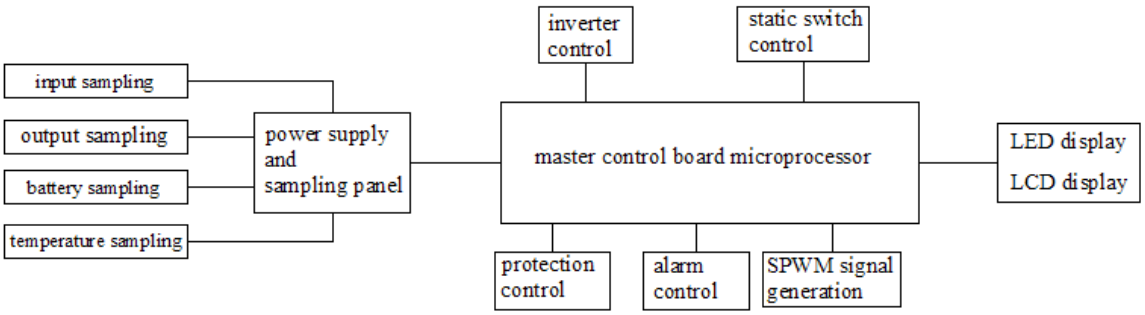
3.5. Because the product is very big and heavy, do not move freely or strong vibration and keep in the good ventilation.

3.6. Do not clean the dust with wet towels in the case of charged.

3.7. Batteries must be changed by the professional people, and the replaced batteries must be submitted to the special recycling mechanism processing. Battery is "TOXIC WASTE"

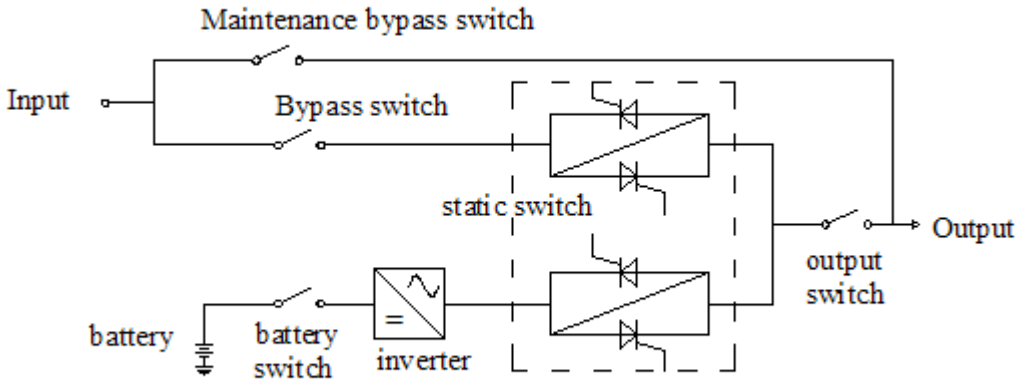
4、WORKING PRINCIPLE.

4.1 GSI Series inverters are highly integrated with the digital technology, can improve the MTBF and reliability of the system, the whole systems are controlled by an independent high-speed DSP chips which can ensure the stable system and reliable operation.



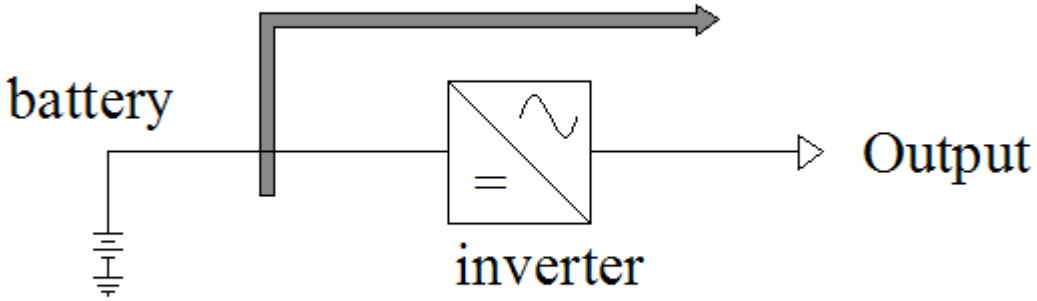
In addition to the above picture, other parts of inverter are including: inverter transformer, IGBT, silicon controlled, switch and etc.

