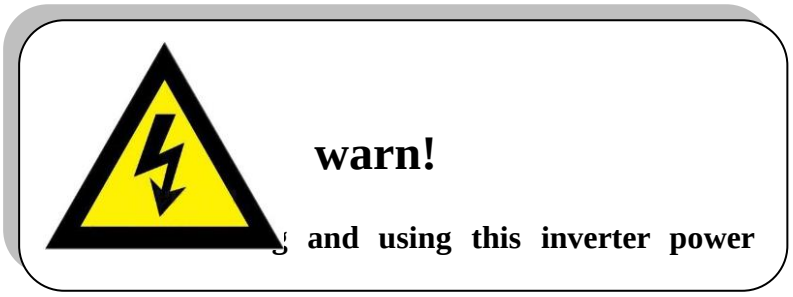
USER

Sinine wave inverter power supply

user's guide

catalogue

第1章　Safety instructions



warn:

Do not remove any housing or components of the inverter power supply. Internal parts of the equipment have a lethal voltage or a high energy hazard!

1.1 Safety instructions

There are high temperature and high pressure in this equipment, only trained qualified professional and technical personnel can install, operate and maintain.

During equipment installation, operation and maintenance, local safety specifications and relevant operating procedures must be observed, otherwise personal injury or equipment damage may occur. The safety precautions mentioned in the manual are only complementary to the local safety specifications.

The Company shall not assume any liability for violation of general safety operation requirements or violation of safety standards for design, production and use of equipment.

1.2 General safety precautions

1. Do not expose the inverter power supply in water, fog, snow, dust and other environment, to reduce the risk to prevent or cover the probability of ventilation duct. Do not install it in a poorly ventilated small space, or the power supply will overheat.

2. To avoid fire and shock, make sure all cables have good electrical characteristics and appropriate diameter. Never use damaged or undersized cable diameter.

3. Because there are parts inside the inverter power supply that can cause discharge or ignition, please do not place batteries, flammable goods or any items that need fire prevention around the inverter power supply

1.3 Safety precautions for battery-related operation

1. If your skin and clothes are stained with battery acid, wash them with soap and water immediately. If the acid splashes into the eyes, wash with cold water for at least 20 minutes and go to the hospital for examination.

2. Do not smoke or make an open flame near the battery or the inverter power supply.

3. Do not place the metal tool on the battery. The spark or short circuit can cause an explosion.

4. When operating lead-acid batteries, please do not wear rings, bracelets, necklaces, watches and other metal accessories. When the current of short circuit with the battery can produce high heat, which can melt the metal to produce serious burns.

An Overview of Chapter 2

2.1 Introduction

This series of special inverter power supply is for the requirements of communication system, railway system, power system and design of a new generation of intelligent special high-frequency inverter power supply, to meet the communication, railway, power application environment for power supply high quality and high reliability, and applicable to all sensitive to power interference, need reliable and purification of uninterrupted sine wave ac output system.

2.2 Functions and features

- This series is an intelligent special inverter power supply, using intelligent single-chip microcomputer control technology, using advanced control theory and mature and stable high-frequency inverter mode, can quickly respond to the changes of the external environment, real-time to provide uninterrupted high-quality AC output.
- Using advanced PWM + SPWM pulse width modulation technology, the output is pure sine wave with steady frequency and voltage, filter and low distortion.
- Advanced DC-AC electrical isolation technology, different from other pseudo-isolation modes, truly realizes the complete electrical isolation between DC and AC in all circuits, meets the isolation requirements of all application systems, and eliminates all possible interactive interference.
- Unique nonlinear control circuit, in any load situation can output pure sine wave, strong load capacity, good load compatibility.
- With the self-check function and the built-in bypass switch, it improves the continuity and reliability of the inverter power supply.

- It has the function of direct power boot, allowing the user to bypass the city output to power the load when there is no DC input, allowing to cut off the DC under the startup state, automatically switch to the city bypass, without affecting the power supply of the load, and facilitating the maintenance and replacement of the battery.

- With the adaptive function of city input 50Hz / 60Hz, it can track and remember the city input frequency and output the same frequency mode, so that the input frequency range of the inverter reaches 44Hz~66Hz, and the output is 50Hz or 60Hz, widely adapting to different power grid and equipment requirements.

- With intelligent unattended function, in the occurrence of DC voltage is too high or too low, mains power drop and other off output, when the DC voltage or mains return to normal, the power supply will automatically return to normal work, especially suitable for unattended communication base station.

- It has perfect protection function, with DC input buffer protection, DC input anti-reverse connection protection, DC input overvoltage protection, with overvoltage, overload, overtemperature, short circuit, inverter fault and other comprehensive protection measures.

- Advanced backirrigation noise suppression technology is adopted to interfere with other communication equipment sharing the DC screen. The AC input terminal adopts multiple filtering to eliminate the interference of the municipal power grid and meet the requirements of the main AC power supply of the application system.

- Provide two working modes: AC main supply and DC main supply (selected through the machine rear panel main supply mode selection switch), where:

- AC main supply mode: the inverter power supply is in the mains power, in the mains power bypass output mode, when the mains power transmission

  Automatic switch to inverter output mode during incoming failure.

DC main supply mode: the inverter power supply works normally in the inverter output mode, when the DC input fails,

Automatically switch to the mains bypass output mode.

- With rich LED / LCD status display and alarm signal display function, to provide a complete and amiable man-machine operation interface.
- Provide 5 sets of passive dry contacts respectively for DC input fault, AC input fault, inverter fault, load overload, and bypass output alarm respectively.
- Provide standard RS232 / RS485 communication interface, support real-time data communication function.

2.3 Technical Features and Parameters

2.3.1 Technical parameters

Table 2-1

rated capacity		1KVA	2KVA	3KVA	5KVA	6KVA	8KVA	10KVA
DC input	Rated DC input voltage (Vdc)	12V/24V/48V/72V/110V/220V						
	DC Input voltage range (Vdc)	(See Table 2-2 below)						
	Input the run-back murmur current	When the input voltage and load current are rated: noise current <10%						
AC input	Communication input range	220±20%						
	Input frequency range	50 or 60 Hz ± 10%						
Communication output	Inverter output voltage (Vac)	220V ±2%						
	Inverter output frequency (Hz)	50 or 60 Hz ± 1%						

