

# **1U Rack power supply**

**User Manual**

**(31010281-V1.0)**

# Preface

## Manual description

The information contained in this manual relates to the installation and operation of the power supply. Please be sure to read all relevant contents of the manual before installation. Equipment installation and maintenance personnel must be engineers approved by the manufacturer (or agent). Violation of the above regulations causes safety risks to personnel, and is not within the scope of the equipment's warranty. This device is designed for commercial/industrial use only and cannot be used as a power source for any life support equipment.

Disclaimer: Due to the continuous update and improvement of products and technologies, the content in this manual may not completely match the actual product, please understand. For product updates, please contact the manufacturer or supplier.

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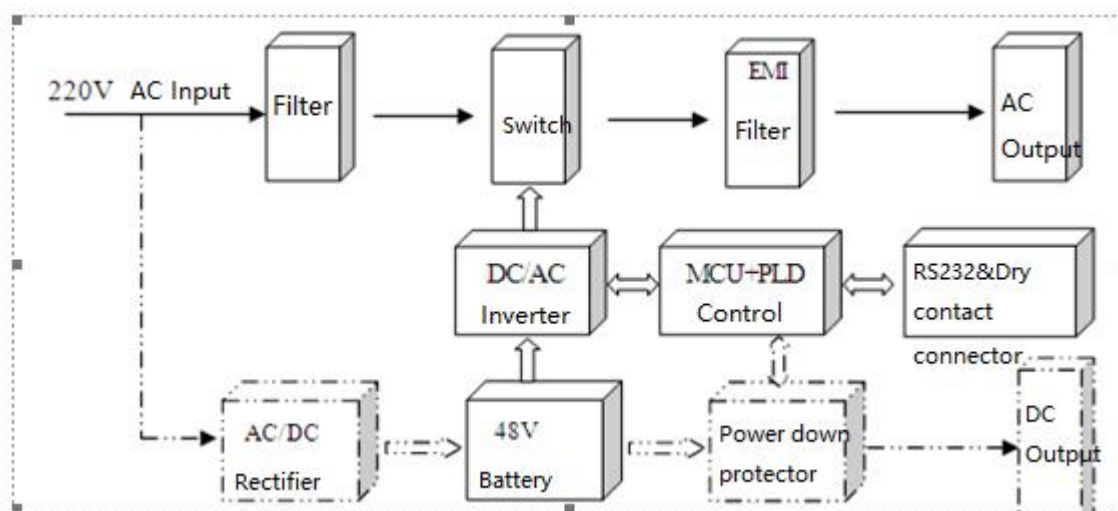
# 1、 Product description

## 1.1、 Product Introduction

This power Inverter adopts advanced control technology and is a standard 19 inch rack-mounted power supply product, which can be used in communication base stations, office, electric power, industrial control, security and other fields. The power system has the functions of battery over and under voltage protection, output over voltage protection, output under voltage alarm, output short circuit protection and over temperature protection. It also supports RS232 communication information reporting.

## 1.2、 Basic composition

When the mains power is normal, the bypass filter is directly used to supply power to the load; when the mains is abnormal, the power supply switches to the battery inverter state and outputs 220Vac/50Hz high-quality sinusoidal AC power. The system diagram is shown below:



**Remarks: Pure inverter power system does not contain the dotted line part of the function.**

## 1.3、 Features

### ■ Self-starting function

When the DC input is higher than  $48 \pm 1V$ , the power supply will start automatically, and enter the inverter state after the panel indicator flashes; After 10s, if the mains power is normal, the equipment will automatically enter the mains power state.

### ■ DC cold start

When the DC input voltage is less than  $48 \pm 1V$ , press and hold the switch button, the device can enter the inverter state after the panel indicator flashes.

### ■ Forced start function

When the forced start is off, the equipment stops output when the battery is under voltage; When the forced start switch is on, the battery undervoltage is not protected when the equipment is discharged!