4.2. Standard inverter principle



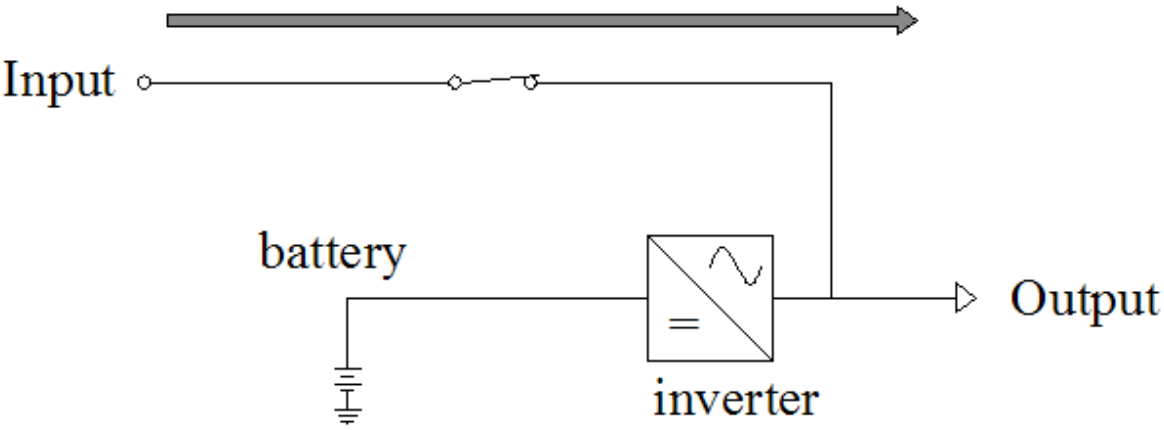
4.3.1. Normal inverter mode

Battery inverter output power supply

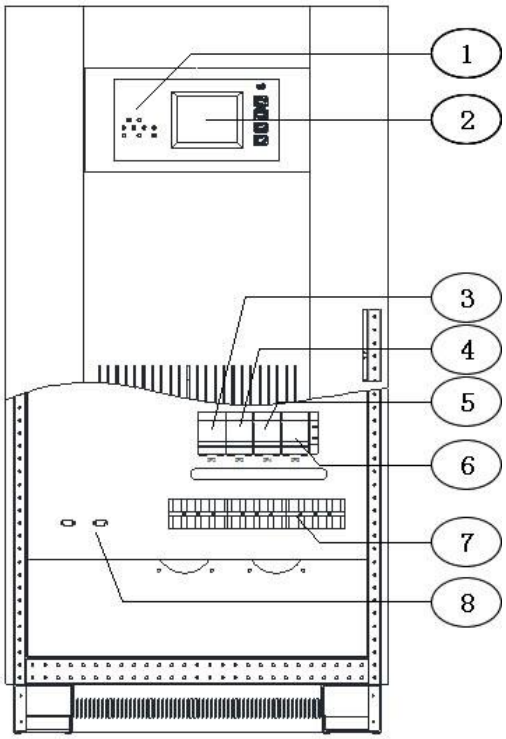


4.3.2. By-pass output working mode

With AC input but the inverter turns off (not working), the by-pass will supply the power for output.



5. FRONT PANEL INSTRUCTION



(1) LED status instructions--indicating the working status

(2) LCD display-- showing all kinds of data

(3) By-pass switch--controlling the by-pass input (A type)

(4) Output switch-- controlling the output

(5) Battery switch--controlling the battery input

(6) Repair the machine by-pass switch--controlling the AC by-pass (A type)

(7) Line bank-- connecting input, output, battery and earth line

(8) RS232 communication interface, dry contact interface and etc.

6、INSTALLATION

Please read the "OPERATION INSTRUCTION" part carefully before installation

6.1. Installation environment requests:

1 Temperature:-10℃~+40℃

2 Relative humidity:30%~90%

3 Altitude: under 1000mts; please decrease the capacity when higher than 1000mts.

4 Installation environment space requests（L×W×H）: referring to the specification chapter.

5 Floor stress requirements: referring to the specification chapter.

Make sure the indoor environment when install

6 No dust

7 With suitable indoor temperature: inverters can operate under temperature -10~40℃, but the temperature of turning on must be higher than 0℃. And the most ideal operating temperature is 25℃.

8 Need a good cooling system.

A.Nature cooling system: only suit for low heat and broad space

B. Artificial ventilation system: need to install the air conditioner when the casing temperature (TA) is higher than peripheral temperature (TE), need to increase the capacity of convulsions system when their temperature is close.

