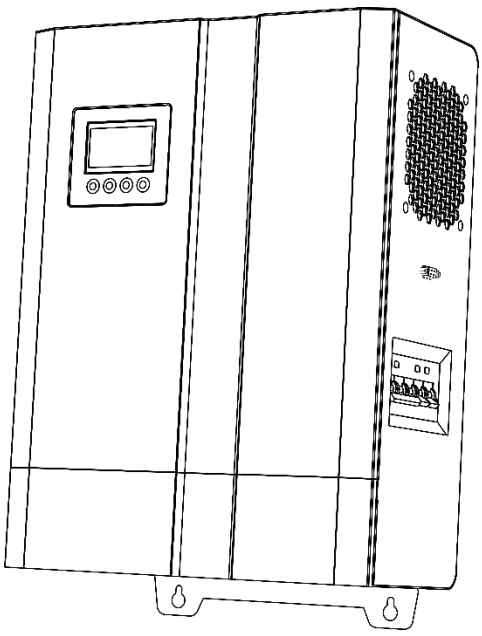
User Manual



FTC series 3K

Dear consumer

Thank you very much for choosing our products! Before using this product, please read this manual carefully, including installation, use and troubleshooting and important information and advice. Please properly keep this manual!

Catalogue

1 Product Features

● Double CPU intelligent control technology, excellent performance.
● The grid mode /battery mode could be set, application flexible.
● Charge current/battery type could be set, convenient and practical.
● Intelligent fan control, safe and reliable.
● Pure sine wave AC output, and be adapt to all kinds of loads.
● LCD display equipment parameter in real-time, operation status be clear at a glance.
● Output overload, short circuit protection, various of automatic protection and alarm warning.

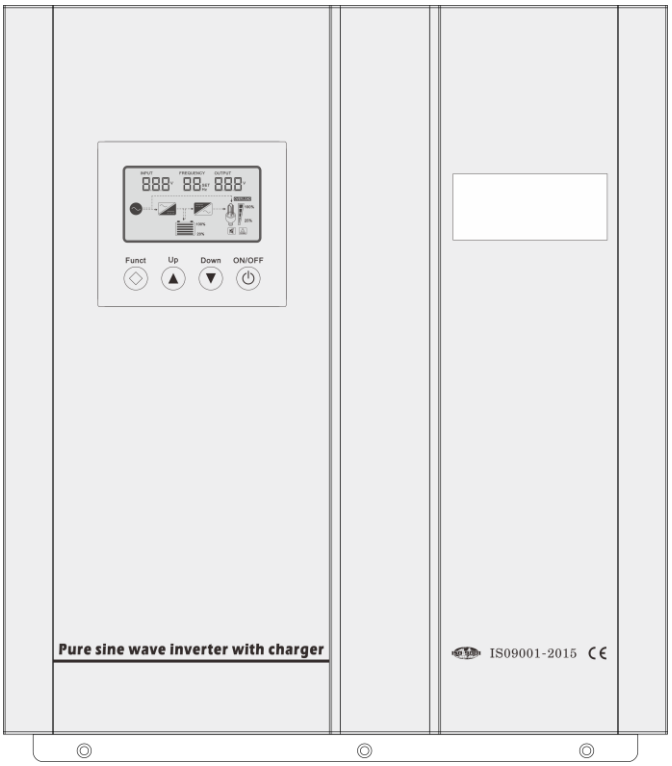
2 Installation and Storage instructions

2.1 Unpacking inspection
2.1.1 Open the package, check whether the product accessories is complete, including: a host controller, a user manual.
2.1.2 Check whether the device is damaged in transit, if you find damaged, please do not start machine and inform your shipper and dealer.