**Warning!**

**The forced start switch is off by default! It can only be operated after being confirmed by professionals. It cannot be switched to on state during normal operation!**

## 2、Quoted standards and norms

GB/T 2423.1-2001  
GB/T 2423.2-2001  
GB/T 2423.3-1993  
GB/T 2423.4.1993  
GB/T 2423.5-1995  
GB/T 2423.6-1995  
GB/T 2423.8-1995  
GB/T 2423.10-1995  
GB/T 2423.11-1997  
GB/T 2423.22-2002  
GB/T 14508-93  
EN55022: 1998  
EN55024: 1998  
CEI IEC 61000-4-2 2001  
CEI IEC 61000-4-3 2002  
CEI IEC 61000-4-4 1998  
CEI IEC 61000-4-5 1999  
CEI IEC 61000-4-6 2001  
CEI IEC 61000-4-8 1993  
CEI IEC 61000-4-29 1994  
CEI IEC 61000-4-29 2000  
CEI IEC 61000-3-2 2001  
CEI IEC 61000-3-3 1995  
GB 4943.1-2011  
YD/T 282-2000  
GB/T 13722-92  
YD/T 732-94  
YD/T 731-2002

## 3、Environmental conditions

No.	Item	Requirement	Remark
1	Working Temperature	-33~+45°C	The LCD display screen may not be able to display normally below 0 °C
2	Storage temperature	-25~+80°C	
3	Humidity	10~90%	
4	Altitude	3000 m	

## 4、Environmental test

No.	Item	Requirement	Remark
1	Working on high temperature	45±2°C rated load 24H	
2	Working on low temperature	-33±2°C rated load 24H	

3	Storage on high temperature	80±2°C, 24H	
4	Storage on low temperature	-25±2°C, 24H	

## 5、 Safety characteristics and EMC characteristics

### 5.1、 Safety requirements

No.	Test items	Test standard	Requirement	Remark
1	Dielectric strength (Input to ground)	2820Vdc	Should be able to withstand 2820Vdc DC voltage for 1 minute , Leakage current ≤10mA, no breakdown, no arcing	Mains only priority AC input to ground
2	Dielectric strength (Output to ground)	2820Vdc	Should be able to withstand 2820Vdc DC voltage for 1 minute , Leakage current ≤10mA, no breakdown, no arcing	
3	Ground resistance	<0.1Ω	40A/2min	input to ground

### 5.2、 EMC requirements

No.	Test items	Test standard	Requirement	Remark
1	Radiated harassment emission	EN55022	/	CLASS A
	Conducted disturbance emission	EN55022	/	CLASS A

## 6、 Communication mode (standard dry contact, RS232)

### 6.1 dry contact:

- When the input battery voltage is abnormal, "common point" and "battery low" are in a short circuit state.
- When the input mains power is abnormal, "common point" and "power off" are in short circuit state.
- When the inverter fails, "common point" and "fault" are in short circuit state.

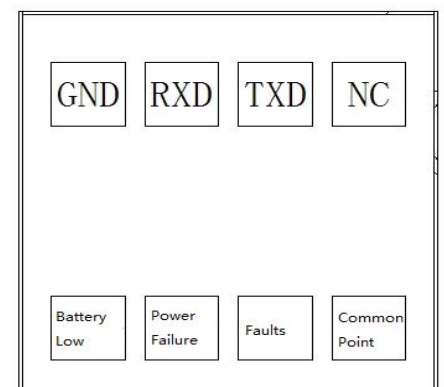
### 6.2. RS232 wiring:

- Brown wire lock "TXD"
- Black wire lock "RXD"
- Red wire lock "GND"
- "NC" is empty and not wired



RS232 Cable

## RS232



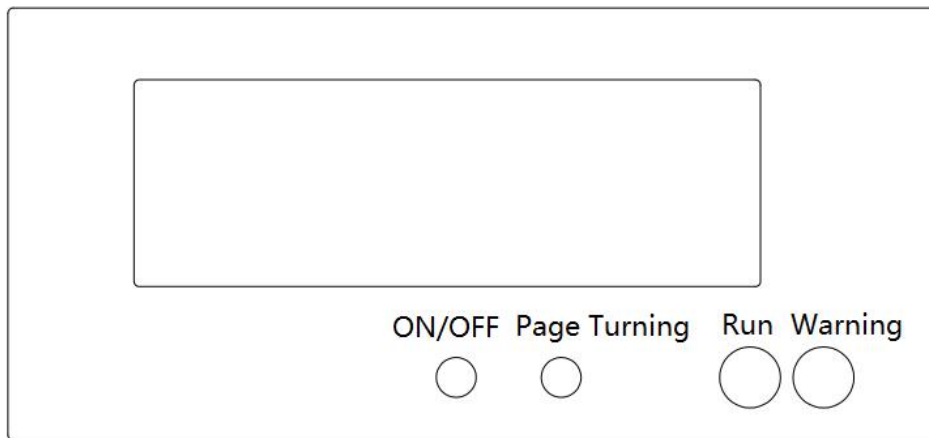
Dry Contact

**Note: when you need to cut off the output of the inverter, ensure that the machine is in shutdown and no power input status.**