6.2. Checking before installation

- Open the packaging and take out the machine, check if any damage during the transportation.
- Open the front door, and make sure all the switches are disconnected at the same time.

✧ Warranty card

✧ Operation manual

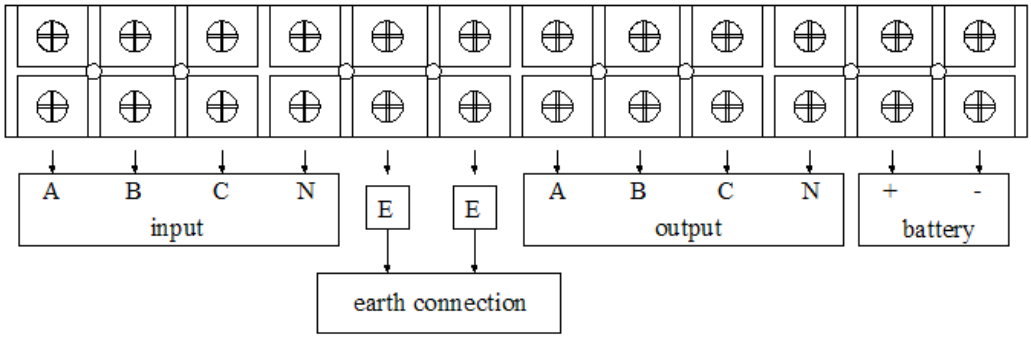
✧ Packing list (see the enclosed list)

6.3. Installation location

- Do not put anything on top of the machine
- Please leave enough space for repairing on front and top of equipment.
- Power line must be connected from the bottom of machine.

6.4. Line bank connection chapter:

6.4.1 GSI series inverter terminal diagram



All the switches must be disclosed before installation.

Connecting the Tri-phase line and center line as the above chart A,B,C,N; E will be connected to earth;+、- will be connected with the positive and negative of battery.

6.5. Inverter Tri-phase output system 10-80KVA cable specification: see below table (Unit: mm^2)

Capacity	Output				Battery	
	R	S	T	N	+	-
10KW	6	6	6	6	10	10
20 KW	6	6	6	6	16	16
30 KW	10	10	10	10	25	25
40 KW	16	16	16	16	35	35
60 KW	25	25	25	25	50	50

80 KW	35	35	35	35	70	70
100KW	50	50	50	50	70	70
120KW	50	50	50	50	95	95
160KW	70	70	70	70	120	120
200KW	95	95	95	95	200	200

Input cable size can't be smaller than the output cable size.

6.6. Connection inspection

Connecting all the input and output line, check the below matters:

If all the cables are connected correctly, the input, output and earth line are connected correctly to the line bank.

7、TECHNICAL DATA INSTRUCTION

Model	GSI 220 (240)				GSI 360 (384)					
Rated power（W）	10K	20K	30K	40K	60K	80K	100K	120K	160K	200K
DC voltage	220 (240) VDC(rated voltage)				360（384）VDC(rated voltage)					
Phase	Tri-phase+N+G									
Rated voltage	380VAC±1%（steady-state load），380VAC±3%（fluctuation of load）									
Rated frequency	50Hz±0.05%									
Frequency stability	＜±0.05%									
Frequency stability:when synchronous	＜±5%									
Crest factor	3：1									
Output wave	Pure sine wave									

THD	linear load＜3%, un-linear load＜5%									
Dynamic load voltage transient(0-100% jump)	＜±5%									
Recovery time	＜10ms									
Balanced load voltage	＜±1%；＜±5%（un-balanced load voltage）									
Overload capacity	125% 10min，150% 1min									
Inverter efficiency	>90%									
communication interface	RS232，（485, Network remote, optional）									
working temperature	0～40℃									
Relative humidity(non condensation)	30%～90%									
Max.altitude	<1000mts(decrease 1% when the hight increase every 100mts,max.5000mts)									
cooling method	forced cooling									
noise dB	45～55									
Case color	Black(optional)									
Input cable	bottom/front									
easy maintenance	front/top/left and right side all can be opened									
Weight(kg)	220	300	400	480	750	900	1000	1200	1400	1800
Dimension W×D×H（mm）	480*840*1228		765*640*1610		1040*815*1735			1105*900*1810		1490*1100*1910

*The above data is just for reference, if any differences please refer to actual products.

8．INVERTER POWER ON PROCEDURES

8.1. Turn on the DC input switch

8.2. Turn on the by-pass switch when the indicator light on

8.3. Turn on the output switch when the load can supply power

Remark: When inverter is connected to the battery, if you don't turn on the battery switch within 10s, you will see the battery low-voltage alarm message. Please press F3 to cancel this alarm message and execute the above procedure at the same time.

9. EMERGENCY SHUTDOWN PROCEDURES

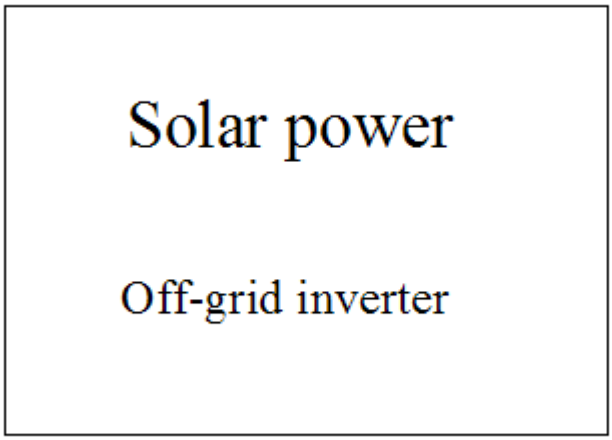
This procedure is just used in fire, electric shock, arc or other endangered situations. But it will cause no AC output risk.

——Make all the switches turn off

10. INTERFACE INSTRUCTION

10. 1 Standby Interface

Standby Interface is as picture 1. Inverter will show this figure when powers on. CPU will automatically cut off the touch screen backlight power when touch screen not be touched in interval four minutes. --This can extend the life of backlight, and back to the standby interface at the same time.(If inverter is under alarm status, touch screen will show the alarm message in priority, CPU will not cut down the touch screen backlight or back to standby interface before the alarm message removed.)

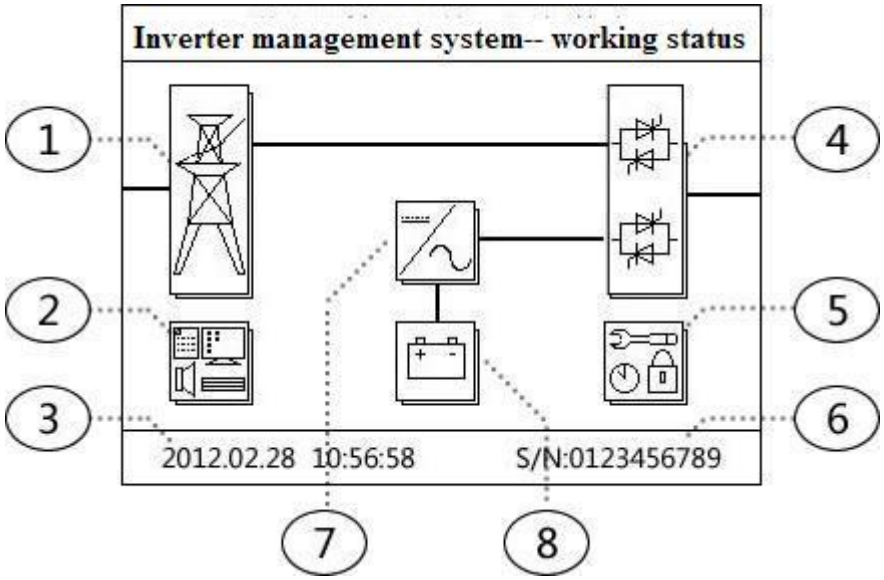


(picture 1)

10. 2 Flow chart display interface

Flow chart display interface is as picture 2. Touch anywhere of the screen under standby interface can enter into the flow chart display figure. You can find the basic information of the inverter and working status in this figure.

The means of each part are as followings



(picture 2)

⑴Mains key: Press this icon to check the input status and data of mains

⑵System information: Press this icon to check the system basic status and event log information.

⑶System time: real system date and time

⑷Static switch: Press this icon to check the output status and data.

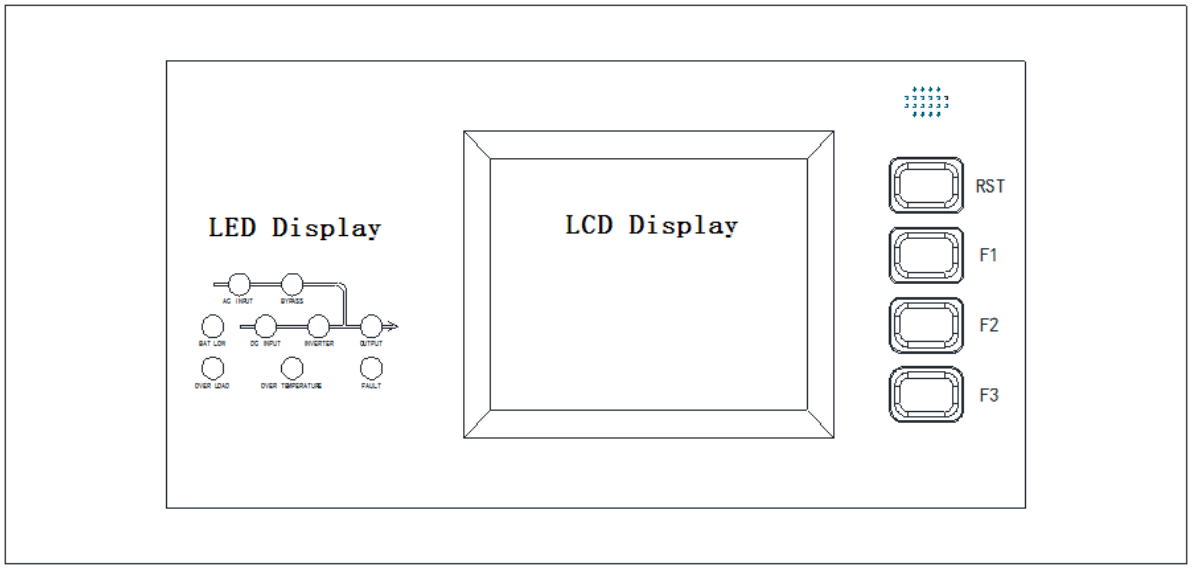
⑸System setting: Press this icon to revise the system time, language, clear log, change the password.

⑹Inverter serial number: Display the inverter's production serial number.

⑺Inverter: Press this icon to check the working status and data of inverter.

⑻Battery key: Press this icon to check the data of battery.

10．3 Display panel instruction



(picture 3)

（1） The LED instructions from left to right, from top to bottom (refer to the picture 3 above) are separately as follows: AC input, by-pass operation, battery low-voltage, DC input, inverter operation, AC output, overload, over temperature, fault.

（2） RST is the reset button of showing parts.

（3） F1:combination key

（4） F2: starting up the machine; the machine will be shutdown when press F1 and F2 at the same time

（5） F3 is the combination key of page up/down of the screen and sound attenuation, and pressing F3 can eliminate alarm when in the event of the trouble alarm.

10.4 Management display interface

The management display interface is as shown in picture 4. Press the system management module icon and input password when in a flowchart display interface, then you can enter into the management display interface. In this interface you can press the corresponding icon to make corresponding operation to inverter. The means of each parts are as follows:

⑴Clock setting: Touch this icon to enter into the system of clock setting interface and make settings for system clock.

⑵Password changing: change the passwords of system settings.

