# 3000W bidirectional inverter Specification

Product Model：ZI48B-3K0W

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Fujian Geekey Technology LTD

Modification Record

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|---|---|---|---|
| 2023-12-28 | Scope of application | A0 | |
| 2024-06-08 | Modify upper computer parameters | A1 | |
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# 1. Scope of application

This specification outlines the performance indicators, functional characteristics, usage conditions, and precautions for the ZI48B-3K0W bidirectional inverter produced by Geekey Technology Ltd.

ZI48B-3K0W is a 3000W power bidirectional inverter with integrated charging and discharging, which can achieve efficient conversion between DC and AC power. This product has strong adaptability and compatibility with loads when the power is sufficient. It can be used in many scenarios such as household electricity, outdoor portable mobile power, emergency power supply during power outages, UPS, large capacity battery pack charging, and is compatible with most electrical appliances on the market, providing stable and reliable power protection.

# 2. Product model

As an inverter, ZI48B-3K0W can output pure sine high-quality AC power, and as a charger, it can perform high-power fast charging, enabling flexible battery charging and discharging switching. The "product" in this specification refers specifically to the ZI48B-3K0W bidirectional inverter produced by our company. Among them:

ⅰ: 1 letter, "Z" is the abbreviation of the company name, representing Zhenge Technology Co., Ltd.
ⅱ: 1 letter, "I" indicates that the product type is a bidirectional inverter
ⅲ: 2 digits, “48” represents the rated input voltage of 48V
ⅳ: 1 letter, “B” indicates the output voltage RMS value is 220VAC, where “A” is 120VAC and “B” is 220VAC
ⅴ: 3 characters, “3K0W” represents a rated output power of 3000W

# 3. Specifications

General parameters: Battery type: ternary lithium, lithium iron phosphate, lead-acid battery default to ternary lithium battery

| General parameters | | |
|---|---|---|
| Model | | ZI48B-3K0W |
| General parameters | Battery type | Battery type: ternary lithium, lithium iron phosphate, lead-acid battery default to ternary lithium battery |
| | Voltage input range | Discharge voltage: 48~70VDC, Charge voltage: 40~70VDC |

| | | |
|---|---|---|
| | Rated voltage | 48VDC |
| | Rated power | 3000W |
| Inverter parameters | Inverter parameters: Output voltage range | 225V ± 10%VAC |
| | Output frequency | 50Hz ± 1% |
| | Waveform Pure | 纯正弦波<br>sine wave |
| | Efficiency | ⩾95% |
| | Number of phases | 单相<br>single phase |
| | Overload capacity | continuous output up to 3000W, instantaneous input power ≥3300W |
| Charging parameters | inputs Voltage range | 85~250VAC |
| | Rated charging power | 2200W |
| | Constant charging current | 31A<br>(parameters can be set) |
| | Constant charging voltage | 67.2V<br>(parameters can be set) |
| | Operation mode | mains power priority |
| Protection function | buzzer alarm | over-temperature/over-voltage/under-voltage/over-current buzzer (parameters can be set) |
| | Protection performance | It includes soft start, anti-reverse connection fuse protection, surge protection, and can intelligently detect overvoltage, overcurrent, overtemperature, overload, short circuit, overcharge, over discharge, etc., and provide corresponding protection |
| physical characteristics | Dimensions (W/H/T) | 361.6*224.0*92.0mm |
| | Net Weight (Kg) | 3.15kg |
| | Cooling method | intelligent fan control |
| | Control panel | LCD color screen |
| | Communication interface | CAN bus interface, PIN2.45-4P interface |

# 4. Functional characteristics

## 4.1 Flexible switching between charging and discharging

The main topology of the product adopts a three-active bridge (TAB) circuit structure, which has the characteristics of high power density and flexible control of energy flow direction, enabling the sharing of a single hardware circuit for charging and discharging, saving space resources.

## 4.2 Full isolation design

The power board and control board are fully isolated to achieve electrical isolation, which can prevent personnel and equipment from being exposed to potentially dangerous surge currents and voltages, while ensuring the efficiency and stability of the system.