## 7、 Display

### 7.1、 LCD Display Series

LCD display:



- a. On / off key: press the on / off key to start and shut down the machine;
- b. Page turning key: through the page turning key to view the page turning.
- c. Operation indicator light: when the equipment works in battery state, the operation indicator light flashes; When the equipment works in the mains power state, the operation indicator light is on for long time; When the Inverter is abnormal, the operation indicator light is off;
- d. Alarm indicator: when the equipment is abnormal, the alarm indicator will be on for long time; when the equipment works normally, the alarm indicator is off;
- e. Display content: it can display AC input voltage, AC input frequency, output voltage, output frequency, DC input voltage, ambient temperature, output load percentage and fault code.

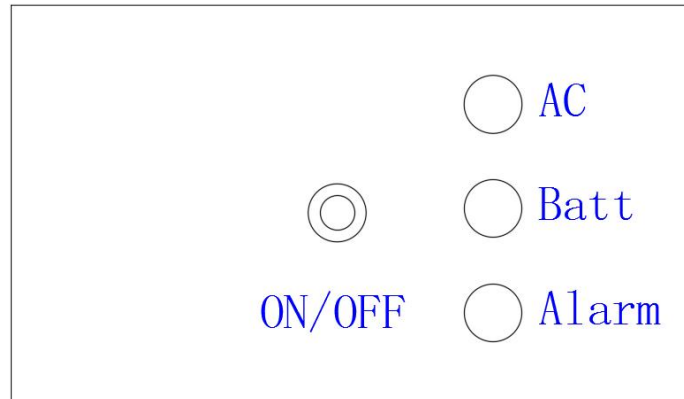
The machine fault phenomenon can be understood by checking the fault code through LCD. The specific comparison is as follows: (the "byte content" and "LCD display" columns in the figure are binary and decimal fault codes respectively)

No.	Byte content	LCD Display	Faults
1	00000001	001	Fan 1 abnormal
2	00000010	002	Fan 2 abnormal
3	00000100	004	Fan 3 abnormal
4	00001000	008	Abnormal auxiliary power supply
5	00010000	016	Output short circuit
6	00100000	032	Abnormal DC input
7	01000000	064	overload
8	10000000	128	Over temperature

Note: when two or more faults occur at the same time, the fault code displayed in the inverter is the sum of the fault codes corresponding to these fault phenomena (for example, if fan 1 and fan 2 are abnormal at the same time, the display code is 003).