	Inverter output current (A)	3.6	7.2	10.9	15.9	19.1	25.4	31.8
	Output power factor (PF)	0.8			0.7			
	Wavelveform distortion (THD)	Impetive load 3% and nonlinear load 5%						
	Dynamic response time (ms)	Loads ranged from 0 to 100% upon mutation with a response time of 30ms						
	Bypass transition time (ms)	≤8						
	overload capacity	100% to 125%, 10 minutes; 125% to 150%, 10 seconds; 150%, immediately shut off						
	inversion efficiency (95% resistive load)	≥85％						
	defencive function	DC input buffer, anti-reverse connection, overvoltage and undervoltage; output overload, short circuit, etc						
Interface communication	human-computer interface	LED+LCD						
	CI	Standard intelligent RS232 / RS485 communication interface						
	Dry junction output	The 5-way passive dry contact point						
work environment	insulation strength (DC input and AC output)	2000VAC, 1 min						
	Noise (1 m)	≤45dB						
	ambient temperature (℃)	-10℃～+45℃						
	relative humidity	0-90% with no condensation						
	Relative sea dial (m)	<1500m, 10% power reduction per 1000M increase						
Mechanical size	machine Wide and height (mm)	482.6×370×88			482.6×400×133.5		482.6×410×267	
	The fram weight (Kg)	11.8	12.4	12.8	17.9	18.5	33.2	33.8

	e type								

2.3.2 Input DC startup voltage and working voltage range

Table 2-2

rated voltage	12V	24V	48V	72V	110V	220V
DC start-up voltage (V)	10.5～14.5	21～29	42～58	63～88	95～130	189～262
DC working range (V)	10～15	20～30.5	40～60	60～91	90～135	180～272
DC low pressure alarm (V)	10.8	22	43	63	94	192

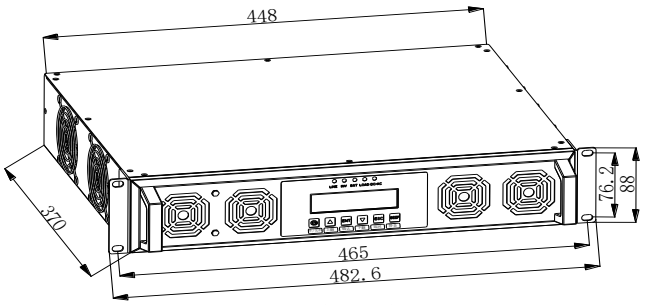
explain:

1. In order to protect the battery, only when the battery voltage is within the startup voltage range, the inverter can be normally started.

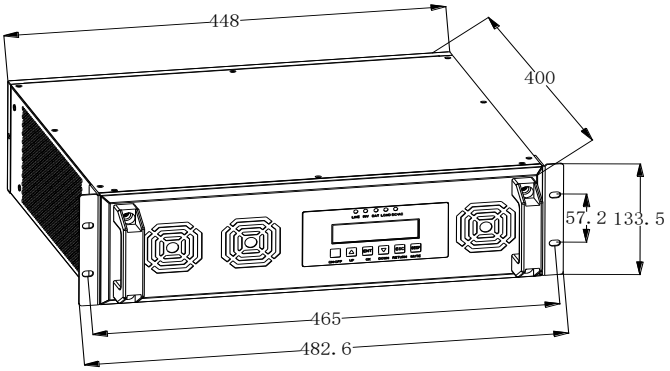
2. After entering the working state, as long as the battery is within the working voltage range, the inverter can work normally. When the battery voltage drops to the DC low voltage alarm point, there will be a DC low voltage alarm, and the inverter power will automatically shut down when the battery voltage drops to the lower working voltage.

Chapter 3 Product Introduction

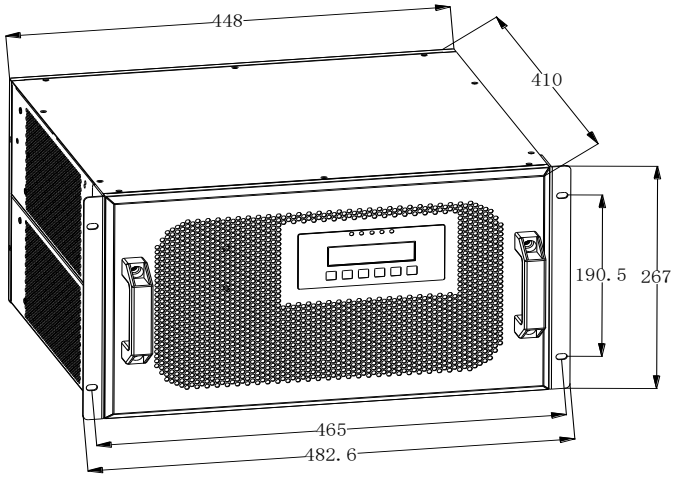
3.1 Mechanical dimensions of the inverter power supply



1-3KVA逆变电源机械尺寸图
单位：mm

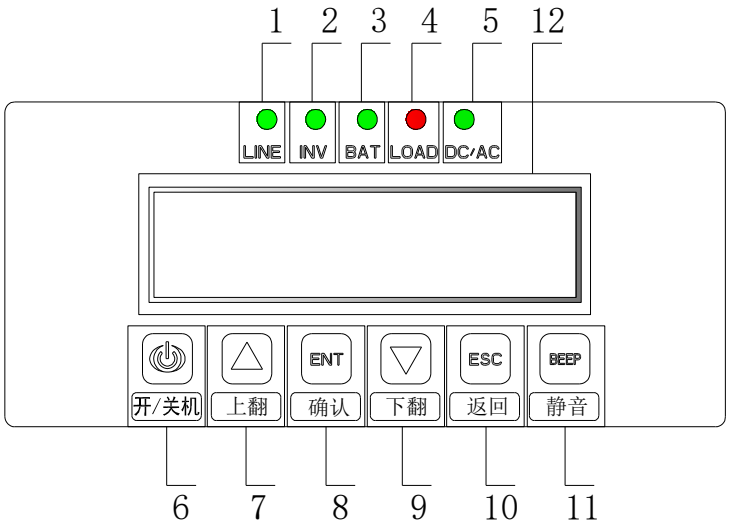


5-6KVA逆变电源机械尺寸图
单位：mm



8-10KVA逆变电源机械尺寸图
单位：mm

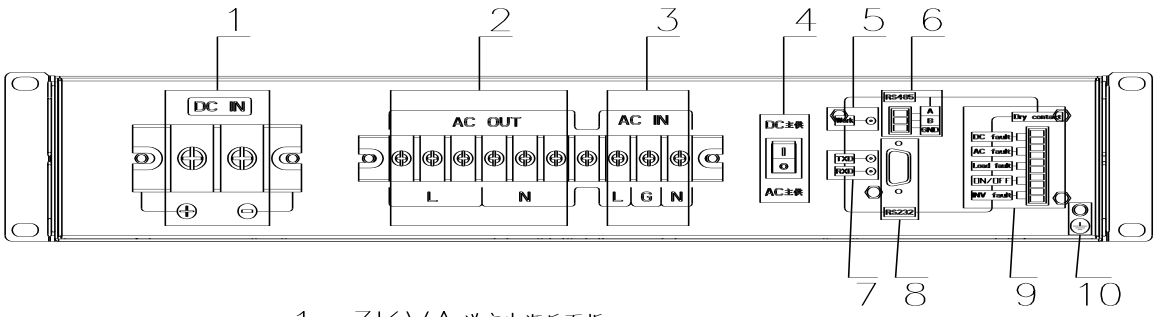
3.2 Introduction of the important components of the front panel of the inverter power supply