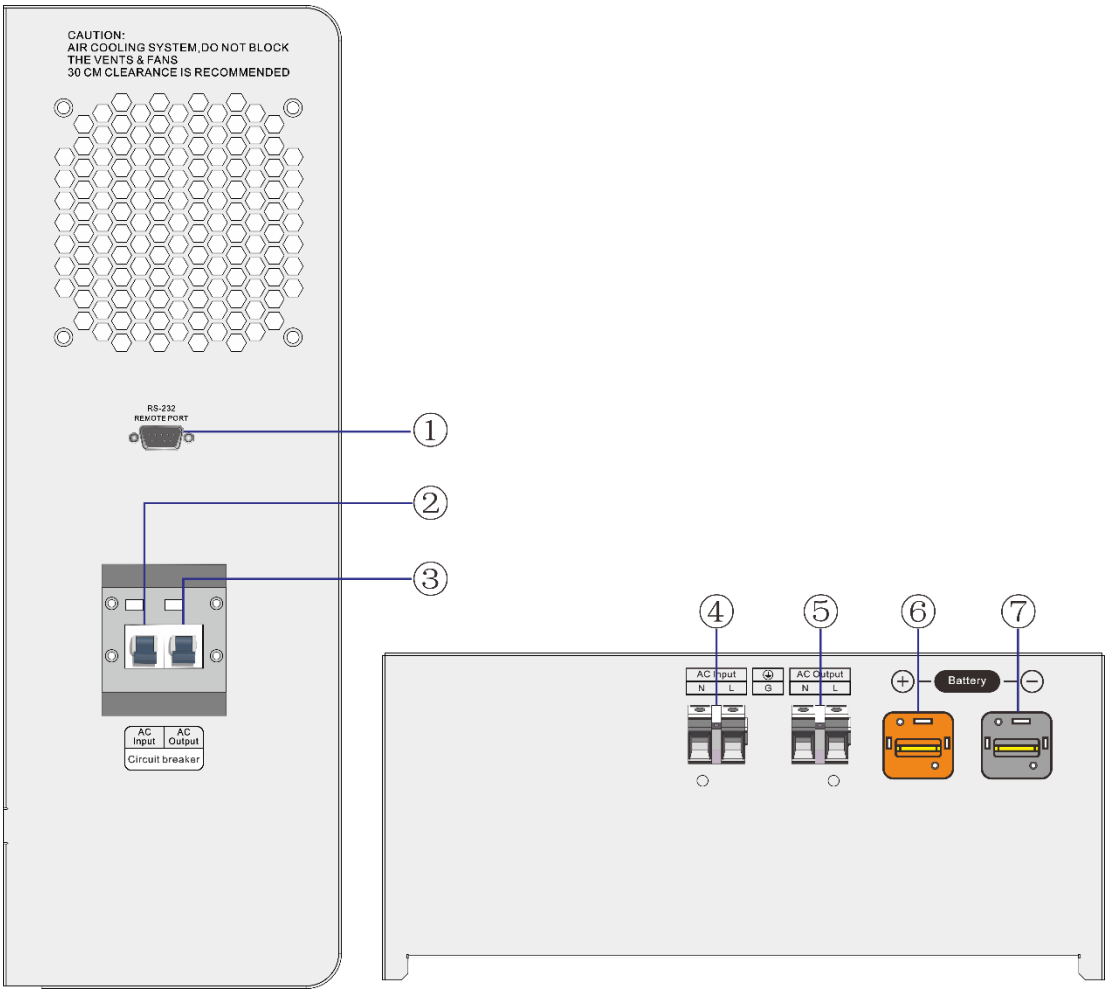
2.2 Installation and Storage matters need attention
2.2.1 Install equipment should be operated by a professional personal, or performed by the local distributor.
2.2.2 During transportation, it need taking appropriate protective measures. When the equipment is moved to high temperature environment from low temperature environment may appear water, in order to ensure safety so it must be completely dry before use.
2.2.3 Do not expose the device to damp, flammable and explosive, dust mass and harsh environments; Do not cover and blocking the air vents, so that having good heat dissipation.
2.2.4 Battery switch on backboard should be under off state when themachineis not be used for a long time.

3 Equipment appearance graphical representation guide

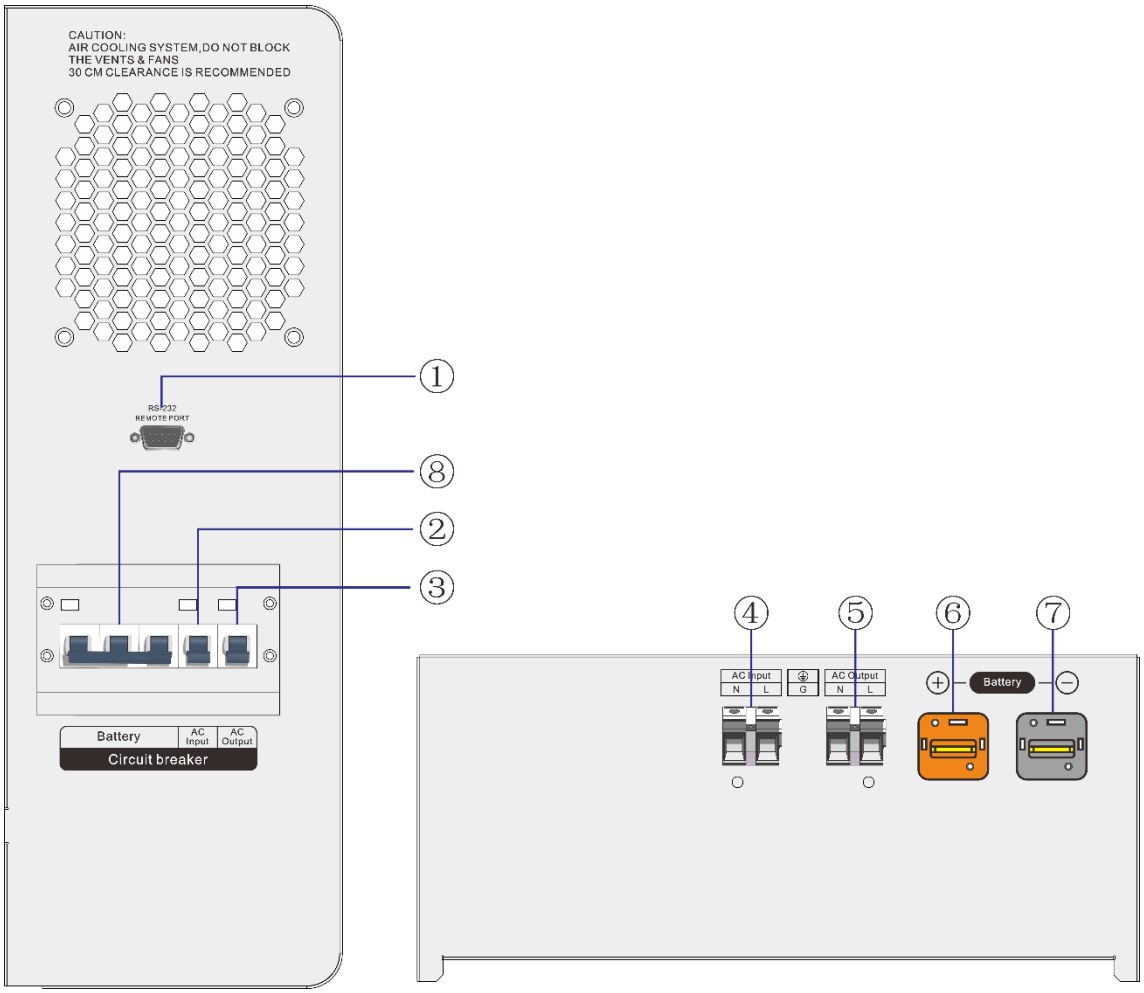
3.1 Front panel icon description



3.2 3KW 12V Side panel icon description



3.3 3KW 24V-48VSide panel icon description



Introduction：

① --RS232

②-- AC Input switch

③-- AC Output switch

④-- AC Input terminals

⑤-- AC Output terminals

⑥-- Battery terminal positive terminal

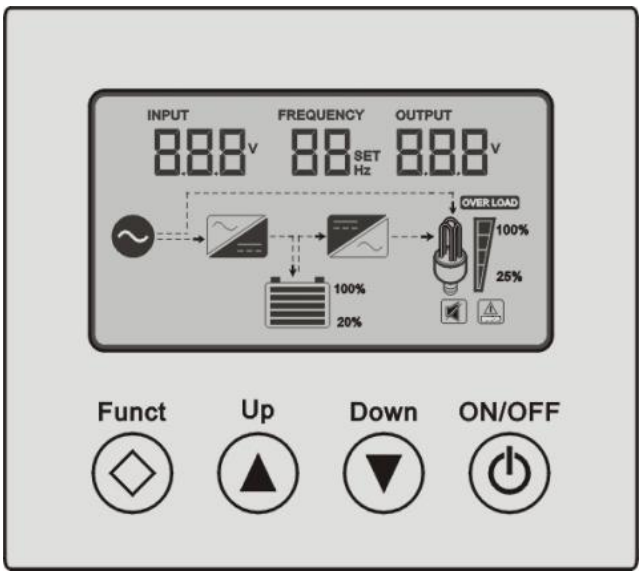
⑦-- Battery terminal negative input terminal

⑧-- Battery switch

4 Operating instructions

4.1 Panel LCD display graphical representation instruction

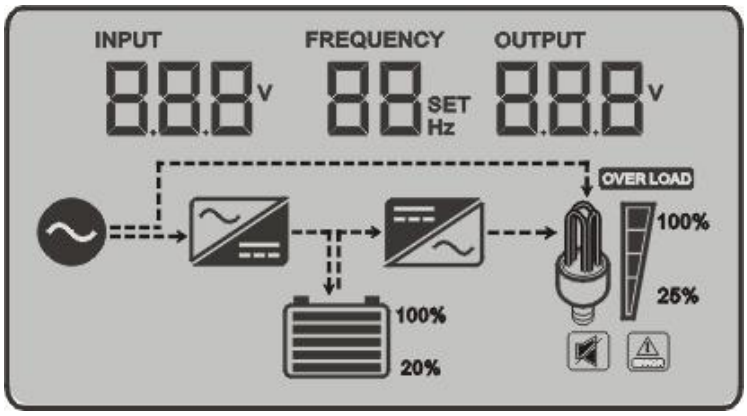
4.1.1 LCD display and function keys interface can display the equipment working status, such as: input/output voltage, frequency, grid mode, inverter mode, battery capacity, load capacity, alarm warning etc.



4.2 Instruction of keys

Function keys		Instruction
◇	Mute/ function key	Sound attenuation with short press; enter into equipment working mode with long press
▲	Function key/ multiply key	Enter into charge current setting with long press 5s; increment with short press
▼	Function key / Reducing key	Enter into battery mode setting with long press 5s; decrement with short press
⏻	ON/OFF	Single bond ON/OFF control

4.3 LCD display instruction



Equipment parameter instruction		
LCD display	Function instruction	
INPUT 888 V	AC input voltage parameter	
FREQUENCY 88 Hz	AC output frequency parameter	
OUTPUT 888 V	AC output voltage parameter	
88 SET	Equipment working mode selection	
	Grid priority mode	Battery priority mode
	01 SET	03 SET

Battery icon instruction		
LCD display	Status	Battery voltage values/12V；*A（pcs）
	Twinkle	＜10.5V；*A
	Lighten	10.5～11.2V；*A
	Lighten	11.2～11.6V；*A
	Lighten	11.6～12.1V；*A
	Lighten	12.1～12.5V；*A
	Lighten	＞12.5V；*A

Load icon instruction				
LCD display	Function instruction			
	Output overload reminder			
	0%～25%	25%～50%	50%～75%	75%～100%
				

Working mode icon instruction	
LCD display	Function instruction
	Grid input icon
	AC-DC icon
	DC-AC icon

Buzzing icon instruction		
	Lighten	Prohibit buzzer tweet
	dark	Start buzzer tweet

Fault/abnormal icon instruction	
	Fault/Abnormal reminder

4.2 Panel key/LCD setting instruction

Function key		Operating instructions	
	Mute key	Long press for 1 second, buzzing 1 time, start mute state; Long press for 1 second again, buzzing 2 times, close mute stage;	
	Functi-on key	Long press for 5s, 01,03 mode can be recurrent selection, it will take effect after restarting；	
		Grid priority mode	Battery priority mode
			

<table>
<tr><td rowspan="3">  </td><td rowspan="3">Functi-on key</td><td colspan="7">Long press for 5s，LCD panel 88 SET will display relative charge current regulation C+, press ▲ increase charge current，press ▼ decrease charge current</td></tr>
<tr><td>C0</td><td>C1</td><td>C2</td><td>C3</td><td>C4</td><td>C5</td><td>C6</td></tr>
<tr><td>0A</td><td>5A</td><td>10A</td><td>15A</td><td>20A</td><td>25A</td><td>30A</td></tr>
<tr><td rowspan="9">  </td><td rowspan="9">Functi-on key</td><td colspan="7">Long press for 5s，LCD panel 88 SET will display charge voltage regulation U+, press ▲ increase charge voltage from U0 to U7，press ▼ decrease charge voltage from U7 to U0;</td></tr>
<tr><td>U0</td><td colspan="3">Gel U.S.A</td><td colspan="3">13.7V</td></tr>
<tr><td>U1</td><td colspan="3">A.G.M.1</td><td colspan="3">13.4V</td></tr>
<tr><td>U2</td><td colspan="3">A.G.M.2</td><td colspan="3">13.7V</td></tr>
<tr><td>U3</td><td colspan="3">Sealed lead Acid</td><td colspan="3">13.6V</td></tr>
<tr><td>U4</td><td colspan="3">Gel European</td><td colspan="3">13.8V</td></tr>
<tr><td>U5</td><td colspan="3">Open lead acid</td><td colspan="3">13.8V</td></tr>
<tr><td>U6</td><td colspan="3">Calcuim(open)</td><td colspan="3">13.6V</td></tr>
<tr><td>U7</td><td colspan="6">De sulphation cycle 15.5 for 4 hrs</td></tr>
<tr><td rowspan="2">  </td><td rowspan="2">ON/OFF key</td><td>Starting up</td><td colspan="6">Long press for 2s, buzzing 1 time, equipment start output</td></tr>
<tr><td>Power off</td><td colspan="6">Long press for 2s, Long press for 2,after internal relay energized, the equipment power off output</td></tr>
</table>

4.3Working mode instruction

Icon	Working mode	Running state
	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 distortionetc, inverter can supply high quality power via inner modules to loads
	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.

4.4 Alarm warning instruction

Equipment normal operation	Buzzing forbid	Default state, no buzzing
	Buzzing open	Buzzer alarm 4 time per 15 seconds indicate the equipment under battery pack inverter mode.
Battery pack high voltage alarm	Buzzer alarm 4 times per second, indicate high voltage	
Battery pack low voltage alarm	Buzzer alarm 2 times per second, indicate low voltage	
Over temperature alarm	Buzzer alarm 2 seconds pause 1 second	

4.5 Electric generator connection announcements:

If connect electric generator, it needs operate as below.

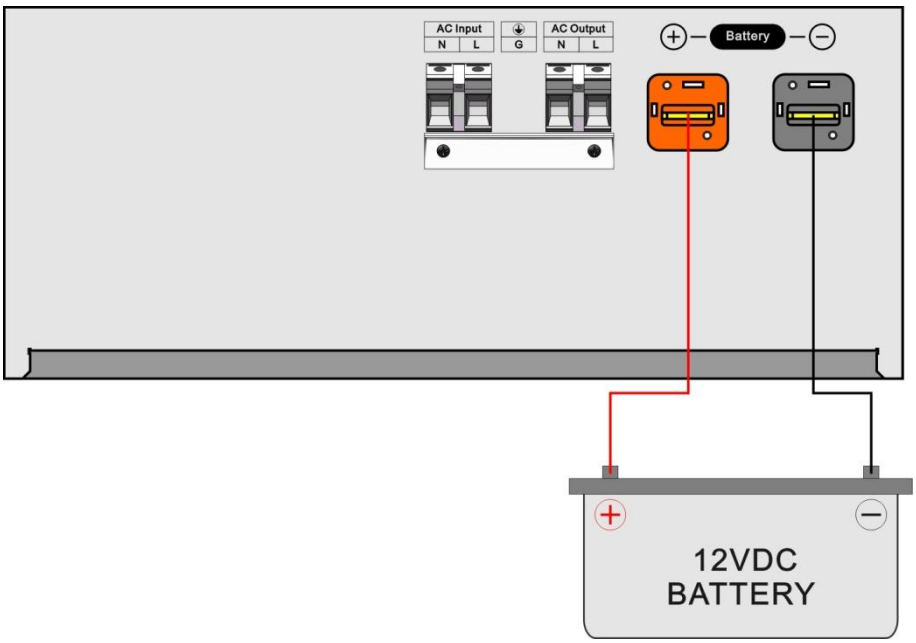
4.5.1 Start up electric generator and after it running stable, make electric generator output power connect into the equipment input terminal, then make sure the equipment output is no-load, then start up the equipment.

4.5.2 After the equipment starting, then connect load one by one.

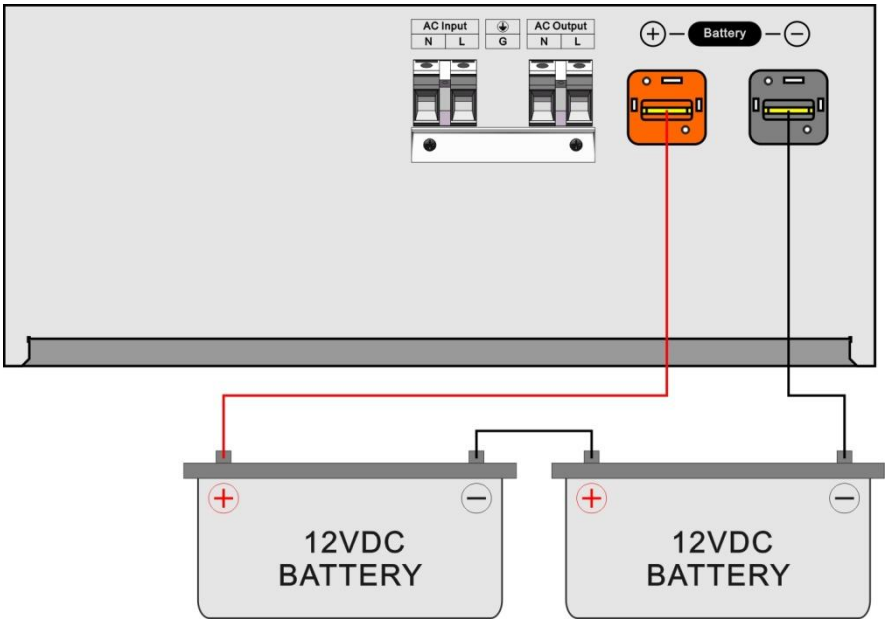
4.5.3 We suggest electric generator capacity should be 2~3 times of this equipment.

5 Equipment wiring diagram

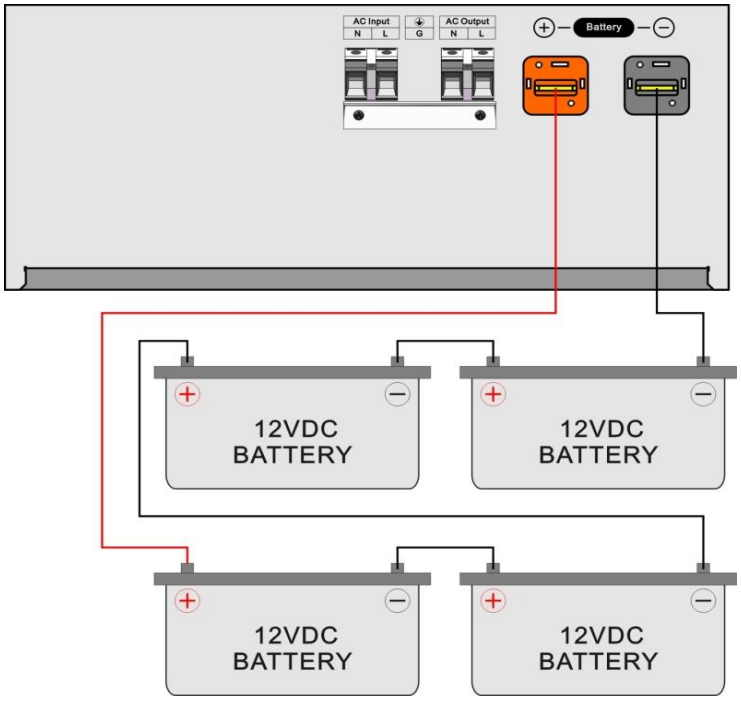
5.1 12VDC series battery wiring graphical representation



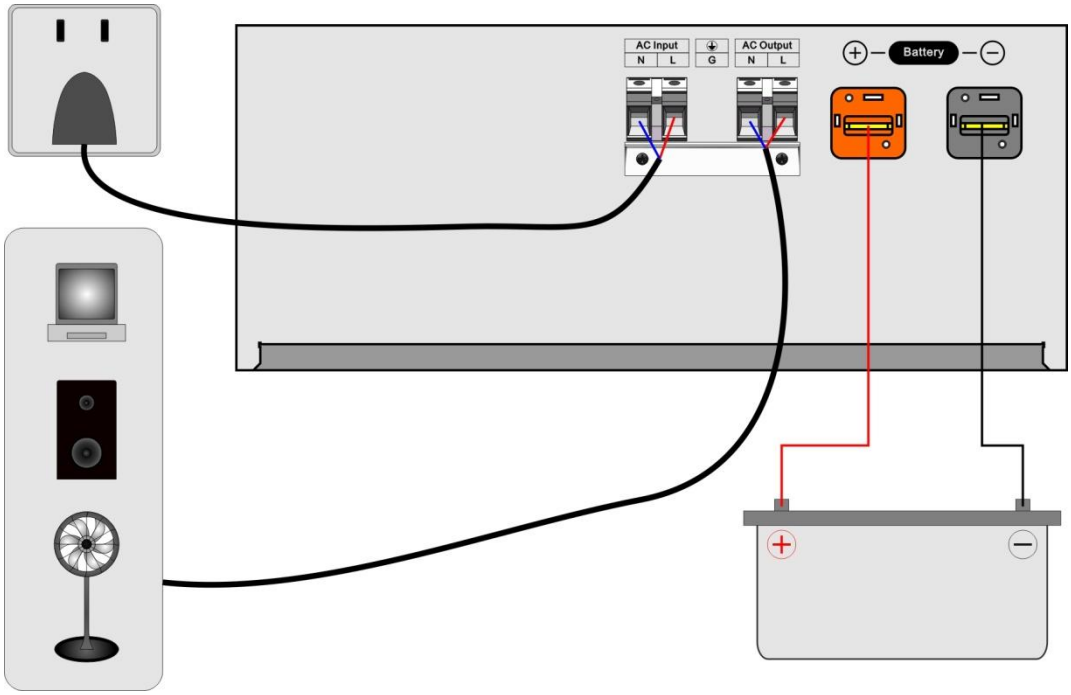
5.2 24VDC series battery wiring diagram



5.3 48VDC series battery wiring diagram



5.4 Input/Output wiring diagram



5.5 Direction for using of wire diameter

Direction for using of battery, AC input/output wire diameter: (Compute depends on 1mm2 copper core with 4-5A current)

$$\text{Battery wire diameter} = \frac{\text{Rated power(W)}}{\text{Rated battery(V)} \times 5\text{A/mm}^2}$$

$$\text{AC wire diameter} = \frac{\text{Rated power(W)}}{\text{Rated AC voltage(V)} \times 5\text{A/mm}^2}$$

For example：Wire diameter of 5000W/48Vdc/220Vac as below:

$$\text{Battery wire diameter} = \frac{5000\text{W}}{48\text{V} \times 5\text{A/mm}^2} \approx 20(\text{mm}^2)$$

$$\text{AC wire diameter} = \frac{5000\text{W}}{220\text{V} \times 5\text{A/mm}^2} \approx 6(\text{mm}^2)$$

6 Care and Maintenance

6.1 This series products only need rarely care, battery only need keeping charging so that can get expected lifetime.

6.2 If the equipment will not be used for long-term, we suggest it should be charged 1 time every 4~6 month. Usually, the battery can be used for 3~5 years, if it has some problem, then the battery should be changed as soon as possible. When changing battery, it must be operated by professional and obey battery supplier indicate.

6.3 Before changing the battery, it must be closed equipment and break away from the grid, close the battery switch. Take off the metal objects such as rings.

6.4 Connect the battery line, tiny spark in joint belongs to the normal phenomenon, and will not cause harm to the personal safety and equipment. Never connect the battery positive and negative into short or the reverse.

7 Judgment and treatment for simple faults

Warning :High voltage inside the device! Do not open it by yourself, or try to do maintenance, so as not to be in danger!

Fault	Possible causes	solution
The grid occasional	Strong out of restoration fuse holder	Press again the strong out part
Time degradation of Machine with loads	Battery undercharge	Make sure battery be full of charging normally
	Machine connect load overcharge	Move away non-key loads
	Battery burn-in and can't charge enough power	Please contact with CSR and get battery need changing module
The machine can't be started	The grid input line or battery input line is in bad connect	Check and reconnection
Starting up alarm	Low battery	Make sure battery be full of charge normally
	Overload	Move away non-key loads
Buzzer for 2s, pause 1s	Internal over-temperature	Check fan and hear dissipation whether be blocked
Fan sometimes fast, sometimes slow	Internal temperature above 45℃ fan fast, below 42℃ fan slow	Normal

When you contact with maintenance personal, please provide the following information: machine model/problem happening date/complete instructions (including relative indicator light display status, equipped battery power, photovoltaic modules power, connection and other information).

8 Technology Parameter

Type：FT-		3KW		
Rated power(W)		3000W		
Battery	Rated voltage(Vdc)	12V	24V	48V
	Charge current(A)	30A（default）-C0-C6can be set		
	Battery type	U0-U7 can be set		
Input	Voltage range(Vac)	85-138VAC/170-275VAC		
	Frequency(Hz)	45-65Hz		
Output	Voltage range(Vac)	110VAC/220VAC；±5%(Inverter mode)		
	Frequency(Hz)	50/60Hz±1%(Inverter mode)		
	Output wave	Pure sine wave		
	Switching time	＜10ms(typical load)		
	Efficiency	＞85%（80% Resistance load）		
	Overload	110-120%/30S；＞160%/300ms；		
	Protection	Battery overvoltage/low voltage, overload, short circuit protection, overtemperature protection, etc.		
Operating ambient temperature		0-40℃		
Storage ambient temperature		-15 - +50℃		
Operating/Storage ambient		0-90%No condensation		
Machine Size: L*W*H (mm)		545*365*186		
Package size: L*W*H（mm）		700*495*283		

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 shortcircuit inside applicances loaded
E03	Applicance 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	----------
E 10	Undervoltage of battery	Check the system voltage of inverter and use same data for the battery pack.