## 7.2、LED Display Series

### LED Display:

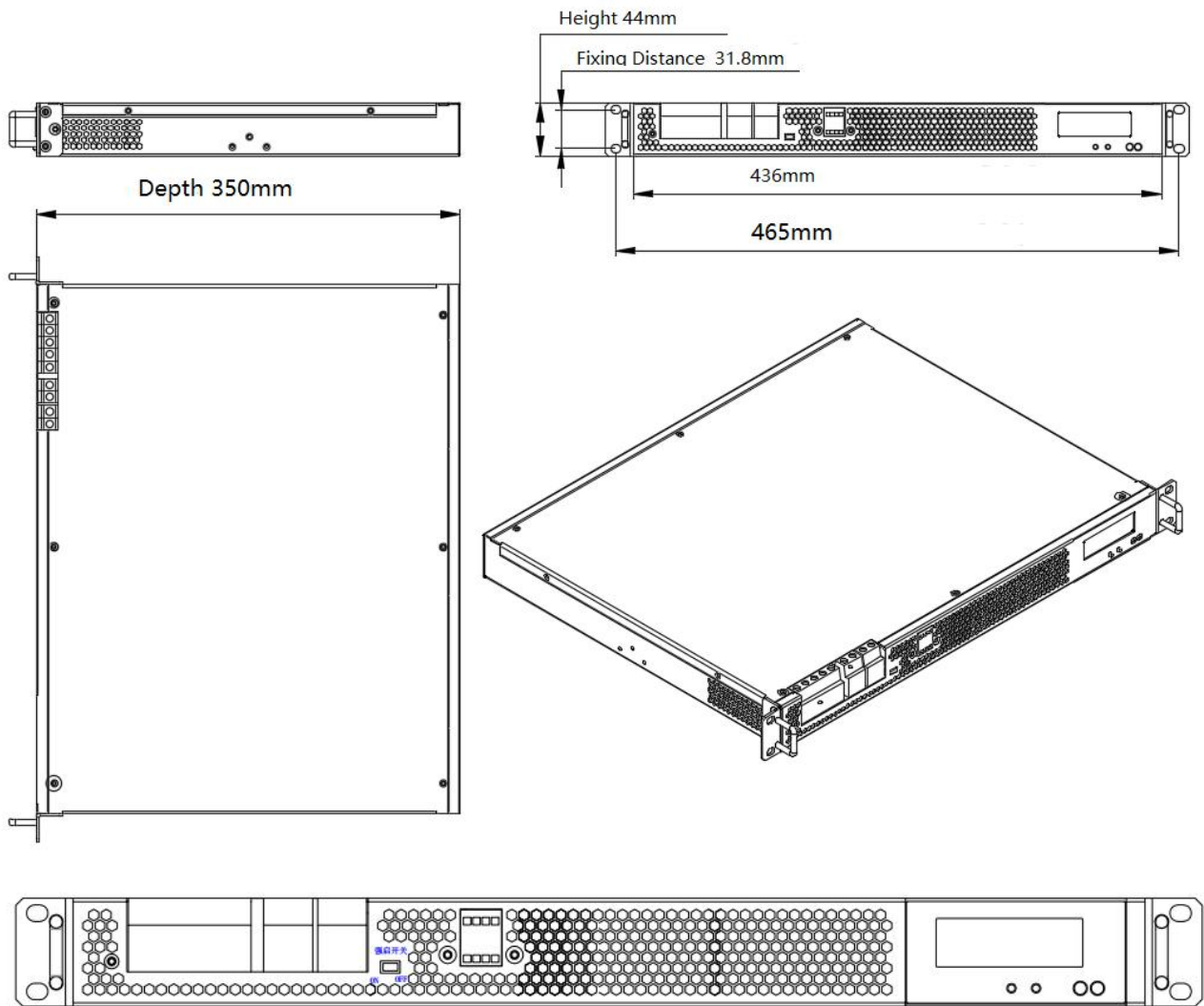


- a. On / off key: press the on / off key to start and shut down the inverter;
- b. Ac indicator light: when the mains power is normal and the inverter works in mains power status, the mains power status indicator is on;
- c. Battery status indicator: when the inverter works in the battery discharging status, the battery status indicator is on;
- d. Alarm indicator: when the inverter is abnormal, the alarm indicator will be on for a long time; When the equipment works normally, the alarm indicator is off.