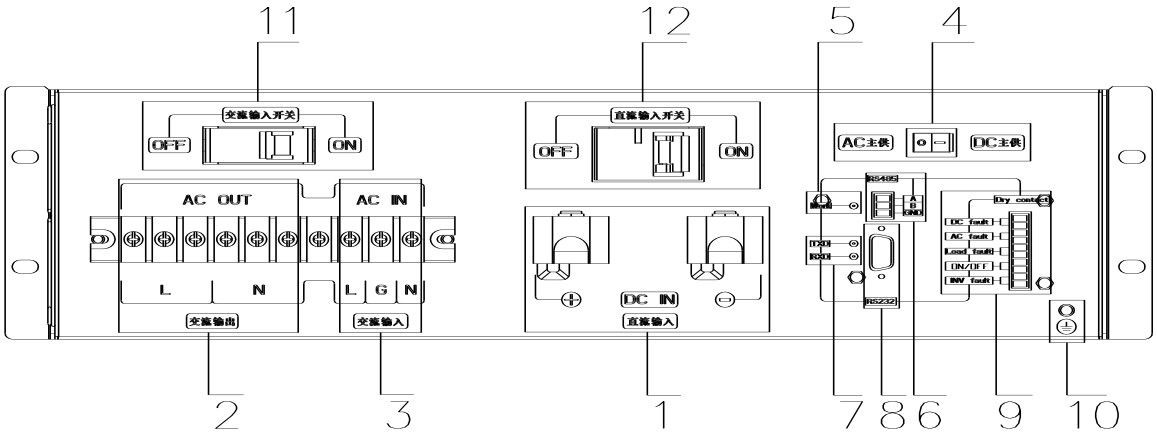
order number	name	use	remarks
1	LINE lamp	When the mains power input is normal, it is bright, and otherwise, it is extinguished	pilot lamp
2	INV lamp	Inverter work when bright, otherwise out	
3	BAT lamp	When the DC input is normal, it will out	
4	LOAD lamp	The load is overloaded or the module has no output, the load is not overloaded and the module has output	
5	DC/AC lamp	Inverter output when bright, bypass output when out	
6	Open / shut down key	Press the power-on / shutdown button above 2S to turn on and shut down	
7	Turn on the key	In the menu, you can turn the page up to add a count when setting the parameters	

8	Confirm the key	When you need to enter the next menu, select the corresponding menu item and press the confirmation key. After modifying the corresponding setting parameters, press the confirmation key	key
9	Turn down the key	In the menu, you can turn the page down to reduce the count when setting the parameters	
10	return key	Press this key when required to return to the previous menu	
11	Silent key	Keep pressing the 2S clock off / on to mute	
12	liquid crystal display	Real-time display of the inverter running data and running status	LCD

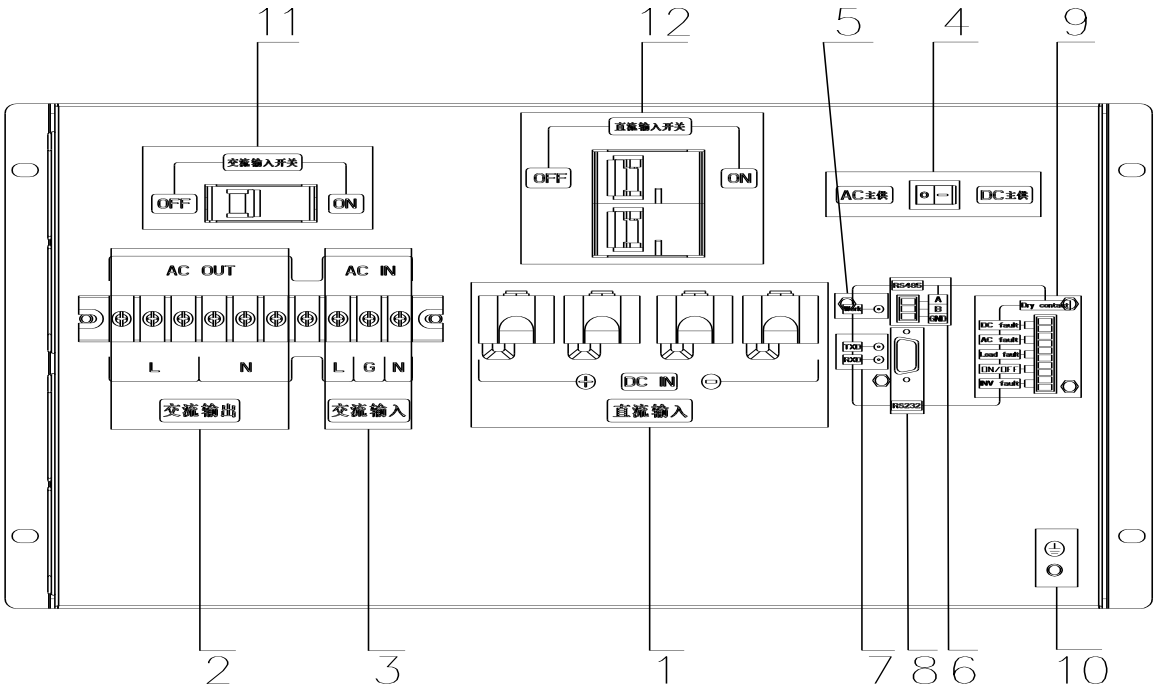
3.3 Introduction of the important components of the rear panel of the inverter power supply



1—3KVA 逆变电源后面板



5—6KVA 逆变电源后面板



8—10KVA 逆变电源后面板

order number	name	use
1	DC input wiring terminals	The DC input terminal, connected to the battery or DC power supply
2	The AC output wiring terminals	The AC output terminal, connected to the load
3	The AC input wiring terminals	The AC input terminal, connected to the AC power supply
4	Main supply mode selection switch	The switch in "1" indicates DC primary, and the switch in "0" indicates AC primary
5	The RS485 indicator lamp	The lamp flashes when the inverter external RS485 communicates effectively
6	The RS485 communication interface	Inverter external RS485 communication interface
7	The RS232 indicator lamp	This lamp flashes when the inverter communicates effectively with the external RS232
8	The RS232 communication interface	Inverter external RS232 communication interface
9	Dry contact connection terminals	Provide 5 sets of passive dry contact interfaces externally
10	Earthing screws	Ground end of the inverter housing
11	Communication input is empty	Control the AC input loop
12	DC input is open	Control the DC input loop

explain:

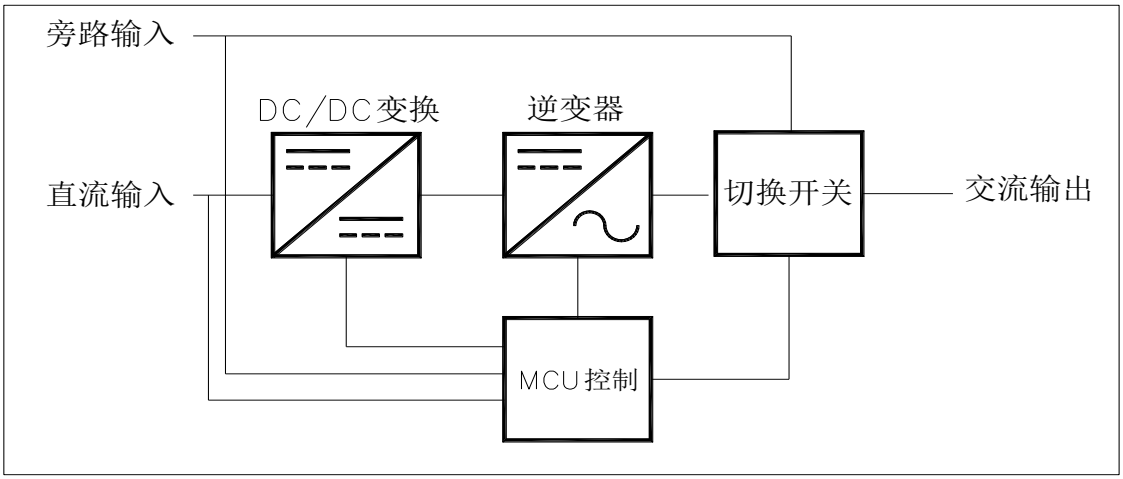
Main supply mode selection switch:

The switch is placed in the "AC mains supply" position, indicating that under normal mains input, the mains power supply to the load, namely the AC mains supply mode.

The switch is placed in the "DC main supply" position, indicating that under normal DC input conditions, the DC inverter is preferentially supplied to the load, namely the DC main supply mode.

Chapter 4 The Working principle of the Products

4.1 Working schematic diagram of the inverter power supply



4.2 Operation mode

4.2.1 AC Main supply mode

When the mains is normal, the mains is switched to output through the switch, and is directly supplied by the mains bypass. When the mains power fails, automatically switch to the inverter output to ensure the uninterrupted power supply of the equipment.

4.2.2 DC main supply mode

When the DC input is normal, the DC booster is switched to the output after the switching switch, and is directly supplied by the battery or DC. When the inverter fails, it will automatically switch to bypass and supply by mains to ensure uninterrupted power supply of the equipment.

warn! The inverter power output cannot be directly used in parallel or grid-connected use, otherwise the machine will be damaged.

Chapter 5: Introduction of the communication interface

5.1 Dry node signal interface

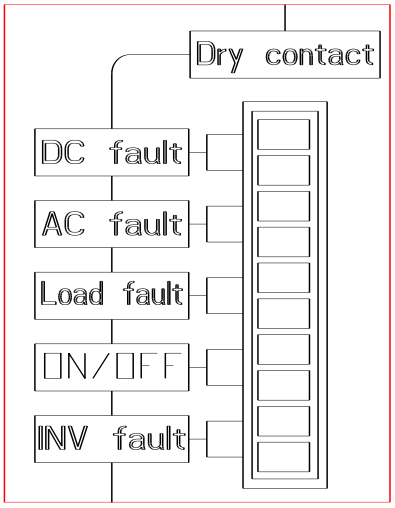


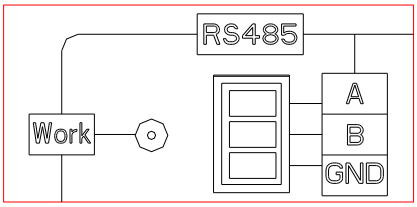
Table 5-1 Definition of the dry contact signal interface

silk-screen	definition	cause	explain
DC fault	DC fault dry node signal	Battery input voltage is abnormal	Normal: disconnect Abnormal: closed
AC fault	AC input fault dry node signal	The AC input voltage is abnormal	Normal: disconnect Abnormal: closed
LOADfault	Load fault dry contact signal	Load overload	Normal: disconnect Abnormal: closed

ON/OFF	Remote switch of dry node	Used to realize the switch machine	Close: boot Disconnect: Shutdown
I N V f a u l t	Inverter fault dry node signal	Internal fault of the inverter power supply	Normal: disconnect Abnormal: closed

Note: The contact capacity of each group shall not exceed 220V/0.5A.

5.2 RS485 terminal terminal



Description: The definition of the terminal corresponds to the identification, and the signal ground (GND) is not connected.

5.3 RS232 interface definition

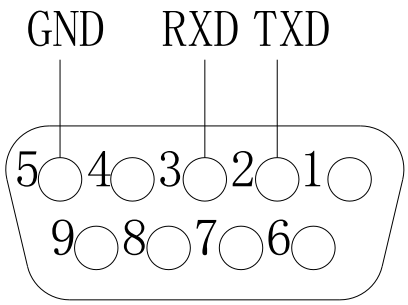


Table 5-2 Definition of the RS 232 interface

DB9 pin	definition	remarks
2	TXD	
3	RXD	
5	GND	

Description: The RS485 and RS232 communication interfaces are compatible with three communication protocols: Emerson Modbus Communication Protocol

(Modbus-EMU10), Modbus Communication Protocol (Modbus-TH), Avida communication protocol