## 4.3 Output pure sine wave

The product adopts a complete set of mature technology and is highly integrated, capable of outputting pure sine waveforms and achieving a harmonic distortion (THDi) of less than 3%, protecting sensitive electronic devices from damage.

## 4.4 Energy efficient conversion

The conversion part uses the PWM modulation method with center alignment to achieve frequency multiplication, which optimizes the compactness of the system design while also improving overall efficiency. It can achieve high efficiency energy conversion of up to 96.8% and reduce energy loss.

## 4.5 Intelligent LCD color screen display

Display the current input and output information of the inverter in real time, making the internal operation of the inverter transparent, allowing users to detect and solve problems in a timely manner, and facilitating user maintenance and management.

## 4.6 Protection function

The product has fault diagnosis and fault alarm functions, and uses a dual-loop control algorithm to achieve instant response strategies, ensuring safe and stable operation of the inverter under abnormal conditions.

## 4.7 Soft start function

Both charging and discharging have soft start limit starting current, which avoids impact and voltage drop on electrical appliances, effectively reduces potential damage to the load, and extends the service life of the equipment.

### 4.8 Heat dissipation measures

The internal intelligent temperature control cooling fan is equipped with large cooling fins to assist in heat dissipation and prevent heat accumulation.

### 4.9 Reliable materials and processes

The product uses high-quality electronic components and advanced production technology to ensure stable operation of the inverter.

### 4.10 Anti-reverse connection protection

The DC output interface is equipped with anti-reverse insertion fuse protection to prevent accidents caused by users reversing the connection.

### 4.11 Anti-surge protection

The battery input is equipped with multiple TVS tubes to prevent damage to electronic devices caused by short-term voltage or current surges due to equipment start-up or shutdown.

## 5. Instructions for use

Please read this manual and the safety signs on the inverter carefully before use.be careful:

Before opening the inverter, please ensure that all input and output switches are turned off.

When the bidirectional inverter is running, do not touch any exposed parts or connecting lines inside the inverter.

The battery rated voltage must be consistent with the inverter rated voltage. If the inverter voltage is 48VDC, then the battery voltage must also be 48V correspondingly, otherwise the inverter will not work or be damaged.

The power supply from the car cigarette lighter can only support loads below 200W, otherwise it will burn out the car fuse.

### 5.1 Discharge process：

1. connect the loop line to the input terminal of the inverter battery, tighten the terminal stud, and pay attention to the positive and negative poles and the voltage range of 48V-70V.
2. Connect the load to the inverter output terminal, which can support a maximum

load of 3000W.

3. Press the inverter switch key. In the shutdown state, pressing the "inverter switch key" will turn on the inverter output. In the power-on state, pressing the "inverter switch button" will turn off the inverter output.

