



# User Manual

## UCG5KVA Pure Sine Wave Inverter



## *Brief Introduction*

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UCG5KVA pure sine wave power inverter is made of high quality power frequency transformers, advanced CPU control technology, IGBT tubes or FUJI IGBT modules combined with DSP technology to generate sine wave power source. Inverters with IGBT and DSP technology are characterized of wide load range, fast response, anti-interference, low self consumption, high efficiency, etc., They are regarded as the best choice for areas without grid power or for solar/wind generator systems.

## *Application Area*

Computer systems, communications systems, precision instruments, precision machine tools, railways, shipping, hospitals, shopping malls, schools, families, travel, alarm system, widely used for solar and wind power generation equipments. Also, when connected with a direct external maintenance-free battery bank, it can be used as an EPS (Emergency power system).

### **Attention:**

1. When utilizing UCG5kva inverter, the switch time between grid power and battery power is less than 1s, - so it's not suitable for the loads which requires switch time to be less than 20ms. Per customer's request UCG3kva inverter can be customized to "0" switch time - Please mention the need for this feature when ordering.
2. UCG5KVA inverters can be used within industrial and commercial sectors, it can be applied to all kinds of loads (normally, the max. starting current of the loads should not exceed 2.5 times of the inverter rated current.)

Please take note of the following safety measures which also applies to inverter loads. Please read the details carefully and reserve it for future reference.

1. To avoid electric shock, without the guide of a technician do not open the cover of the inverter or pull the input and output terminals.
2. When functioning the inverter input/output cables should be arranged in proper order to avoid any cable damage.
3. Inverter power supply lines must be ground connected to avoid electric shock.
4. Do not connect the inverter ground lines to heating pipes, water pipelines, gas pipelines and other public facilities, - to avoid violating the rights of the third party.
5. Do not connect the ground line and neutral line. If connected together or reversely connected, it may cause abnormal working of the inverter or lead to electric shock.
6. When the battery voltage is higher than 48V, in order for safety installation and future easy maintenance, should connect in series with one high current DC switch between batteries and inverter.
7. For the inverter with AC input(grid charger), please connect in series with one power switch between grid and inverter to ensure safety.
8. In avoid fire caused by overload, please don't overload the inverter with appliances.

## Technology Characters

### Main Data (Single Phase)

Model	UCG
Specs	5KVA
Rated power	3.2KW
Input DC	96VDC
Output current	13.63A
Instantaneous current	16.36(10 s)
Output frequency	50HZ
Output AC	220V
Output wave	Pure sine wave
Output frequency	50HZ
Voltage stability	±5%
AC input(grid)	220V
Overload protection	3.84KW(120% of the rated power), 10 seconds
Under voltage protection	84VDC(87.5% of battery rated voltage)
Efficiency	≥80% (full load)
Working Environment	Temperature:0-20~+540 Relative Humidity: 30~90%
Dimension	530*315*450mm
Weight	42Kg

**Notice:** The UCG3KVA is a off-grid inverter, please do not connect the AC output to the grid.

### Cable Size Option

Power	DC Voltage	Wire of DC	AC voltage	Wire of AC
Single phase 5000VA	96V	16mm <sup>2</sup>	220V	4mm <sup>2</sup>

## **Moving**

1. Don't move the inverter in reverse.
2. Handle the inverter slowly, avoid crash.
3. Before moving, turn off the inverter and remove all wires;

## **Installation place**

1. Put the inverter on a flat ground or spot.
2. Put the inverter in a well ventilated place (at least 50cm surrounding space in one meter range of the inverter should not have combustible material or heat source).
3. Avoid sun, rain and damp.
4. Put far away from fire.
5. Do not place objects on the inverter.
6. Do not put the inverter in a place with corrosive gas.
7. Best working Temperature: 0~40.

# Installation Method and Operations

Before wiring, please turn the general switch off ("10" in Diagram 2 - pg. 9).

## Wires between the battery and Inverter.

1. According to the input DC voltage(96VDC) requirements of inverter, connect the positive (+, red wire) and negative (-, black wire) of the batteries to relative terminals (positive connector "8" in Diagram 2 and negative connector "9" in Diagram 2 - pg. 9) of the inverter through one DC switch. **Note:** Reverse connection is dangerous!

## Power input wires (for the models with grid standby function)

1. Grid power cables 220V should be connected to the power inverter via circuit breakers according to the firewire connector L ("11" in Diagram 2 - pg. 9) and zero line connector N ("12" in Diagram 2 - pg. 9) connection. **Note:** The circuit breaker for inverters can not be used together with any other loads.

## Power output wires

1. The power output wires should be connected to the output terminals of inverter according to the firewire connector L ("13" in Diagram 2 - pg. 9) and zero line connector N ("14" in Diagram 2 - pg. 9) connection.
2. The output wires should avoid any short circuits.
3. The load should be limited to the rated power capacity of the inverter.

## ON/OFF

Before turning on the inverter, please re-check all cables and terminals are properly connected, the loads connect should abide to the following rules:

1. Purely resistive loads, the maximum rated power of loads should not be over the inverter rated power (3.2KW).
2. Purely inductive loads, the maximum rated power of loads should not be over the inverter rated power of 40% (1280W).
3. Resistive and inductive mixed loads, the maximum rated power should not be over the inverter rated power of 50% (1.6KW).