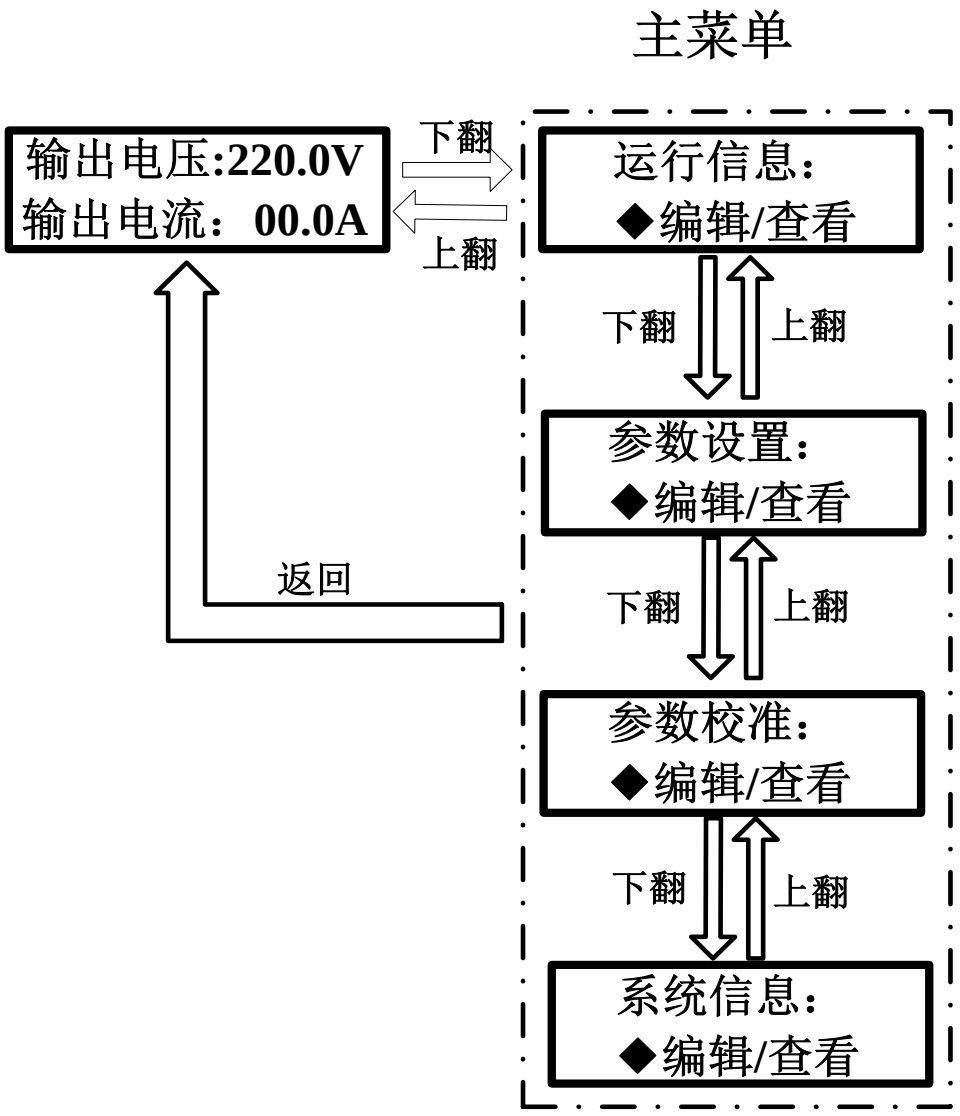
(AWD-V1)。According to the actual needs, users in the LCD system information display interface for the corresponding access

Letter protocol selection and related communication parameters, the default setting is Emerson Modbus

Letter protocol (Modbus-EMU10).

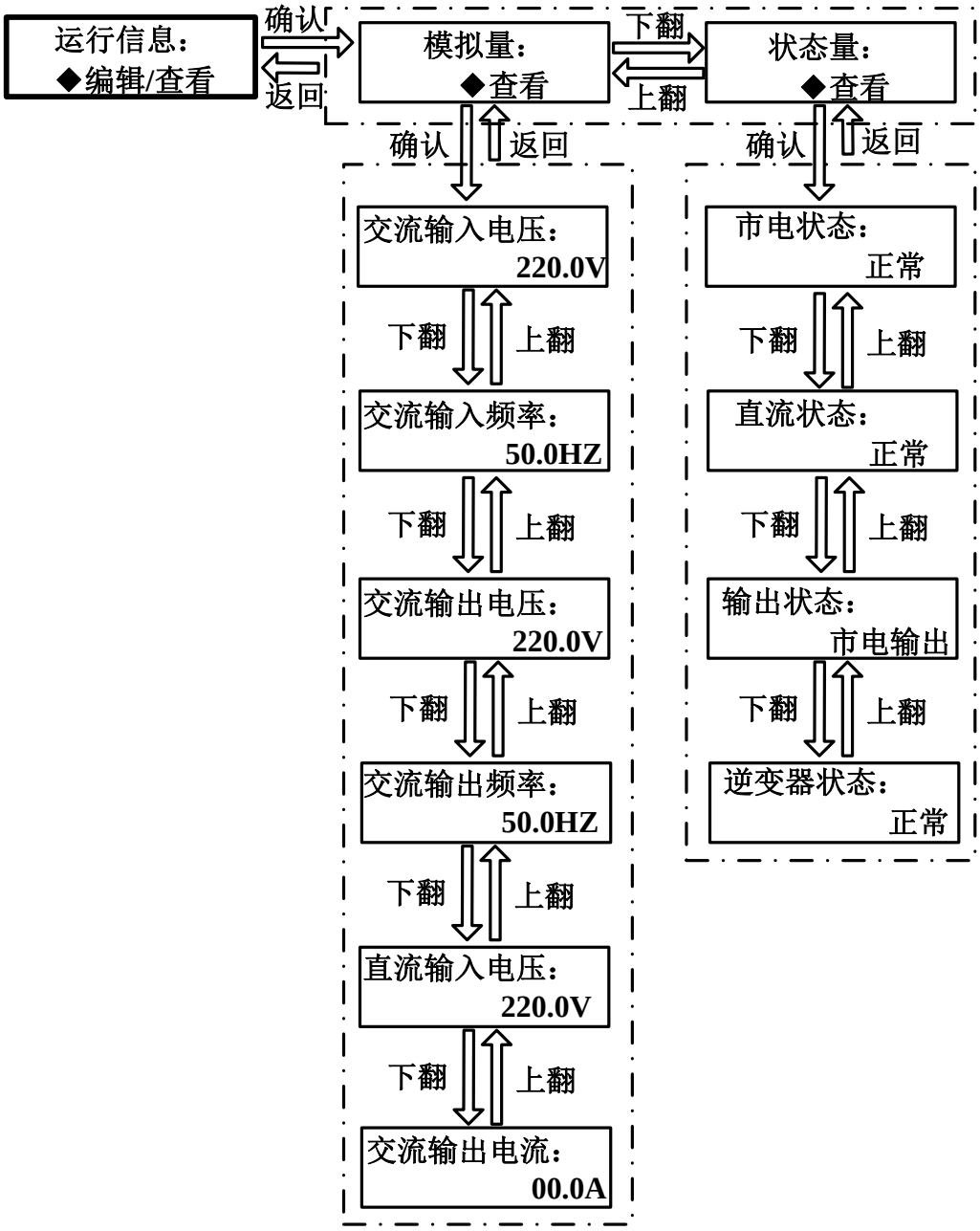
Chapter 6: Introduction of the LCD display interface menu