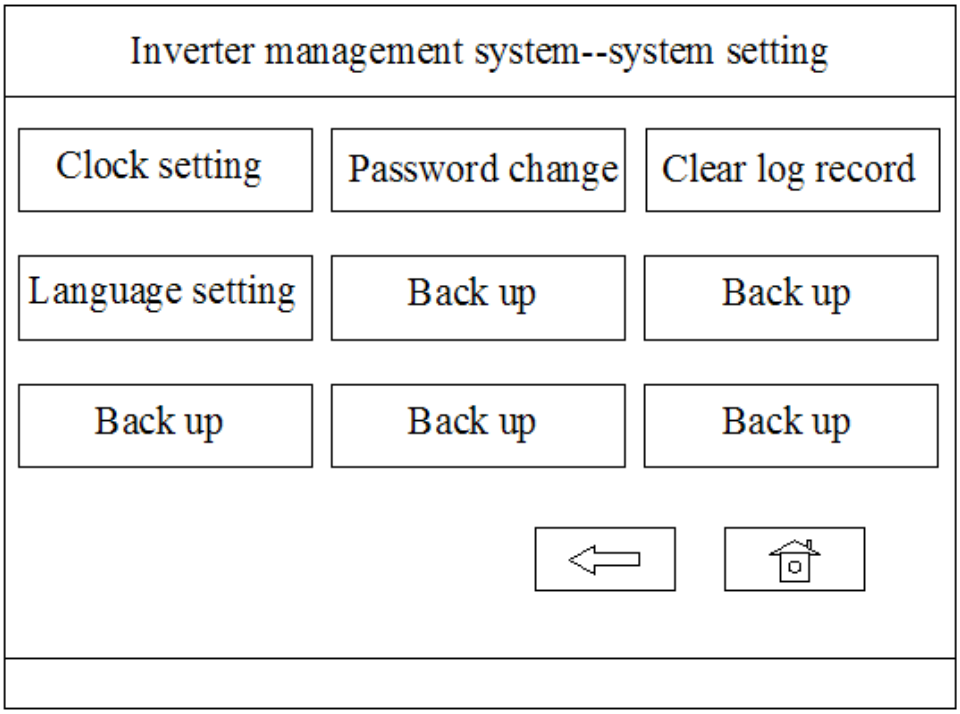
⑶Clear log record: Clear the system event log records

⑷Language settings: Change the system languages, support Chinese and English.

⑸Back up: Used for system upgrade and other uses

⑹Back icon (left): Press the icon to go back to the previous catalogue.

⑺Main screen icon (right): Press the icon to exit all the catalogues and back to the standby interface.



(picture 4)

10．5 Input password interface

When you enter the system setting interface, you need to input the password. The primary code is **1478**. The input password interface is as shown in picture 5. The means of each part in the picture are as follows:

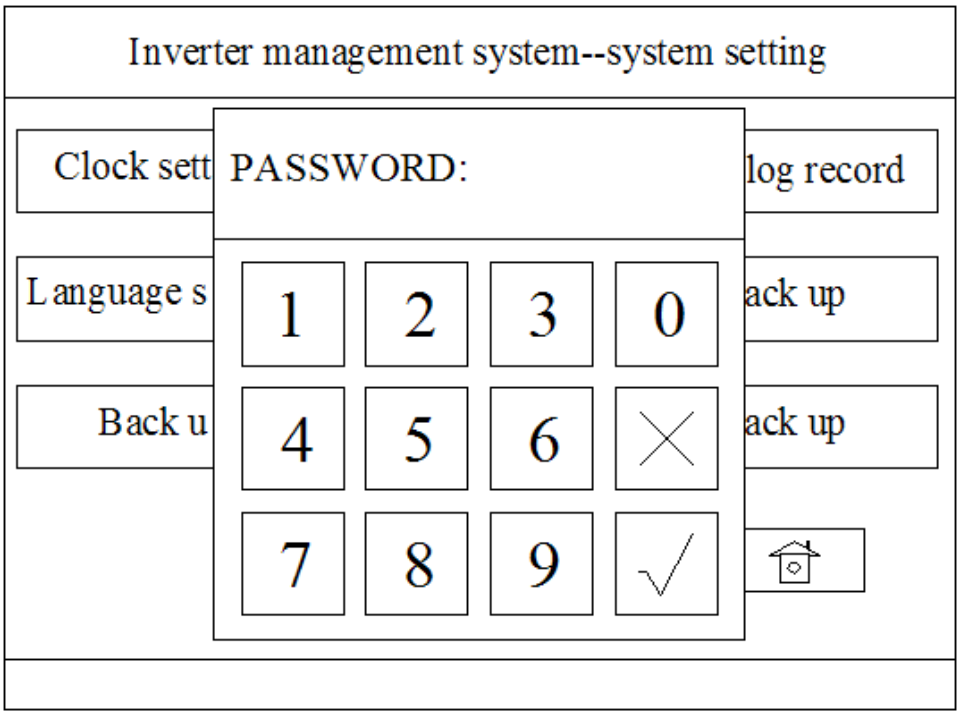
⑴Password: display the input password numbers. To maintain secrecy, the input digitals will be instead of '* '

⑵Numeric key: Input the corresponding number

⑶"√"： Press this key to finish the input.

⑷"×"： Exit the input password dialog box

System will execute the corresponding operation when you input the correct password.



(picture 5)

10.6 The event log query interface

Press the system log icon under the system information interface to enter into event log query interface. This interface displays all the events records of the system. Interface is shown as picture 6. The means of each part in the picture 6 are as follows:

⑴Number: the number of the events in memory, the latest is in the front and the serial number is the minimum.

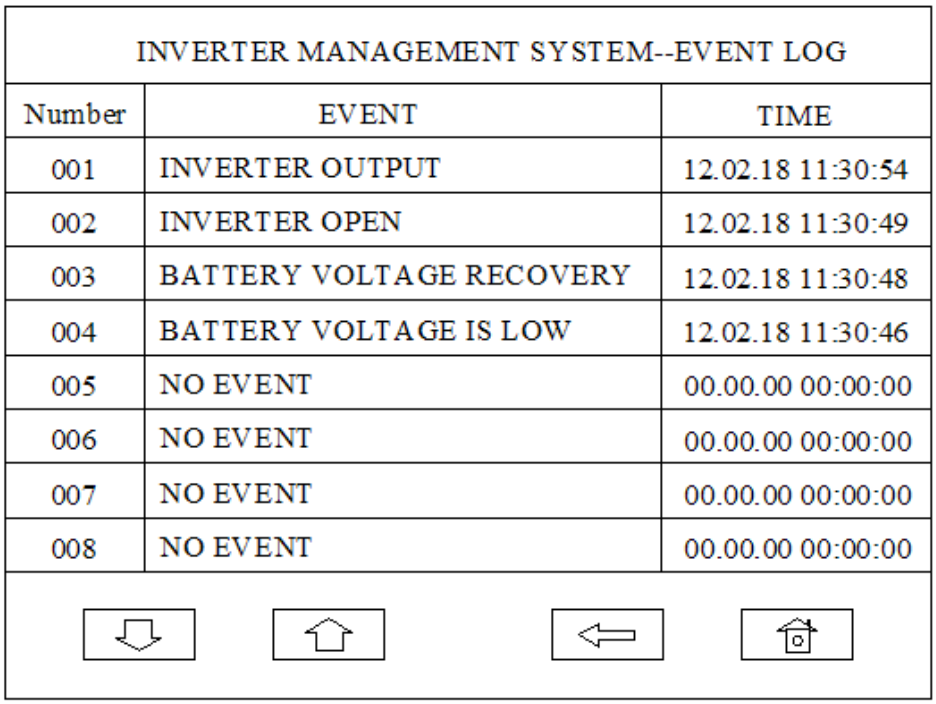
⑶Time: The records of time when events occurs.

⑷Turn Next page (Left 1) check 8 event logs in next page, total 256 items.

⑸Turn previous page (left 2): check 8 event logs in the previous page.

⑹Back icon (left 3):Press the icon to go back to the previous catalogue

⑺Exit key (left 4): Press the icon to exit all the catalogues and go back to the standby interface.



INVERTER MANAGEMENT SYSTEM--EVENT LOG		
Number	EVENT	TIME
001	INVERTER OUTPUT	12.02.18 11:30:54
002	INVERTER OPEN	12.02.18 11:30:49
003	BATTERY VOLTAGE RECOVERY	12.02.18 11:30:48
004	BATTERY VOLTAGE IS LOW	12.02.18 11:30:46
005	NO EVENT	00.00.00 00:00:00
006	NO EVENT	00.00.00 00:00:00
007	NO EVENT	00.00.00 00:00:00
008	NO EVENT	00.00.00 00:00:00

(picture 6)

10.7 ATTENTIONS

1. Please use your finger to touch the screen, avoid using fingertips or other prickles in order to prevent from scratching the touch screen surface, and affect the display.

2. Amendment parameters will be saved immediately in the machine forever after setting the parameters, and will not be affected by the system power on or not.

3. The recorded events will be saved in the machine forever and not be affected by the system power on or not. But if the event logs are exceed to the max, the latest logs will instead of the oldest ones. Users also can delete all the event logs in the system setting interface.

4. The system time is 24 hours a day, and will use the solar calendar date

5. Please adjust the system time and clear the system logs before first

using.

If can't understand the instructions or want to get more detailed help during operation, please contact with the agent or contact with us, we will sincerely for your service.

11. Attended list:

Packing list

NO.	NAME	QTY	REMARK
1	INVERTER HOST	1	
2	INSTRUCTIONS	1	
3	WARRANTY CARD	1	
4	KEY	2	