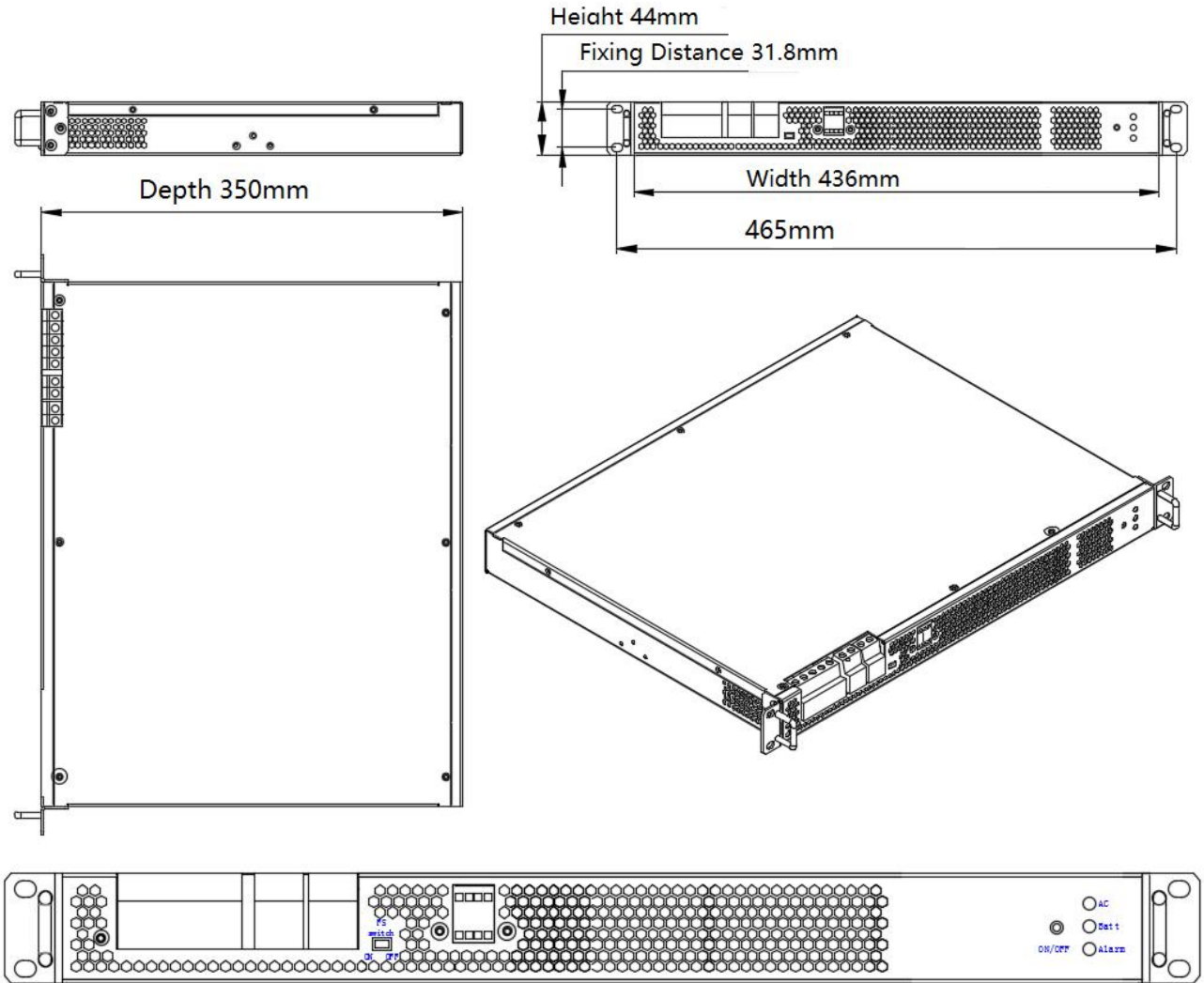


## 8、 Product appearance structure diagram (unit: mm)

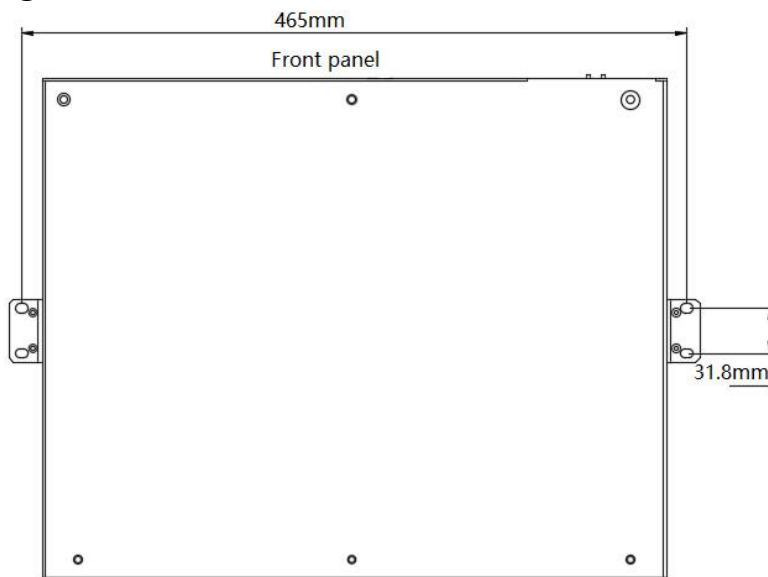
### 8.1、 LCD display series



## 8.2、LED display series

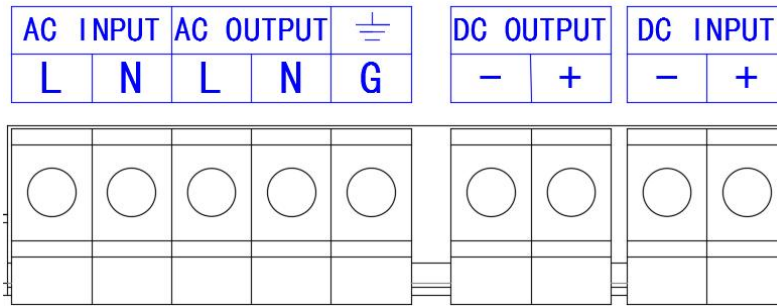


## 8.3、Wall mounting dimension



## 8.4、Terminal block

Terminal blocks for the LED model is same with the LCD model, as shown below:



## 9、Packaging, transportation, storage

### 9.1、Packaging

The packaging box has the product name, model, manufacturer's logo, the manufacturer's quality department inspection certificate, manufacturing date, etc.; With a list of accessories in the packaging box.

### 9.2、Transportation

The product should be transported with a firm packaging box. The outer box should comply with the relevant national standards and should be marked with "handle with care" and "moisture-proof". During transportation, direct rain and snow and mechanical impact should be avoided. Packing boxes with products are allowed to be transported by any means of transportation.

### 9.3、Storage

The product should be stored in the packaging box when it is not in use. The ambient temperature of the warehouse is -25~80°C and the relative humidity is not more than 80%. It is not allowed to store harmful gases, flammable and explosive products and corrosive chemicals in the warehouse, and there is no strong mechanical vibration, impact and strong magnetic field. The packing box should be at least 20cm away from the ground and away from walls, heat sources and windows. Or the air inlet is at least 50cm. The storage period under the specified conditions is generally 2 years, and the inspection should be re-inspected after more than 2 years.

## 10、Performance Specification

Capacity		1KVA / 800W	2KVA / 1600W	3KVA / 2100W
<b>Input</b>				
Power range		176~265Vac		
Frequency range		50±5% Hz		
Power factor		≥0.99		
Rated voltage of battery pack		48Vdc		