6.1 Structure diagram of the main interface

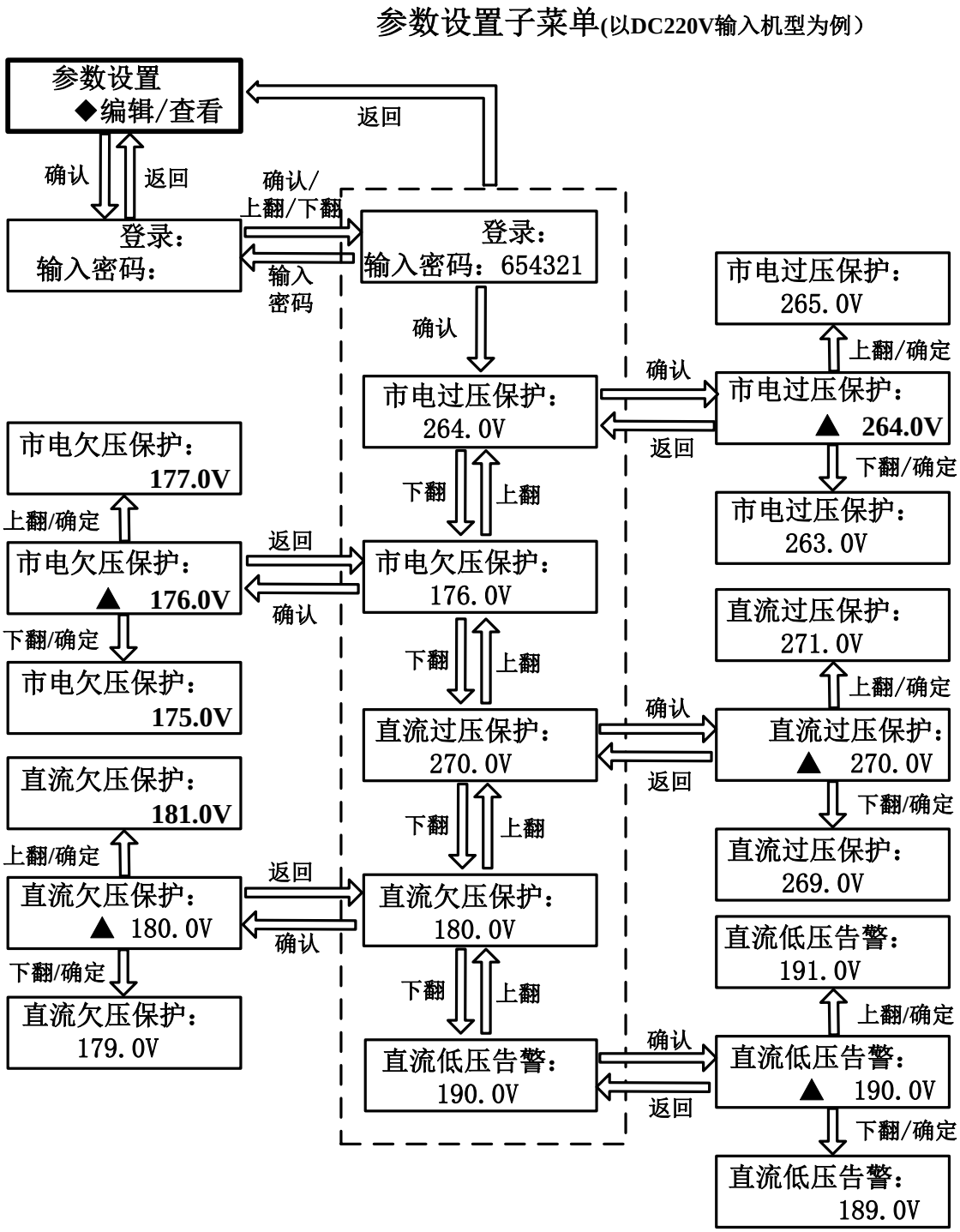


6.2 Structure diagram of the operation information interface

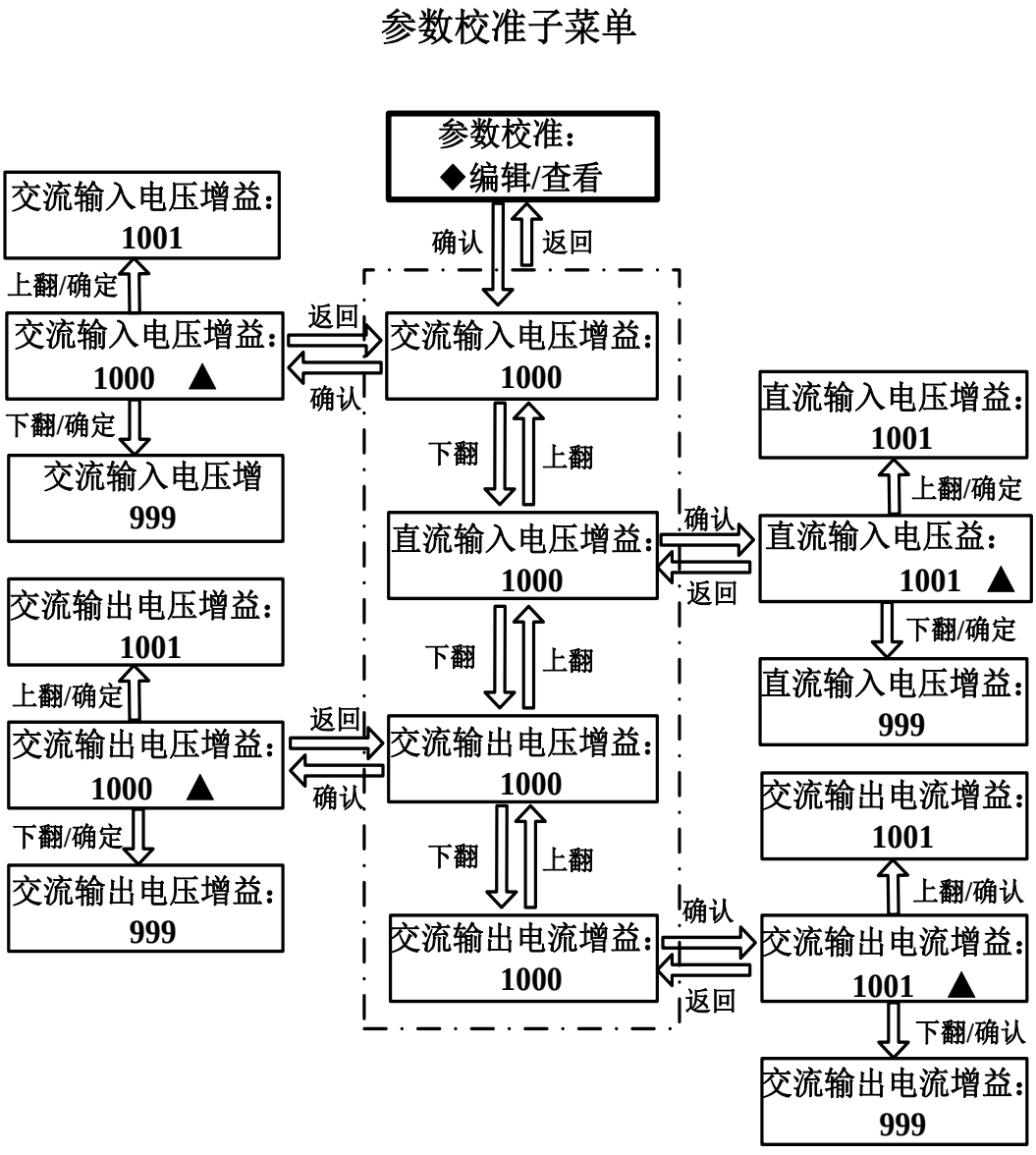
运行信息子菜单


运行信息：
◆编辑/查看
确认
返回
模拟量：
◆查看
下翻
上翻
状态量：
◆查看
确认
返回
确认
返回
交流输入电压：
220.0V
下翻
上翻
交流输入频率：
50.0HZ
下翻
上翻
交流输出电压：
220.0V
下翻
上翻
交流输出频率：
50.0HZ
下翻
上翻
直流输入电压：
220.0V
下翻
上翻
交流输出电流：
00.0A
市电状态：
正常
下翻
上翻
直流状态：
正常
下翻
上翻
输出状态：
市电输出
下翻
上翻
逆变器状态：
正常

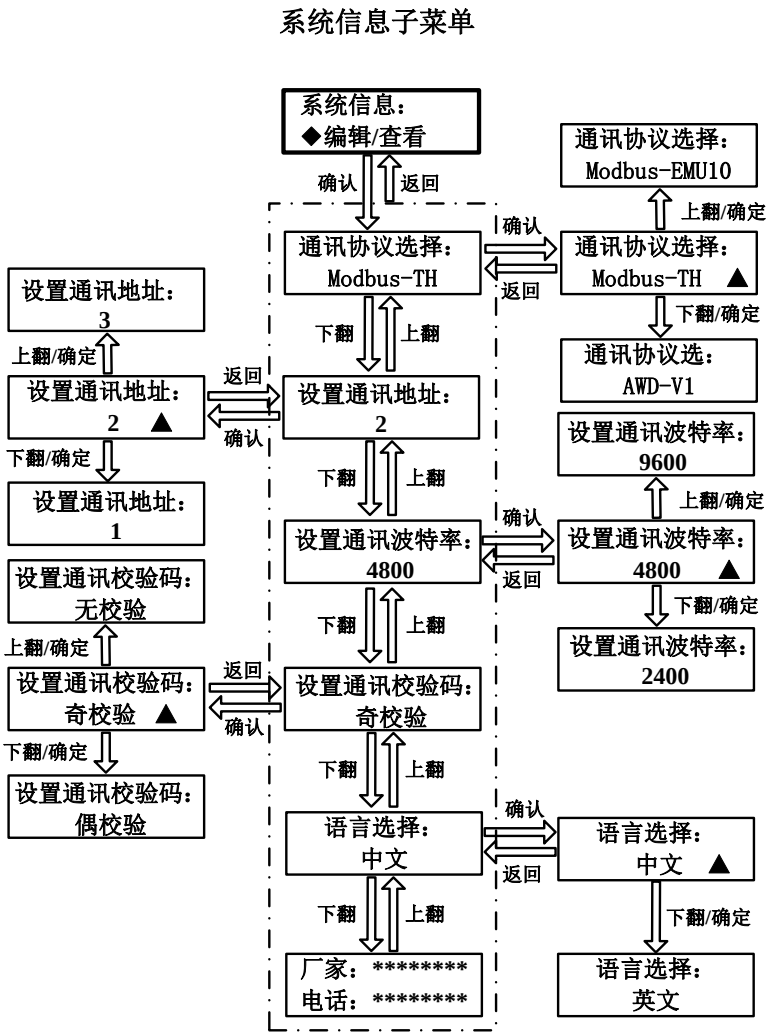
6.3 Parameter of of parameter diagram



6.4 Structure diagram of the parameter calibration interface



6.5 Structure diagram of the system information interface



Chapter 7: Installation and Commissioning

7.1 Installation and preparation

◆ The installation of this inverter power supply must be for the technicians with certain electrical knowledge and practical operation experience.

7.1.1 Tools, instruments, and data

◆ Multimeter, tool kit, instruction manual, cable.

7.1.2 Inspection of the installation environment

Environmental requirements

- Operating temperature: -10℃ ~ 45℃.
- Storage temperature: -40℃ ~ + 70℃.
- Relative humidity: 0% ~ 90%, no condensation.
- Cooling mode: air-cooled.
- Altitude level: 1500m, to meet the reduction requirements of GB3859.2-93.
- Verticality: no vibration bumps and vertical inclination not exceeding 5 degrees.
- Pollution grade: Class II.

The system shall be installed in clean air with sufficient ventilation, dry, low humidity and dust free conditions