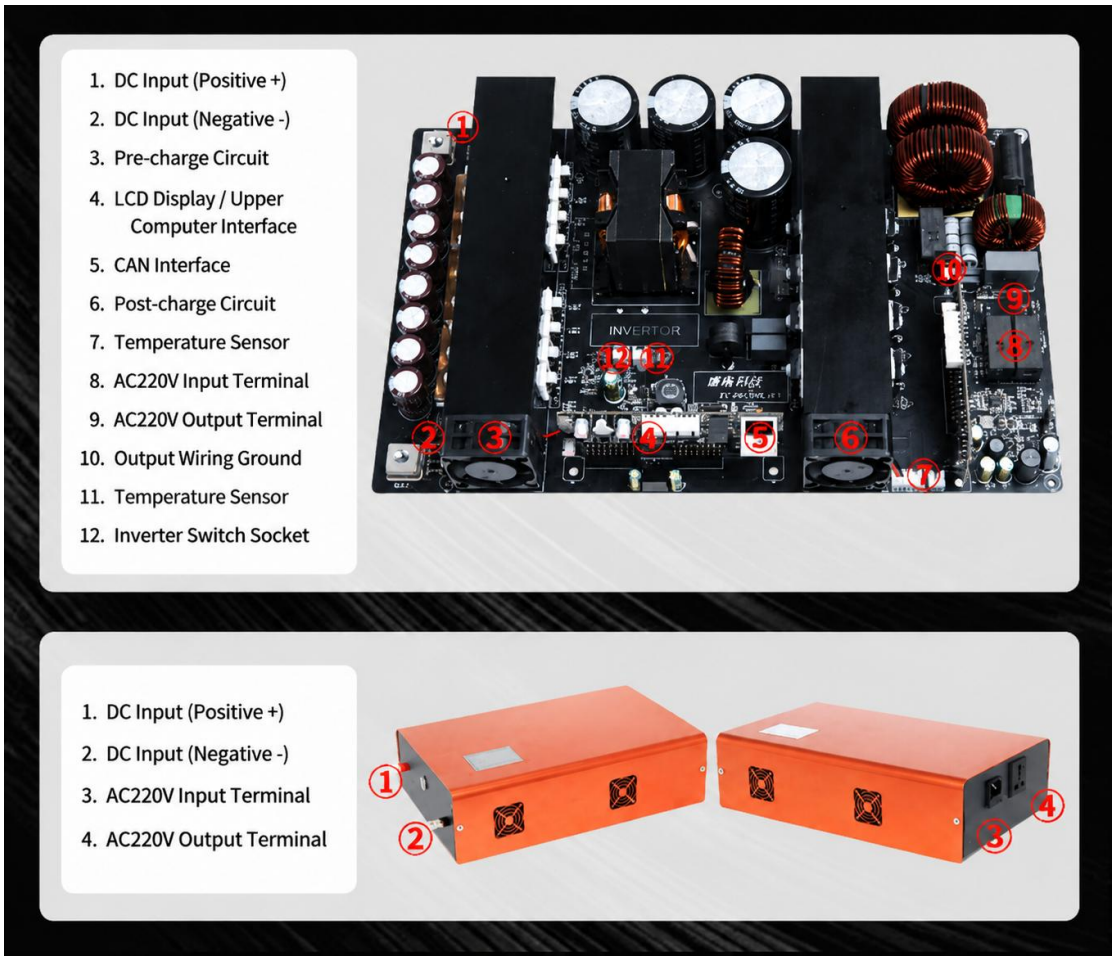
## 5.2 Charging process：

1. Connect the external battery to the red and black input ports of the product, which supports a working voltage range of 40V to 70V.

2. The mains power is connected to the charging port through the charging cable inverter. The inverter detects the mains power input and automatically switches to the charging mode, and charges the battery through the PFC circuit and DC/DC converter with constant voltage and current. The default setting for charging current is 31A, and the default setting for constant voltage is 67.2V.

3. After the mains power is unplugged, it will be determined whether to turn on the inverter output based on the current key state.

### 5.3 接口定义 Interface definition




# 6. Safety Guidelines

## 6.1 Precautions

Before carrying out any cleaning or maintenance work, please ensure that the inverter has been completely turned off and disconnected from the power supply.

The inverter should be placed in a place where children cannot reach it to prevent accidental electric shock.

Inverter will generate heat during operation, please ensure that there is enough space for heat dissipation around.

If the inverter emits a burning smell, abnormal sound, abnormal heating, or smoking, the power should be immediately turned off and the operation stopped. At the same time, the manufacturer or professional technicians should be contacted for inspection

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and repair.

If the battery emits an odor, heats up, discolors, deforms, or experiences any abnormalities during use, storage, or charging, immediately disconnect the power supply from the inverter and deactivate it.

The inverter should be installed in a dry, well-ventilated, and non-sloping area, and should not be used in a humid environment to prevent electric shock or short circuit.

## 6.2 Dangerous Operations

The inverter has high voltage inside, so non-professionals are not allowed to disassemble or repair it without authorization.

During or after the operation of the inverter, its parts may still be in a high temperature state, so do not touch them immediately to avoid scalding.

Avoid damaging power wires and cables, do not step on, twist or pull cables to prevent electric shock, short circuit or fire.

Do not cover the inverter with blankets, cloths, or other textiles to prevent heat dissipation and cause fires.

Do not use the battery with the positive and negative terminals reversed on the inverter. For the power supply, do not use batteries with serious scratches and deformations, do not use batteries in parallel, and do not mix batteries with other types and brands of secondary batteries.

## 6.3 Safety warning

Electric shock hazard

During operation, testing, and product maintenance, be cautious of electric shock. Non-professionals are not allowed to open the chassis without authorization. If professionals need to replace fuses or perform other maintenance, be sure to unplug the power plug first and do so with someone's company. Even if the power plug has been unplugged, there may still be dangerous voltage on the capacitor charge, so it should be discharged before operation. Please do not replace or adjust the internal circuits and components of the instrument without authorization!

Input power supply

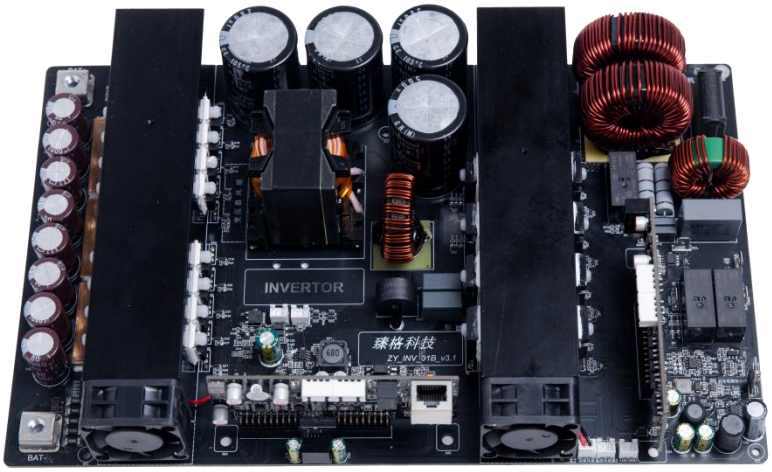
Please use the power supply according to the power parameter requirements specified by this instrument. Power input that does not meet the specifications may damage this instrument. Please use the same specifications for replacing the fuse.

Keep away from explosive gas environment

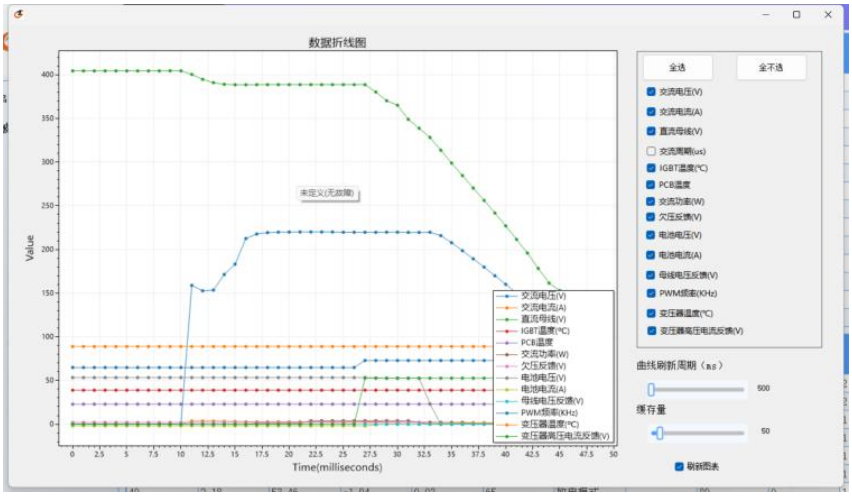
Electronic instruments should not be used in flammable and explosive gas environments, or in environments containing corrosive gases or smoke, to avoid danger.

# Appendix

## Product Display




upper computer interface

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