Battery voltage range		40~60Vdc		
<b>AC output</b>				
Rated voltage		220Vac		
voltage range		220Vac±2%		
Rated frequency		50Hz		
Frequency Range		49Hz~51Hz		
Output efficiency		≥90%		
Output waveform		Pure sine wave		
Output waveform distortion		≤3% @R load		
Main Source /inverter conversion time		≤10ms @specified load		
<b>DC output (optional)</b>				
Rated voltage		54.5~57.6Vdc		
Rated current		6A/20A/30A (The battery charging current is rated at 6A)		
<b>Protection characteristics</b>				
bypass→in verter	Low voltage switching point	176±5Vac		
	High voltage switching	265±5Vac		
inverter→b ypas	Low pressure callback	183±5Vac		
	high pressure callback	255±5Vac		
Low battery warning point		43±0.5Vdc		
Battery under voltage protection point		≤40Vdc @Non-forced start state		
Battery over voltage protection point		≥60Vdc		
Battery over voltage recovery point		≥55Vdc		
Output over current protection		100%~125%: Protect after 1 minute		
		≥125%: 10 seconds protection		
Output short circuit protection		Yes (Short circuit is prohibited when city power is connected)		
Battery reverse connection protection		Yes (Reverse connection is prohibited for models with charging)		
Over temperature protection		Yes (Automatic recovery after the failure phenomenon is resolved)		
Cooling method		Built-in fan for heat dissipation (intelligent speed regulation)		
<b>Appearance</b>				
Display	LED	Main source , battery, alarm status		
	LCD	Input/output voltage, frequency, DC input voltage, ambient temperature, output load percentage, fault code		
Sizes : W*D*H		482*350*44mm		
<b>Communication management</b>				
Dry contact		Including city power failure, low battery, system alarm interface		
RS232		Through the monitoring software, you can directly and remotely monitor the operating status of the power supply system online		

When the product specifications are changed, we may not be able to notify you separately.