In the operating environment of the gas. The recommended operating temperature is 20℃ ~ 25℃, and the humidity control is about 50%.

pay attention to:

No flammable, explosive or corrosive gases or liquids should be stored in the room. Do not be installed in a working environment with metallic conductive dust!

7.1.3 Connect the cables

AC input cable: users can select and make connection terminals;

AC output cable: users' own optional, and make connection terminals;

DC input cable: users choose it by themselves, and make connection terminals, in order to ensure the safety of electricity consumption, DC

Refer to Table 7-1 below:

Table 7-1

capacity	Wiring diameter			
	24V	48V	110V	220V
1KVA	10mm^2	6mm^2	2.5mm^2	2.5mm^2
2KVA	16mm^2	10mm^2	4mm^2	2.5mm^2
3KVA	25mm^2	16mm^2	6mm^2	4mm^2
5KVA		20mm^2	10mm^2	6mm^2
6KVA		20mm^2	10mm^2	6mm^2
8KVA		16mm^2*2	16mm^2	10mm^2
10KVA		25mm^2*2	16mm^2	10mm^2

7.1.4 Unpacking and inspection

The equipment shall be placed in the required storage environment, and the storage time should not exceed 3 months. During the installation, the equipment should be transported to the installation site before removing the outer packaging. At this time, all equipment and materials should be checked according to the packing list in the box, and all spare parts and accessories should be properly kept for subsequent installation and upgrading of the equipment and future maintenance.