# *Installation Method and Operations*

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1. Turn on the general switch ("10" in Diagram 2 - pg. 9). The LCD will show "POWER OFF". After turning on the general switch the inverter starts initializing the system.
2. Push the start buttons on the front panel after 30s ("2" in Diagram 1 - pg. 8).
3. After 2s, the inverter starts outputting AC power, the LCD show "EMERGENCY POWER"
4. Press the screen page button on the right side of the LCD ("7" in Diagram 1 - pg. 8), the LCD will show "system OK"
5. Press the screen page button on the right side of the LCD ("7" in Diagram 1 - pg. 8) again, the LCD will show information of AC input, AC output, loads and battery. When one display cycle finishes, press the screen page button to start next cycle.
6. Turn on the loads.
7. To shut down the inverter, turn off the switches of the loads and then turn off the inverter general switch ("10" in Diagram 2 - pg. 9).

## **Notice:**

When the inverter shuts off due to the protection features for under voltage, overloads or over-temperature - Turn off the general switch ("10" in Diagram 2 - pg. 9), ONLY turn it on after the problem is identified and resolved.

# Structure and Function Description

## Front Panel

### Diagram 1 - UCG5KVA single phase 5KVA inverter

1. LED Display: Show for AC-DC voltage and load status;
2. Start Button: Used to start and shut down the machine
3. Charging Indicator: Valid when charging function is available;
4. Battery Charging Indicator: Valid when grid is charging batteries;
5. Inverter Indicator: It is "ON" when Inverter is functioning;
6. Fault Indicator: It is "ON" when there is a fault also the inverter stops working;
7. Screen Page Button: To view the data and stop their calls.

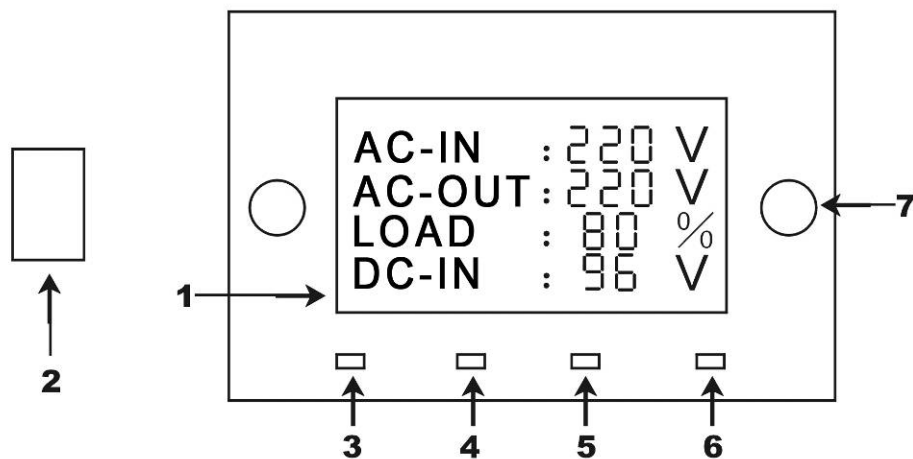


Diagram 1, Front panel

- |                       |                               |
|-----------------------|-------------------------------|
| 1. LED display        | 2. Start button               |
| 3. Charging Indicator | 4. Battery charging Indicator |
| 5. Inverter indicator | 6. Fault indicator            |
| 7. screen page button |                               |



# Structure and Function Description

## Back side

### Diagram 2 - UCG5KVA single phase 5KVA inverter

8. Positive connector of the battery
9. Negative connector of the battery
10. General switch
11. AC input firewire connector L
12. AC input zero line connector N
13. AC output firewire connector L
14. AC output zero line connector N
15. Vent for cooling fan

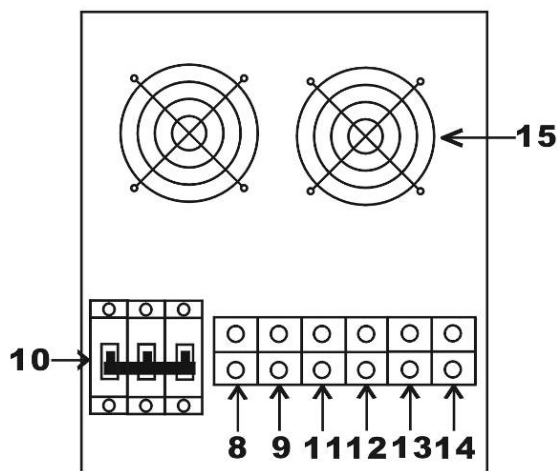


Diagram 2, Back side

8. Positive connector of the battery
9. Negative connector of the battery
10. General switch
11. AC input firewire connector L
12. AC input zero line connector N
13. AC output firewire connector L
14. AC output zero line connector N
15. Vent of cooling fan

# Structure and Function Description

## LCD Display

POWER OFF

1. The display shows the status within 30s after turn on general switch, please press the start button after 30s

EMERGENCY POWER

2. The display shows the status after press the start button, the inverter working normally and with a gap their calls

SYSTEM OK

3. The display show the status after first press the screen page button and at the same time the their calls gone

AC-IN	:	220	V
AC-OUT	:	220	V
LOAD	:	80	%
DC-IN	:	48	V

4. The display shows the status when press the screen page button again

EMERGENCY POWER  
OVER TEMP

5. The inverter has no AC output and with their calls, means the temperature is over the highest working temperature and the over-temperature protection works

EMERGENCY POWER  
OVER LOAD

6. The inverter has no AC output and with their calls, means over loads or over current and the over loads/over current protection works

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