7.2 Installation

7.2.1, rack-type model

- Put on the fixed frame

Place the inverter power supply in the right position of the 19-inch rack (note: at the bottom of the inverter power supply

Have a care device!) And fixed.

- tie cable

  - ✧ Connect the DC input line: connect the prepared cable line to the DC input terminal at the back of the inverter power supply, and pay attention to the wiring of the positive and negative poles.

  - ✧ Connect the AC input line: connect the prepared cable line to the AC input terminal (ACIN) of the rear panel of the inverter power supply, pay attention to the wiring of the zero line (N) and fire wire (L), and ground it (G).

  - ✧ Connect the AC output line: connect the prepared cable line to the AC output wiring terminal (AC OUT) of the rear panel of the inverter power supply. Pay attention to the wiring of the zero line (N) and the fire wire (L).

Note: No live operation, otherwise it will cause short circuit, ignition and other accidents, endangering personal and equipment safety!

Chapter 8: Use and Operation

8.1 Power on and down

8.1.1, the first boot

- Check whether the DC input voltage is consistent with the DC input voltage identified by the machine. If there is any inconsistency, do not send it to the DC current, otherwise it will cause damage to the machine! If there is any unknown, please consult the supplier or consult the manufacturer directly.
- Check whether the positive and negative polarity of the DC input wiring is correct, otherwise it cannot be started normally.
- Check whether the wiring of DC input, AC input and AC output is correct and reliable, and confirm that there is no short-circuit phenomenon.
- All the above checks are sent to DC and AC power supply respectively.
- Press the switch button on the machine to power on the machine.
    - First all the indicator lights turn on to start the self-test
    - Then the switching switch automatically switches the output AC supply load

8.1.2 Daily operation

- Daily boot only need to operate the switch button on the machine.
- When shut down, turn off the load, and then press the switch button (about 3 seconds) to turn off the machine.
- If it is not in use for a long time, please cut off the power supply at the ac and DC input end, and cut off the output connection for safety.

- If it is not used for a long time, please follow the procedure of the first boot.

8.2 Use Operation

8.2.1 Power-on

1. Confirm that the DC input, AC input and AC output connection are correct and reliable;

2. Press the switch button, the inverter power supply emits a "drop" sound and the indicator light in turn into the self-test state, indicating that the inverter power supply is on.

Self-check status: Before the inverter power supply is stable output, check whether the external environment and the inverter power supply itself is normal. If the inverter and municipal power parameters are normal, the inverter power supply will work stably in the mains or inverter state (the mains power supply is stable in the city power output, and the DC main power supply is stable in the inverter output).

Note: When the AC power is cut out, the battery direct current is supplied by the inverter load, and the battery discharges. When the battery voltage drops to the low voltage protection point, the inverter automatically shuts down to realize the undervoltage protection of the battery. In order to realize unattended, the next AC input power supply (about 2S) will trigger the inverter power supply to automatically start up.

8.2.2 Shutdown

When the inverter is in the boot state, continuously press the switch button (about 3 seconds), inverter

The output LED indicator (INV light) is off and the inverter power is off.

8.2.3 Mute

If the inverter power supply fails or abnormal during operation, the system will give a warning

Police, sound alarm can be closed through the mute key, the mute key is a touch.

Keep pressing the mute key (about 3 seconds), and the alarm tone will be turned off. The same alarm, not after the silence

Will automatically open, when a new alarm appears, regardless of whether the last alarm is in the silent state, since

Move on the sound alarm.

Notice of alarm:

First alarm: long ringing; applicable events: DC input fault, module fault, corresponding indicator light on.

Second alarm: 0.7S; applicable events: mains input fault, load fault, fan fault, overtemperature fault

Barrier, the corresponding indicator light is on.

The above alarms can be eliminated by the mute button on the front panel. If there is a new fault, continue to alarm.

8.2.4 Operating status

1. Only DC input, no mains input, DC inverter output, INV lamp, BAT lamp, DC / AC light on, alarm sound 0.7S, can be mute through the BEEP key.
2. Only mains input, no DC input, mains bypass output, LINE light on, alarm sound always sound, can be mute through the BEEP key.
3. When DC input and mains input are normal, inverter and mains input are normal, and LINE lights, INV lights and BAT lights are on with no alarm sound.
4. The LOAD lamp flashes when the fan fails. For overtemperature failure, the 5 lights of LINE, INV, BAT, LOAD, and DC / AC will flash together.

Note: The alarm function of fan fault and overtemperature fault is optional, but not for the conventional machine.

8.2.5 LCD display panel operation

For the LCD display panel, see Introduction to the LCD display interface menu in Chapter 6.

Appendix: Packaging, Transportation, and Storage

abstract

This appendix describes the packaging, transportation, and storage of the inverter power supply.

A.pack

Packaging in carton, and the packing list is shown in the following below

order number	name	unit	quantity
1	user's guide	stem or root of plants	1

2	work certificate	fix	1
3	inspection report	portion	1

B.transport

In the process of handling equipment, should be light, not to severe impact. Moisture and rain should be prevented during transportation.

C.memory

Storage temperature: -40℃ ~ + 85℃.

Storage humidity: 90% relative humidity.

Storage period: 12 months.

Storage site: no corrosive gas, dry, airborne indoor.

Quality assurance card

Sine-wave inverter power supply must be strictly checked to ensure good quality before leaving the factory. The company guarantees the user that the machines listed in the card have good performance and the parts are complete. A one-year free warranty service is provided as follows:

(1) During the one-year warranty period of the purchased machine, if the parts are damaged or faulty, the technical personnel of the company shall confirm that the machine is under normal use, and the free repair and replacement of the parts will be provided, and the damaged parts shall belong to the company.

(Ii) The machines listed in the warranty card will automatically expire under the following circumstances.

1、 Change of the company's trademark;

2、 Damage caused by wrong operation, negligent use and irresistible factors;

3、 Non-company technical personnel unauthorized start repair, modification or alteration, remove the machine number or seal;

4、 Do not according to the installation instructions provided by the original factory.

（三）Please deposit this card and present this card and purchase receipt (invoice) to the technician during repair.

User data sheet

User unit	**contacts**
customer address	**contact number**
Distribution unit	**zip code**
product model	**This machine number**
Purchase time	**Handmen**

Maintenance record sheet

date	Maintenance type	abstract	maintenance man	User signature

Note: Please fill in the user information, copy one and stamp the official seal and immediately send it back to the Marketing Department for archiving.

address:

telephone:

portraiture:

zip code:

URL: